PCN

AO-PCN-2023-030-A

Introduction of next chip generation for OSLON Signal devices

Published by ams-OSRAM AG
Tobelbader Strasse 30, 8141 Premstaetten, Austria
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ams-osram.com

03.04.2023

Dear Customer,

please review this **PCN** and provide your feedback in the **Customer approval form** (at the end of this PCN document) to your ams OSRAM sales partner before **10.05.2023** *).

Your prompt reply will help ams OSRAM to assure a smooth and well executed transition. If ams OSRAM does not hear from your side by the due date, we will assume your (if you are a Distributor: and your customer's) full acceptance to this proposed change and its implementation.

ams OSRAM understands the time requirements your organization needs to approve this PCN.
However, if you can provide ams OSRAM an estimated date your organization will have finalized this PCN review, ams OSRAM can use this date to plan continued production to secure your order needs during the transition time.

Your attention and response to this matter is highly appreciated.

Please direct your inquiries to your local Sales office.

*) ams OSRAM aligns with the widely recognized JEDEC/ECIA/IPC Joint Standard No. 46, which stipulates:

- Customers should acknowledge receipt of the PCN within 30 days of delivery of the PCN.
- Lack of acknowledgement of the PCN within 30 days constitutes acceptance of the change.
- After acknowledgement, lack of additional response within the 90 day period constitutes acceptance of the change. If the customer requires additional time to perform sample testing, beyond the 90 day review period, an extension must be negotiated with the supplier.

Subject of change:	Introduction of next chip generation for OSLON Signal devices	
Affected products:	Refer to document 2_cip_AO-PCN-2023-030-A	
Reason for change:	• Secure continuous supply • Chip performance improvement	
Description of change:	Current status • Current Chip • 38µm wire diameter	New status • Next Generation Chip • 30µm wire diameter for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01
	For details refer to document 2_cip_AO-PCN-2023-030-A	
Time schedule for PCN material: (after implementation of change):	Final qualification report:	03.04.2023
	Samples available:	On Request
	Intended Start of delivery:	01.07.2023 *) *) or earlier if released by customer and upon mutual agreement
Time schedule for Pre-PCN material: (prior to implementation of change):	Last time order date (LTO):	01.07.2023 **) **) Lead time and LTO quantity shall be mutually agreed between ams OSRAM and customer.
	Last time delivery date (LTD):	02.10.2023 ***) ***) planned last date for delivery of products of current status
Assessment:	**No change in form and reliability**	
Documentation:	2_cip_AO-PCN-2023-030-A 3_Qual_ AO-PCN-2023-030-A 4_Qual_ AO-PCN-2023-030-A	

Note:
Pre-PCN material: Products of current status, means before implementation of the changes as described in the PCN.
PCN material: Products with implementation of the changes as described in the PCN.

Customer approval form
AO-PCN-2023-030-A

Introduction of next chip generation for OSLON Signal devices

Please list product(s) affected in your application(s):

Please check the appropriate box below:

○ **Approval:** We agree with the proposed change and accept start of the shipment upon availability of PCN material	○ **Not relevant:** Change is not relevant for products in use.

○ **Change cannot be accepted:**

- ○ **We have objections:**
- ○ **We request following Information:**
- ○ **We request following Samples:**
- ○ **Expected approval date:**
- ○ **Volume requirements for Pre-PCN material:**

○ **Remarks:**

Sender:

Company:

Address / Location:

Signature: **Date:**

Please return this approval form to your Sales partner.

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PCN
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Customer information package

OS Q CQM ICI
2023-04-03

Agenda

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Introduction of next chip generation for OSLON Signal devices

Reason for change

Item	Description
1.	Secure continuous supply
2.	Chip performance improvement

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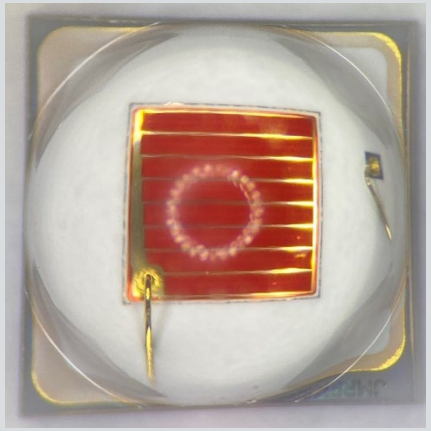
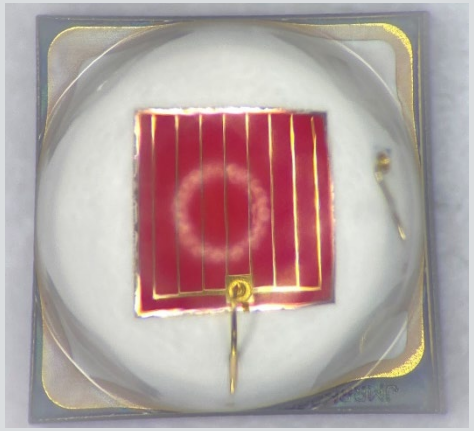
Description of change

Item	Current status	New status
1.	Current Chip	Next Generation Chip
2.	Wire diameter of 38µm	Change of wire diameter to 30µm for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 only
3.	Current appearance LJ CRBP.01 	New appearance LJ CRBP.01 

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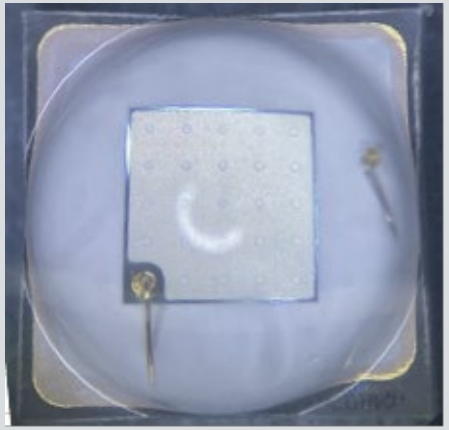
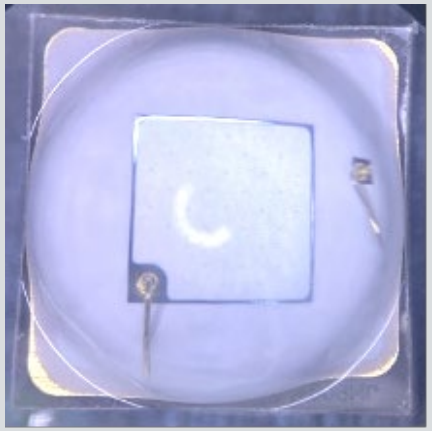
Description of change

Item	Current status	New status
4.	Current appearance LB CRBP.01 	New appearance LB CRBP.01 

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Introduction of next chip generation for OSLON Signal devices

Changes in the datasheet for LJ CRBP.01

Item	Current status	New status

Characteristics

I_F = 350 mA; T_S = 25 °C

Parameter	Symbol		Values
Peak Wavelength	λ_{peak}	typ.	635 nm
Dominant Wavelength [2]	λ_{dom}	min.	612 nm
I_F = 350 mA		typ.	625 nm
		max.	636 nm
Spectral Bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	14 nm
Viewing angle at 50% I_V	2φ	typ.	120 °
Forward Voltage [3]	V_F	min.	1.90 V
I_F = 350 mA		typ.	2.15 V
		max.	2.35 V
Reverse voltage (ESD device)	$V_{R\,ESD}$	min.	5 V
Reverse voltage [4]	V_R	max.	7 V
I_R = 5 mA			
Real thermal resistance junction/solderpoint [5]	$R_{thJS\,real}$	typ.	7.0 K / W
		max.	8.4 K / W
Electrical thermal resistance junction/solderpoint [5]	$R_{thJS\,elec.}$	typ.	3.0 K / W
with efficiency η_e = 57 %		max.	3.6 K / W

Characteristics

I_F = 350 mA; T_S = 25 °C

Parameter	Symbol		Values
Peak Wavelength	λ_{peak}	typ.	636 nm
Dominant Wavelength [2]	λ_{dom}	min.	612 nm
I_F = 350 mA		typ.	625 nm
		max.	636 nm
Spectral Bandwidth at 50% $I_{rel,max}$	$\Delta\lambda$	typ.	15 nm
Viewing angle at 50% I_V	2φ	typ.	120 °
Forward Voltage [3]	V_F	min.	1.90 V
I_F = 350 mA		typ.	2.10 V
		max.	2.35 V
Reverse voltage (ESD device)	$V_{R\,ESD}$	min.	5 V
Reverse voltage [4]	V_R	max.	7 V
I_R = 5 mA			
Real thermal resistance junction/solderpoint [5]	$R_{thJS\,real}$	typ.	6.5 K / W
		max.	7.4 K / W
Electrical thermal resistance junction/solderpoint [5]	$R_{thJS\,elec.}$	typ.	2.5 K / W
with efficiency η_e = 62 %		max.	2.8 K / W

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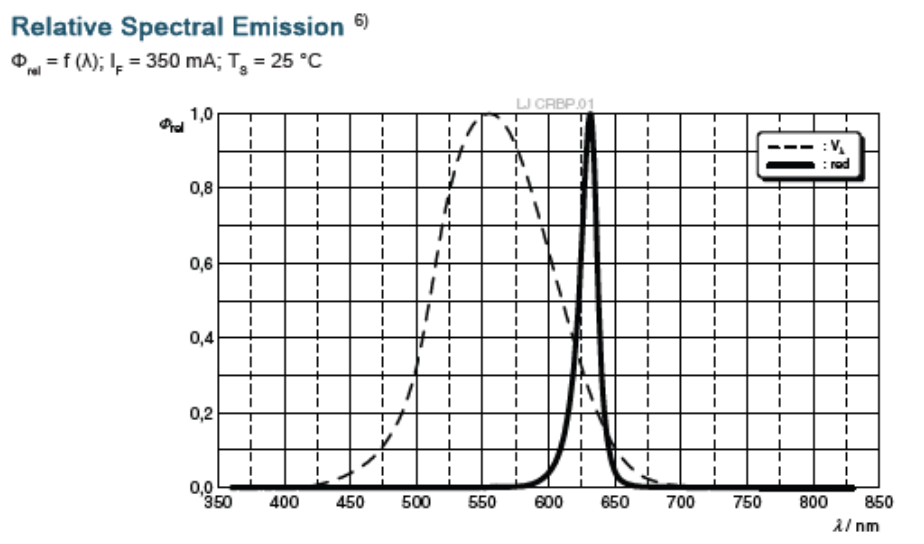
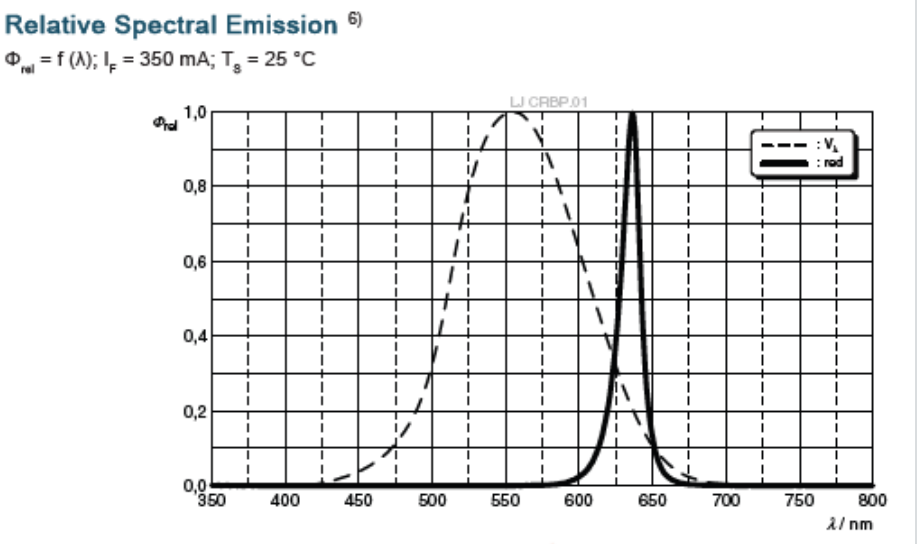
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Relative Spectral Emission		

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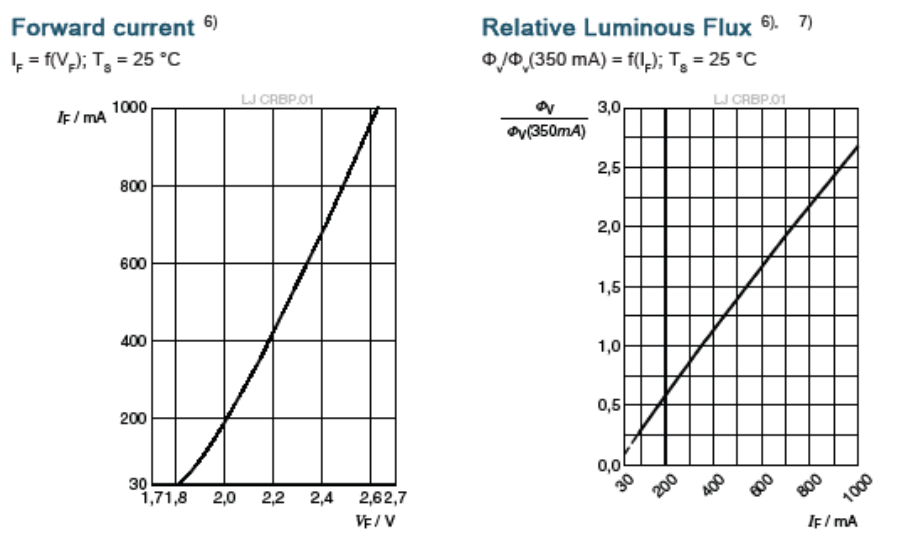
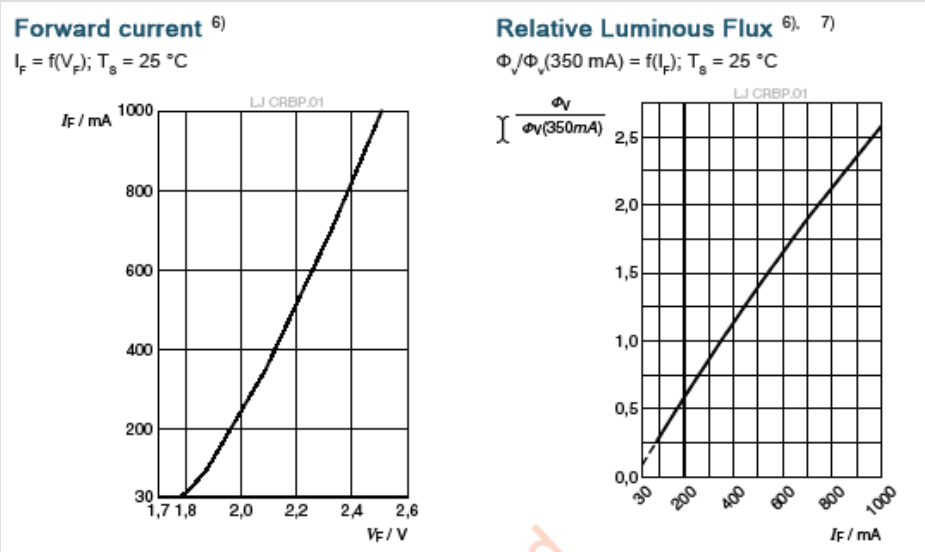
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Forward current & Relative Luminous Flux		

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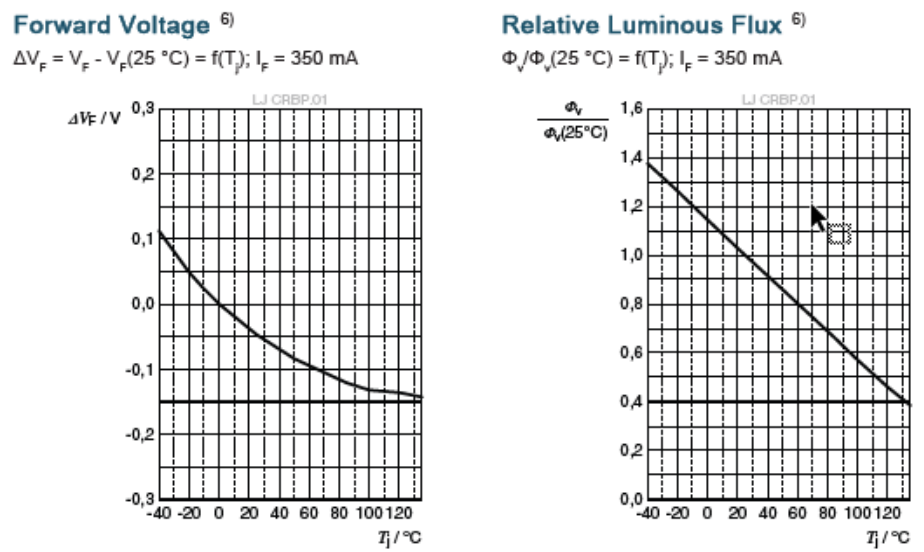
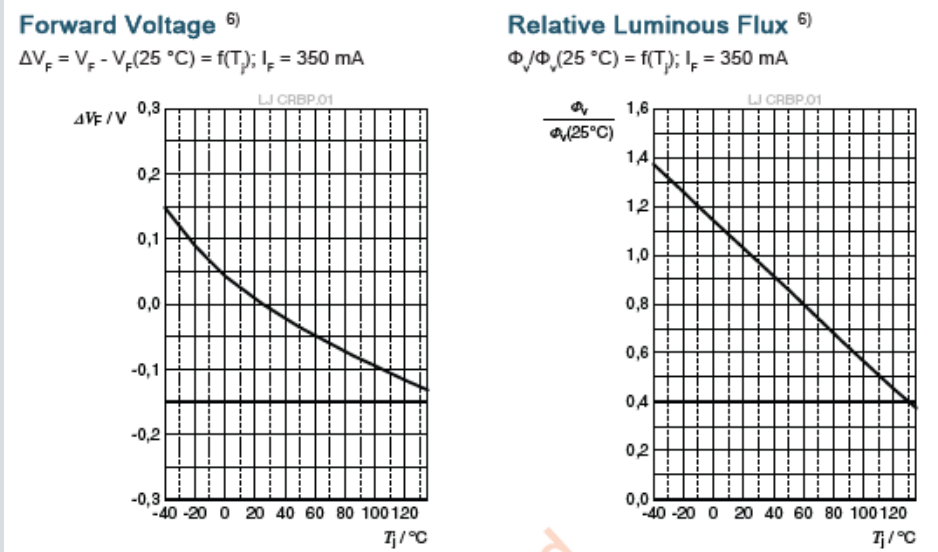
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Forward Voltage & Relative Luminous Flux		

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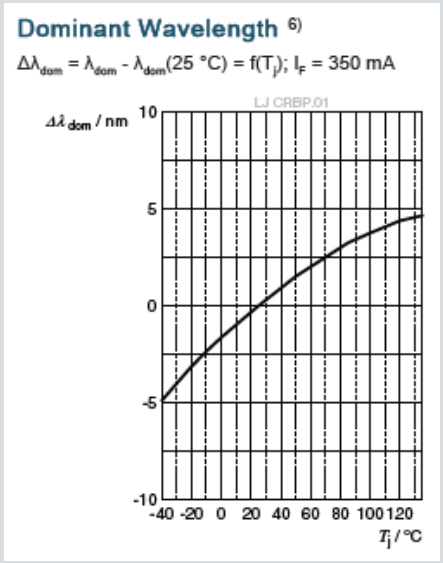
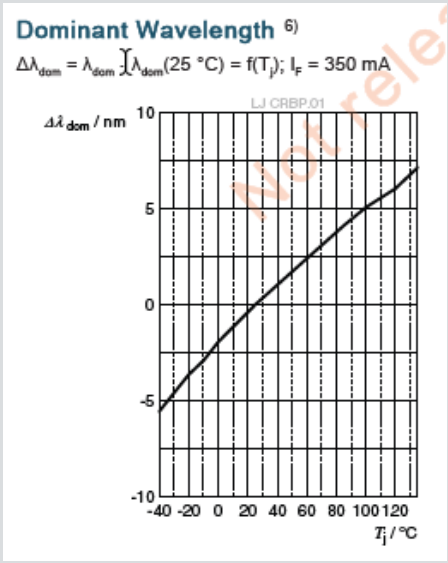
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Dominant Wavelength		

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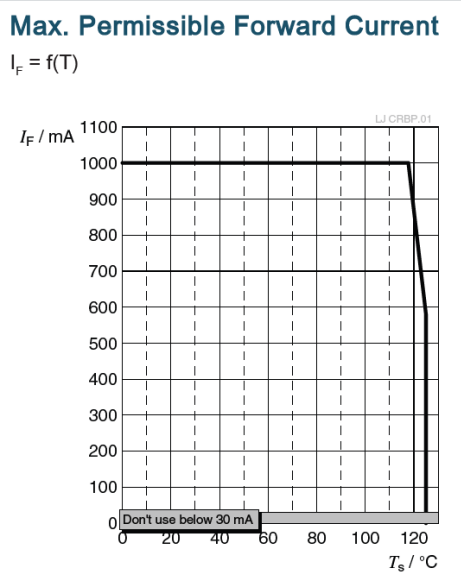
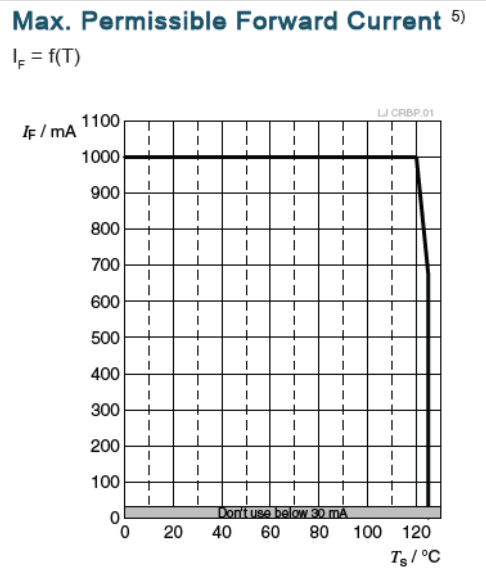
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Max. Permissible Forward Current		

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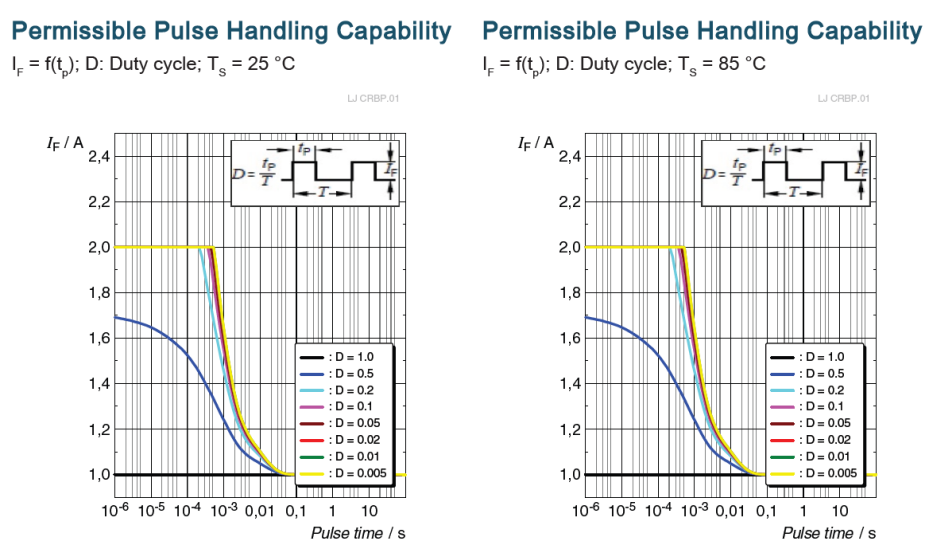
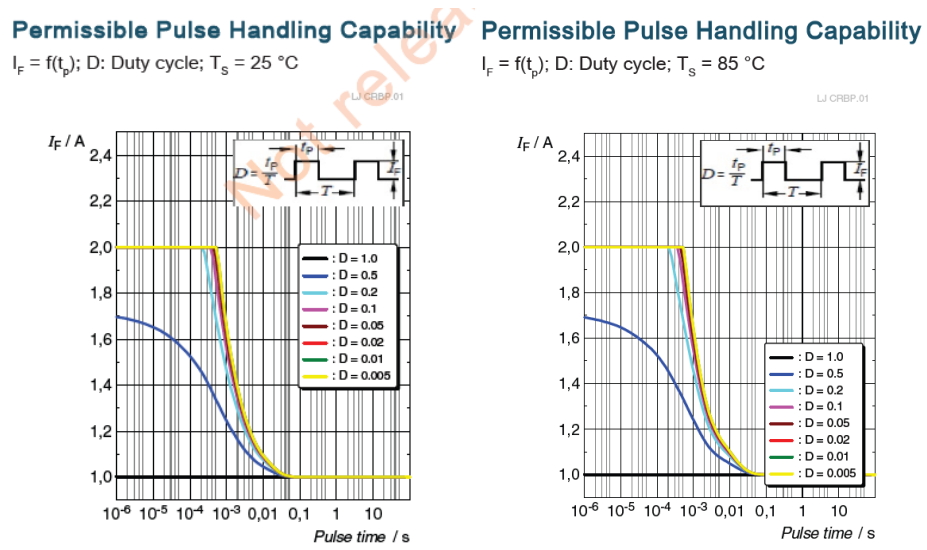
Changes in the datasheet for LJ CRBP.01

Item	Current status	New status
Permissible Pulse Handling Capability		

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Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Characteristics	**Characteristics** I_F = 350 mA; T_S = 25 °C Parameter / Symbol / Values Peak Wavelength — λ_{peak} — typ. 472 nm Dominant Wavelength [2] (I_F = 350 mA) — λ_{dom} — min. 440 nm; typ. 475 nm; max. 480 nm Spectral Bandwidth at 50% $I_{rel,max}$ — $\Delta\lambda$ — typ. 20 nm Viewing angle at 50% I_V — 2φ — typ. 110 ° Forward Voltage [3] (I_F = 350 mA) — V_F — min. 2.65 V; typ. 2.90 V; max. 3.25 V Reverse voltage (ESD device) — $V_{R\ ESD}$ — min. 5 V Reverse voltage [4] (I_R = 5 mA) — V_R — max. 7 V Real thermal resistance junction/solderpoint [5] — $R_{thJS\ real}$ — typ. 7.8 K / W; max. 9.4 K / W Electrical thermal resistance junction/solderpoint [5] with efficiency η_e = 56 % — $R_{thJS\ elec.}$ — typ. 3.4 K / W; max. 4.1 K / W	**Characteristics** I_F = 350 mA; T_S = 25 °C Parameter / Symbol / Values Peak Wavelength — λ_{peak} — typ. 472 nm Dominant Wavelength [2] (I_F = 350 mA) — λ_{dom} — min. 440 nm; typ. 475 nm; max. 480 nm Spectral Bandwidth at 50% $I_{rel,max}$ — $\Delta\lambda$ — typ. 20 nm Viewing angle at 50% I_V — 2φ — typ. 120 ° Forward Voltage [3] (I_F = 350 mA) — V_F — min. 2.65 V; typ. 2.90 V; max. 3.25 V Reverse voltage (ESD device) — $V_{R\ ESD}$ — min. 5 V Reverse voltage [4] (I_R = 5 mA) — V_R — max. 7 V Real thermal resistance junction/solderpoint [5] — $R_{thJS\ real}$ — typ. 7.8 K / W; max. 9.4 K / W Electrical thermal resistance junction/solderpoint [5] with efficiency η_e = 56 % — $R_{thJS\ elec.}$ — typ. 3.4 K / W; max. 4.1 K / W

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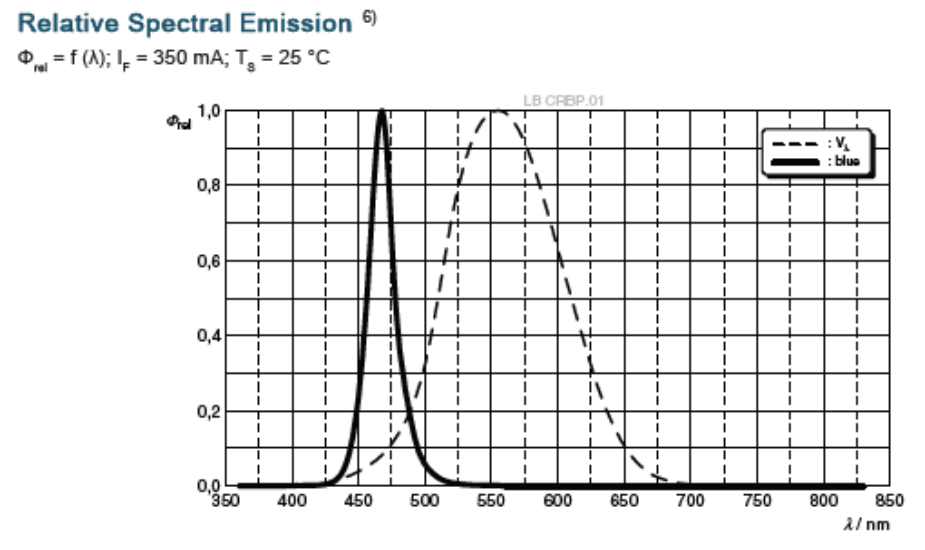
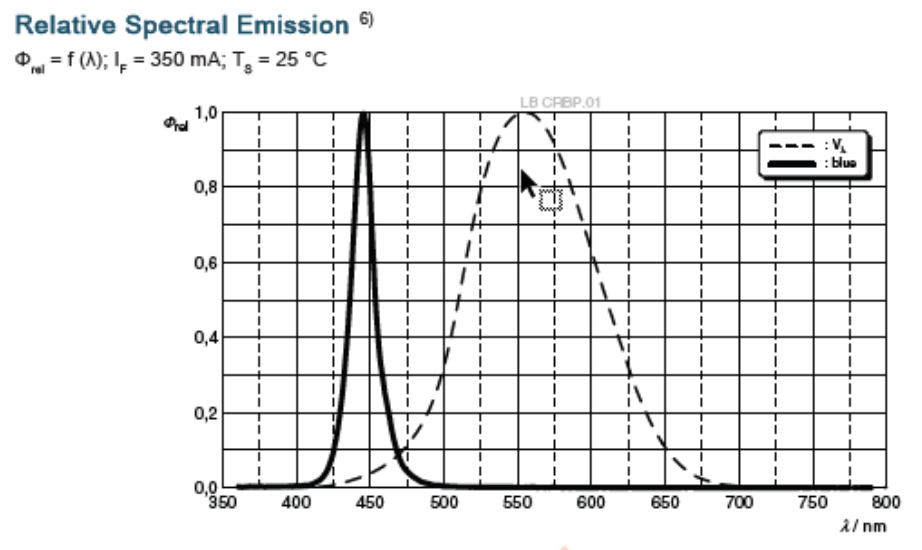
Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Relative Spectral Emission		

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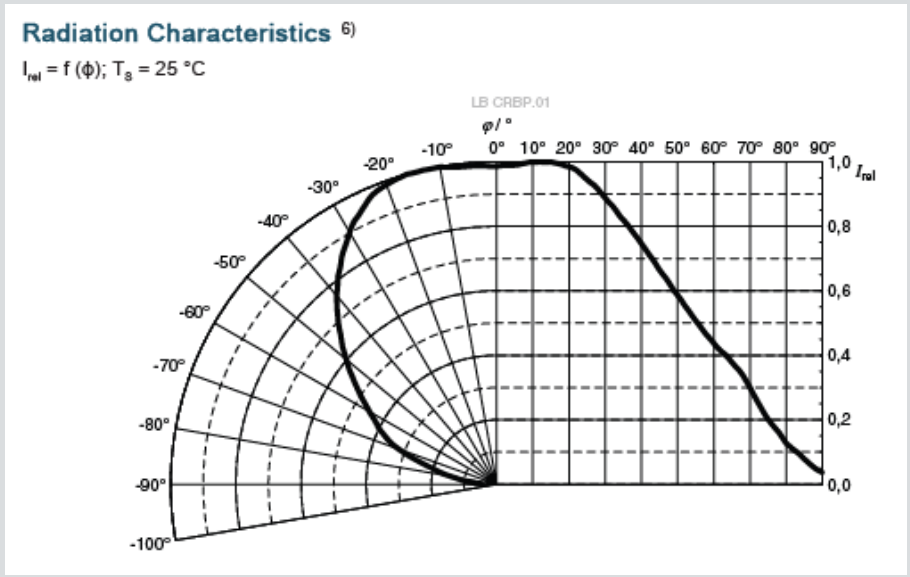
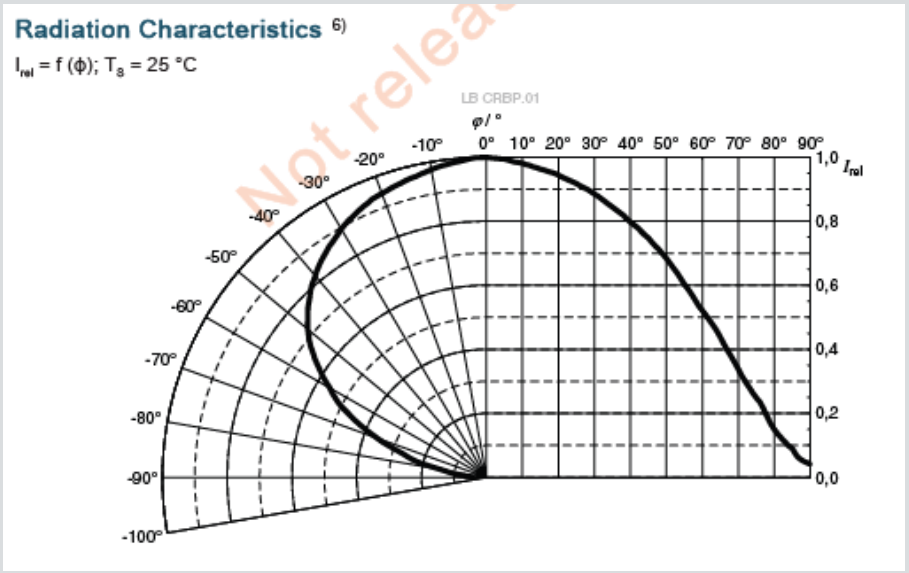
Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Radiation Characteristics		

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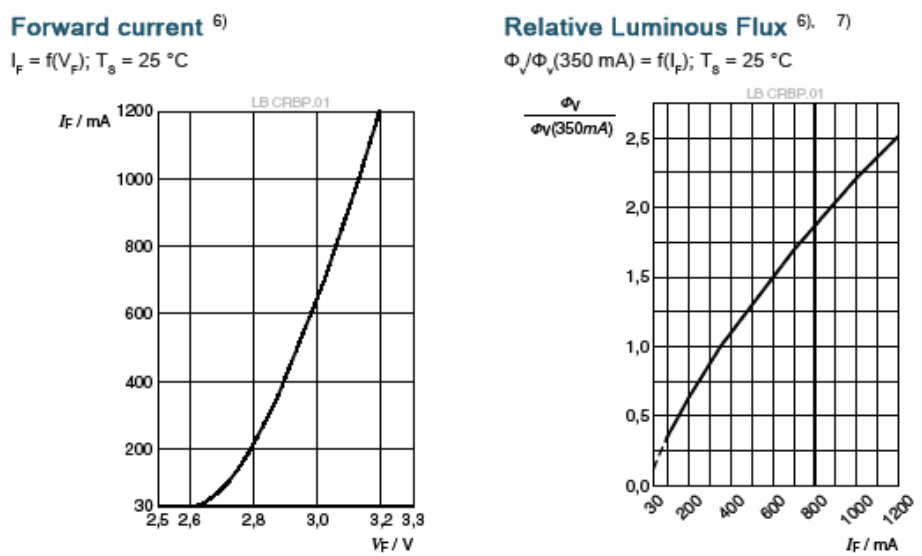
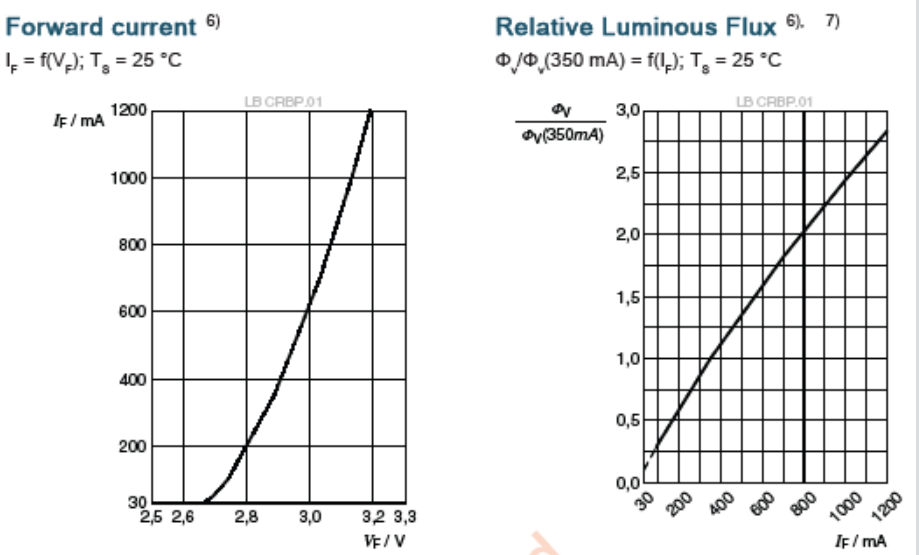
Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Forward current & Relative Luminous Flux		

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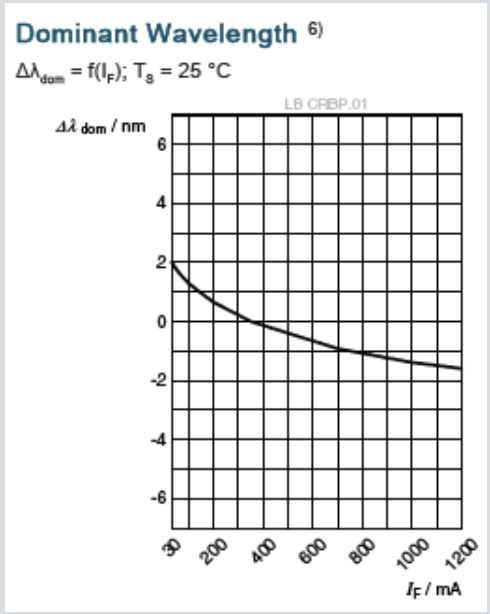
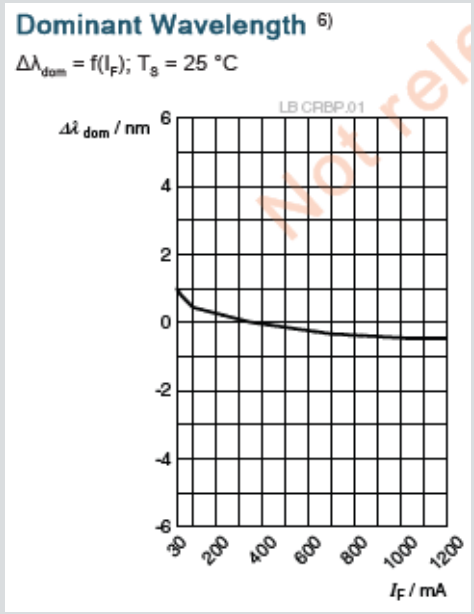
Introduction of next chip generation for OSLON Signal devices

Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Dominant Wavelength		

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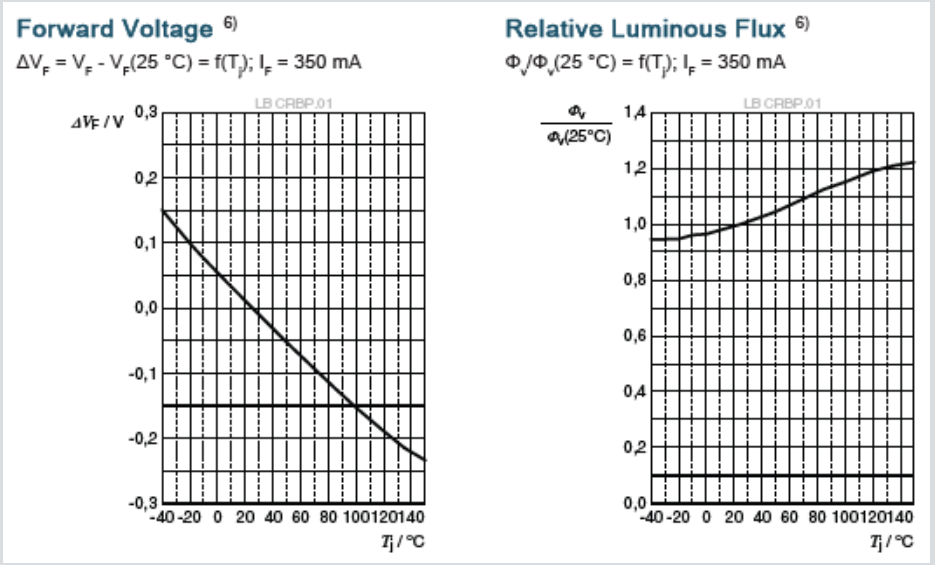
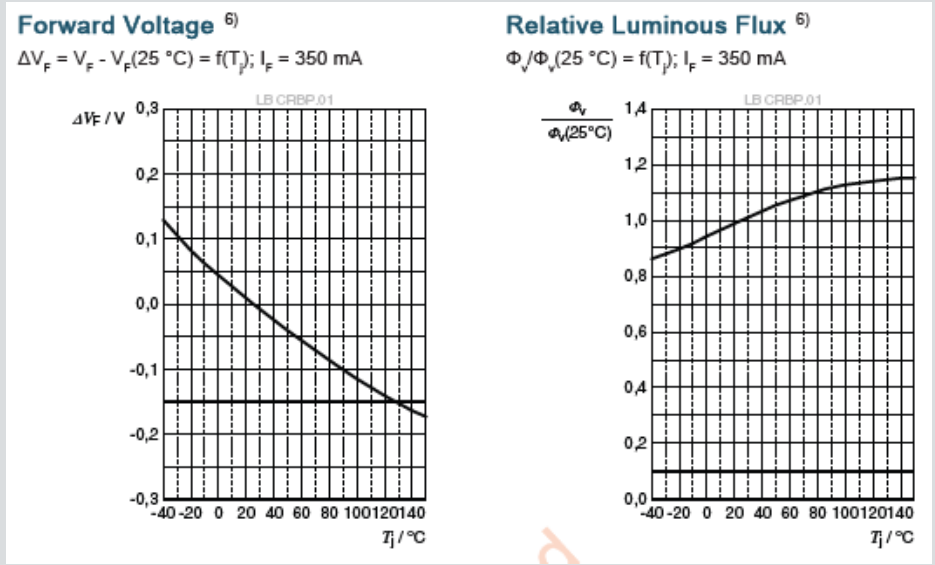
Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Forward Voltage & Relative Luminous Flux		

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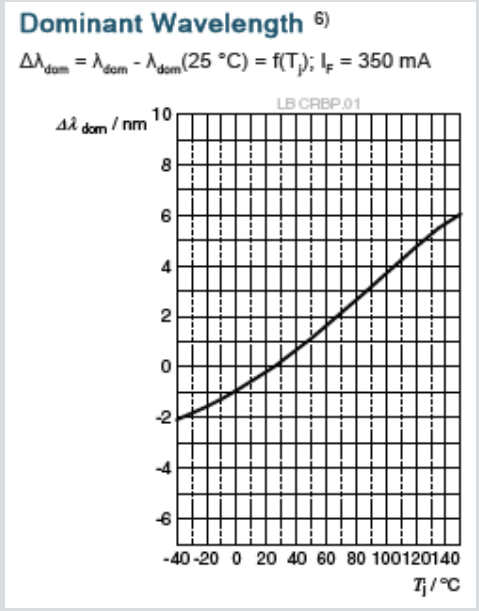
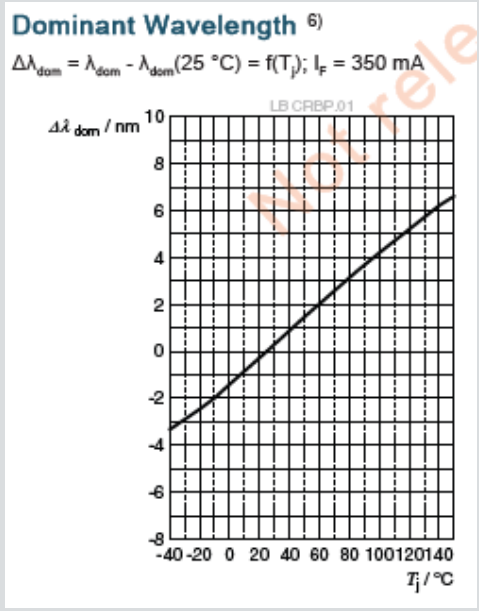
Changes in the datasheets for LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 (The examples below are for LB CRBP.01. Regarding details for LCY CRBP.01 and LUW CRBP.01 please refer to the updated datasheets)

Item	Current status	New status
Dominant Wavelength		

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Changes in the datasheets: Updated Datasheet Version

Product type	Data sheet version before PCN	Data sheet version after PCN
LB CRBP.01	1.2	1.3
LCY CRBP.01	1.5	1.6
LUW CRBP.01	1.3	1.4
LJ CRBP.01	1.3	1.4

Note: After PCN approval and shipment of new material, the new data sheet versions will be valid.
Latest version of data sheet is accessible on the ams OSRAM homepage.

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List of affected products

OSLON Signal
LB CRBP.01
LCY CRBP.01
LUW CRBP.01
LJ CRBP.01

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PCN Samples

OSLON Signal
LB CRBP.01
LCY CRBP.01
LUW CRBP.01
LJ CRBP.01

Color code: available on request

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Time schedule

for PCN material (after implementation of change):		
Final qualification report	03.04.2023	
Samples available	On request	
Intended Start of delivery	01.07.2023 *)	*) or earlier if released by customer and upon mutual agreement

for Pre-PCN material (prior to implementation of change):		
Last time order date (LTO)	01.07.2023 **)	**) Lead time and LTO quantity shall be mutually agreed between ams OSRAM and customer.
Last time delivery date (LTD)	02.10.2023 ***)	***) planned last date for delivery of products of current status

Note:
Pre-PCN material: Products of current status, means before implementation of the changes as described in the PCN.
PCN material: Products with implementation of the changes as described in the PCN.

Sensing is life

Qualification Report 230025C1

Subject	Qualification report for OSLON Signal LJ CRBP.01 according to OS-PCN-2023-030-A
Date	15.03.2023
Tested device	LJ CRBP.01
Brand (including sub brands)	OSLON Signal
Applies to	LJ CRBP.01

ams-OSRAM AG
Tobelbader Strasse 30
8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com

Pre-conditioning according to Jedec Level 2

Test Performed	Condition	Duration	Sample Size	Failures El.	Failures Opt.	Failures Vis
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C; r.H.= 93% I_F = 30mA	1000h	4x30	0	0	0
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C; r.H.= 93% I_F = 1000mA 30min on / 30min off	1000h	4x30	0	0	0
Temperature Cycling TC *JESD22-A104*	T_A = -40°C/+125°C 15min each extreme	1000c	4x30	0	0	0
Damp heat cyclic *IEC 60068-2-30*	$T_{A,min}$ = 25°C $T_{A,max}$ = 65°C r.H.= 90%; I_F = 30mA	10c	4x30	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A = 110°C I_F = 1000mA	1000h	4x30	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A = 125°C I_F = 600mA	1000h	4x30	0	0	0
Low Temperature Operating Life LTOL *JESD22-A108*	T_A = -40°C I_F = 1000mA	1000h	4x30	0	0	0
Pulsed Operating Life PLT *JESD22-A108*	T_A = 25°C I_F =1500mA; tp = 0.1ms D = 3%	1000h	4x30	0	0	0
Electrostatic Discharge HBM *ANSI/ESDA/ JEDEC JS-001*	Human Body Model	2000V	4x30	0	0	0

Note: Lot A-C evaluation lot, Lot D control lot

Failure criteria:

Electrical failures: Vf (If =350mA) > 2.35V; ± 10% from initial value

Optical failures: Iv (If =350mA) > ± 30% from initial value

Visual failures: acc JEDEC JESD22-B101

Conclusion: The tested device fulfills the reliability requirements.

Disclaimer

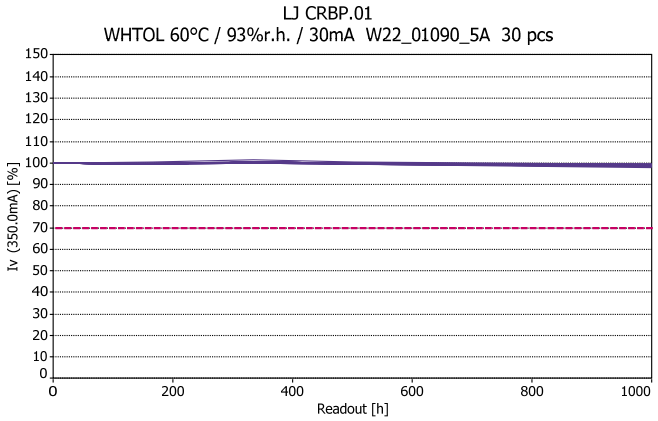
PLEASE CAREFULLY READ THE BELOW TERMS AND CONDITIONS BEFORE USING THE INFORMATION.
IF YOU DO NOT AGREE WITH ANY OF THESE TERMS AND CONDITIONS, DO NOT USE THE INFORMATION.

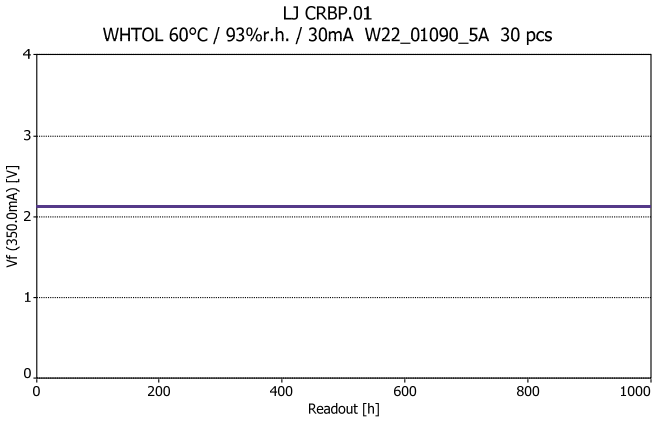
The Information contained in this Document does not constitute an independent warranty. The committed behavior is described in the Product data sheet and/or further, mutually agreed specifications.
Distribution of part or all of the contents of this Document to any 3rd party in any form without the prior permission of ams-OSRAM International GmbH is prohibited except in accordance with applicable mandatory law.

Further explanations:
Data: The Data used in this Document consider the reliability test results under the mentioned driving conditions only. For Product information on the maximum operating conditions and the OSRAM standard qualification profile please refer to the Product data sheet or contact your local sales partner.
Conditions: The conditions for the generation of the Data are as follows:
1. The Data and curves shown in this Document are based on experiments carried out under laboratory conditions on a random sample size of LED/IRED/Laser/Detector with readouts at discrete readout times (where applicable). Thus, the Data above represent a limited number of production lots only and may differ between different assembly lots over time (including chip or package changes). Thus, the behavior of the LED/IRED/Laser/Detector in the final application may differ from the Data. The behavior of the LED/IRED/Laser/Detector at conditions or readout times deviating from those stated above may not be deduced from the Data.
2. If applicable:
    a) Extended driving conditions:
    The tested driving conditions exceed the maximum limits stated in the Product data sheet. Therefore, a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
    b) Extended testing duration:
    The testing duration exceed the OSRAM standard qualification profile of the mentioned Product. Failure limits noted in the Document refer to the testing duration according to the OSRAM standard Product qualification profile and not to the actual testing duration.
    c) Exceeding standard qualification conditions – (Product data sheet limits not affected):
    The tested driving conditions exceed the OSRAM standard qualification profile of the mentioned Product. Therefore a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
3. For long term operation additional failure modes of the chip or package can occur which are not shown in this Document.
4. Possible differences in the thermal management of OSRAM and customer’s setup may lead to a different aging behavior.

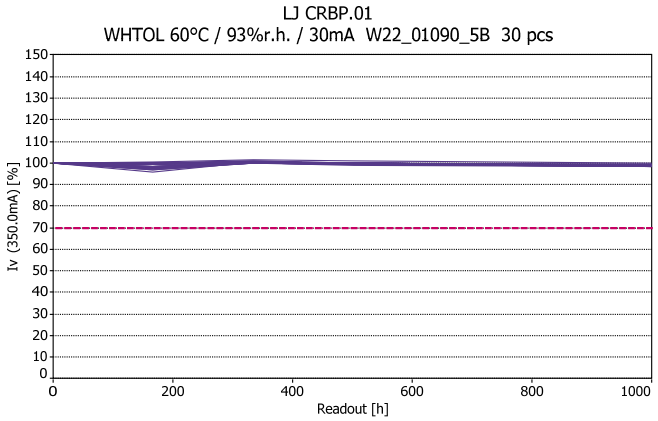
WHTOL 60°C / 93% r.H./ 30mA

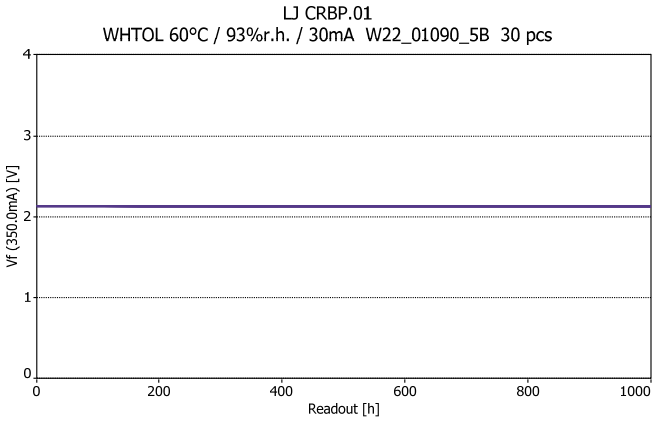
Lot A



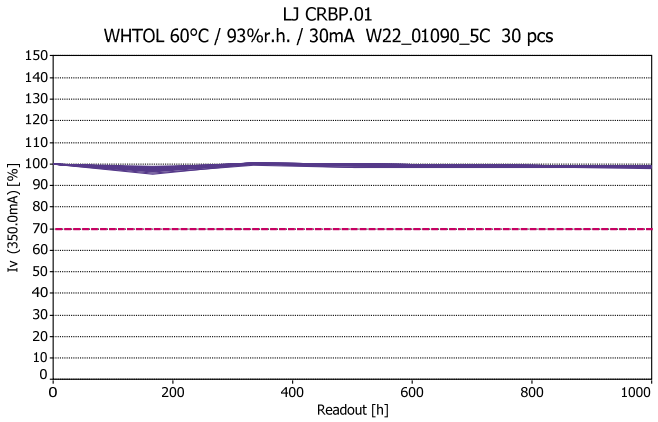


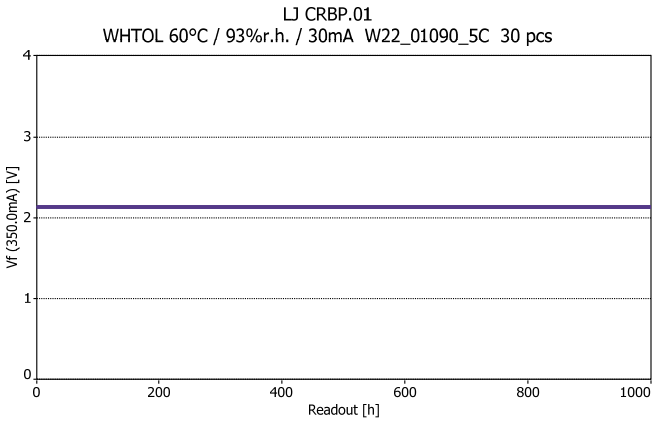
Lot B



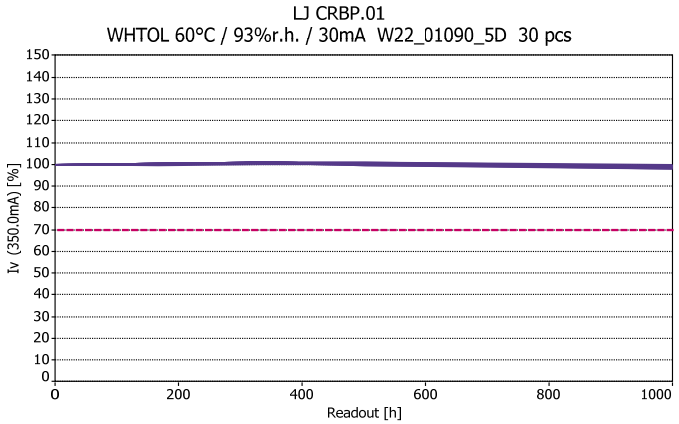


Lot C





Lot D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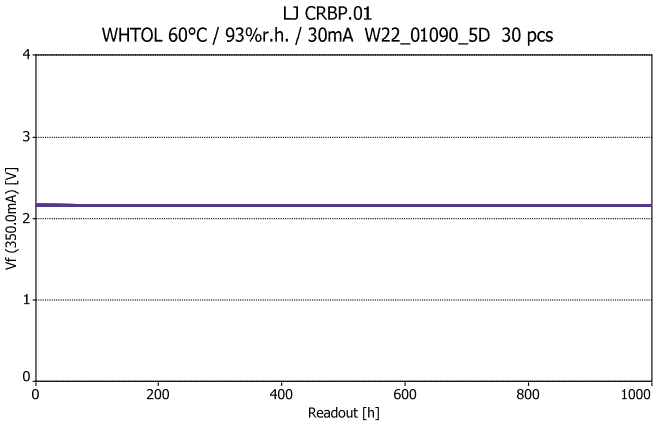
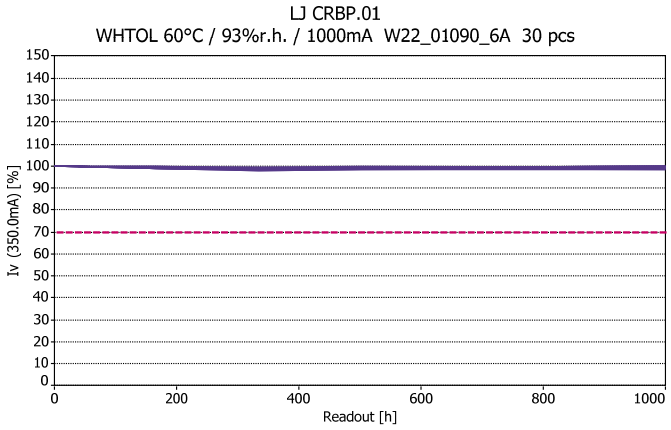
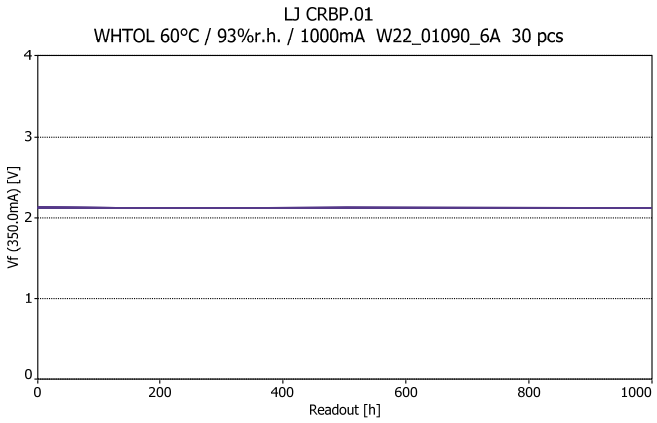
WHTOL 60°C / 93%r.h. / 30mA W22_01090_5D 30 pcs
Iv (350.0mA) [%]
Readout [h]


LJ CRBP.01
WHTOL 60°C / 93%r.h. / 30mA W22_01090_5D 30 pcs
Vf (350.0mA) [V]
Readout [h]

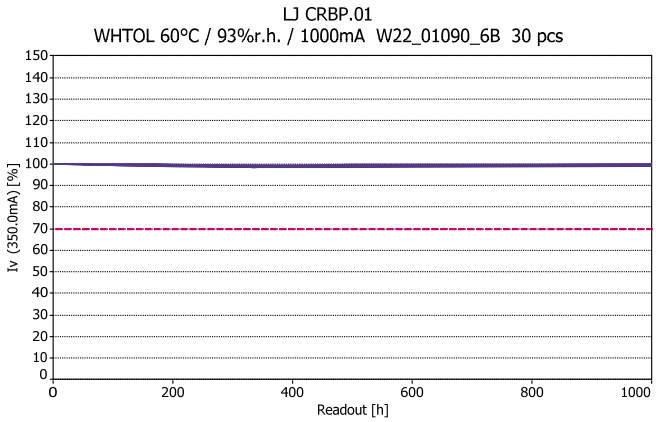
WHTOL 60°C / 93% r.H./ 1000mA

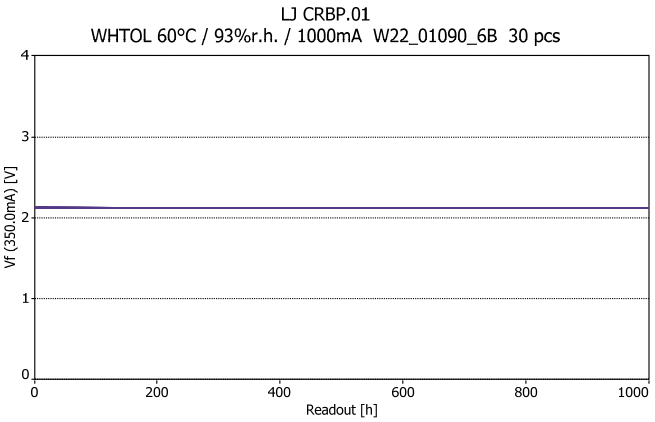
Lot A



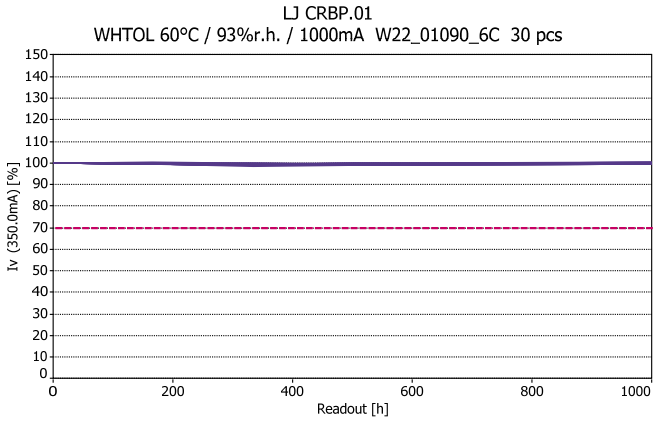


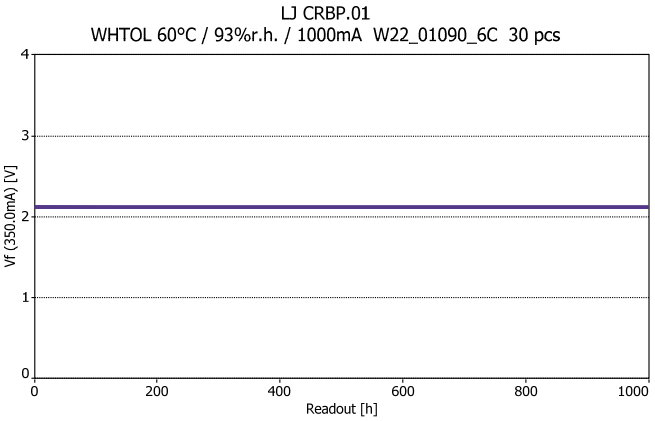
Lot B



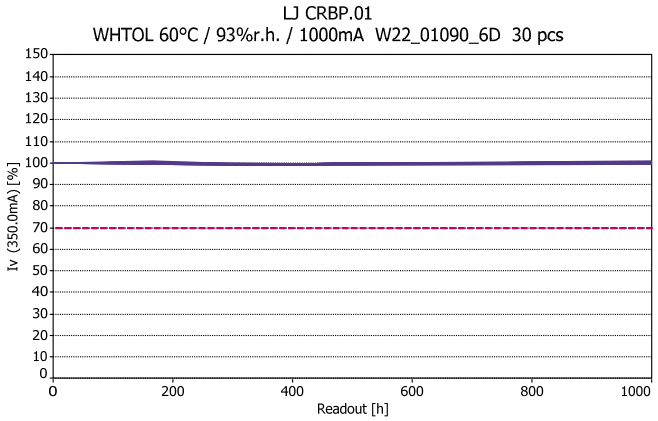


Lot C





Lot D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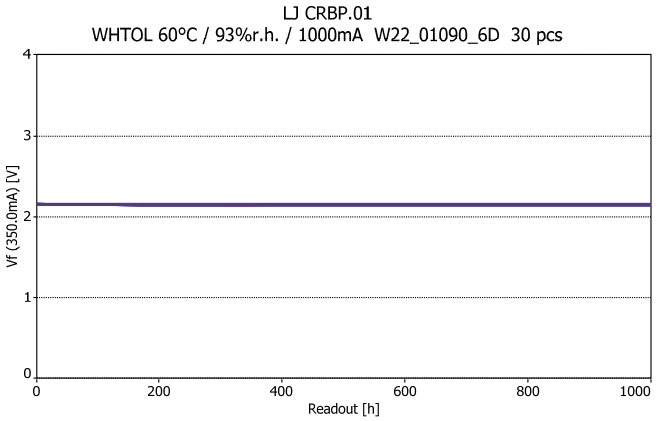
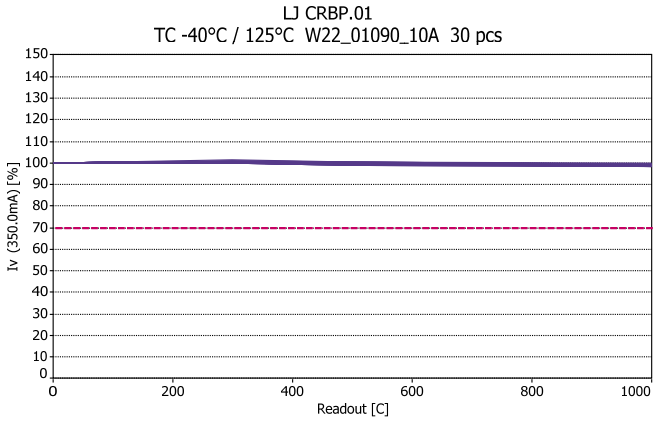
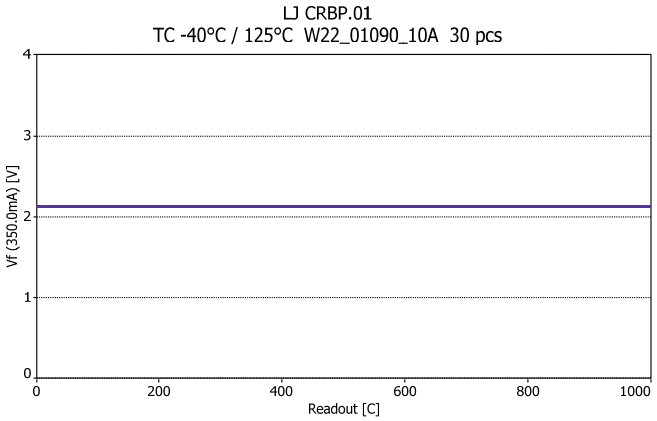
WHTOL 60°C / 93%r.h. / 1000mA W22_01090_6D 30 pcs
Iv (350.0mA) [%]
Readout [h]


LJ CRBP.01
WHTOL 60°C / 93%r.h. / 1000mA W22_01090_6D 30 pcs
Vf (350.0mA) [V]
Readout [h]

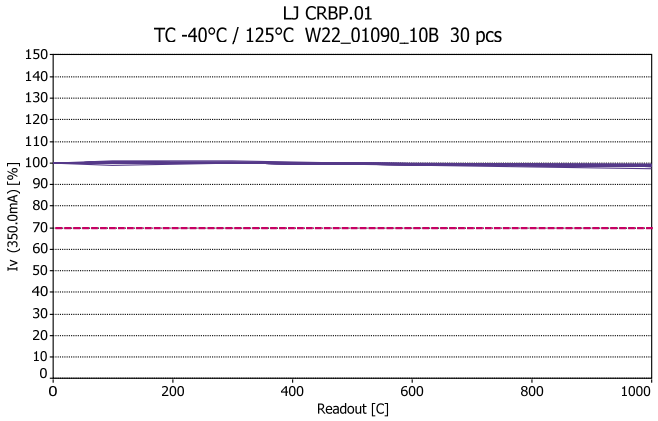
TC -40°C/125°C

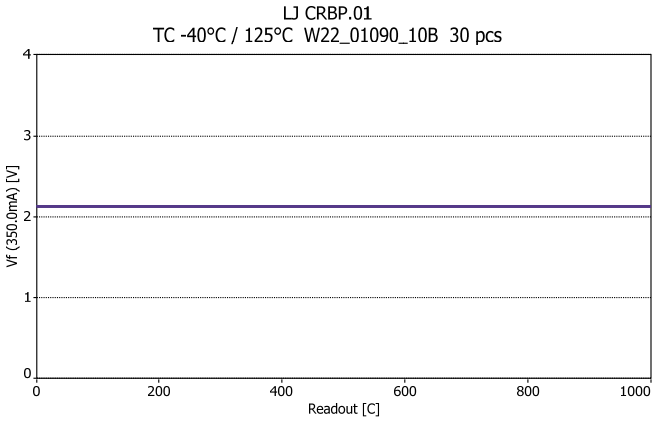
Lot A



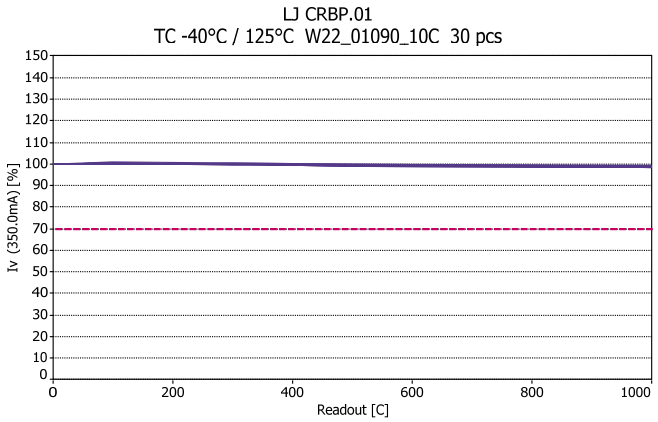


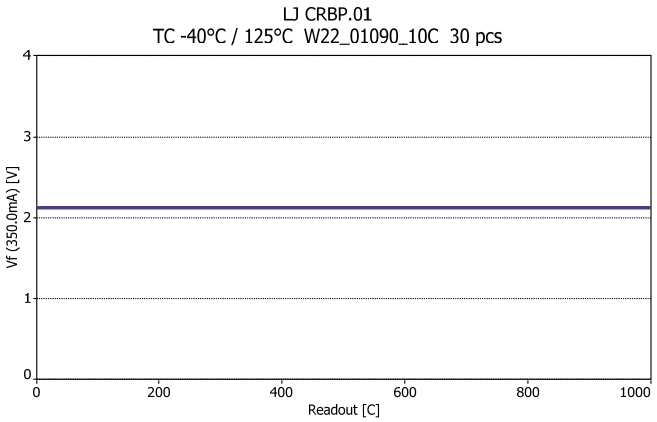
Lot B



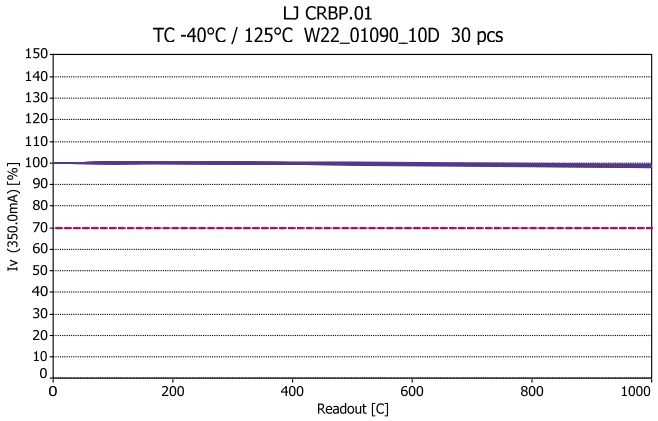


Lot C





Lot D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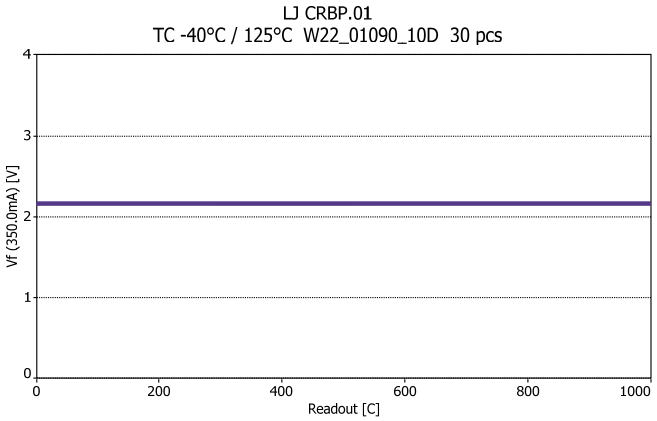
TC -40°C / 125°C W22_01090_10D 30 pcs
Iv (350.0mA) [%]
Readout [C]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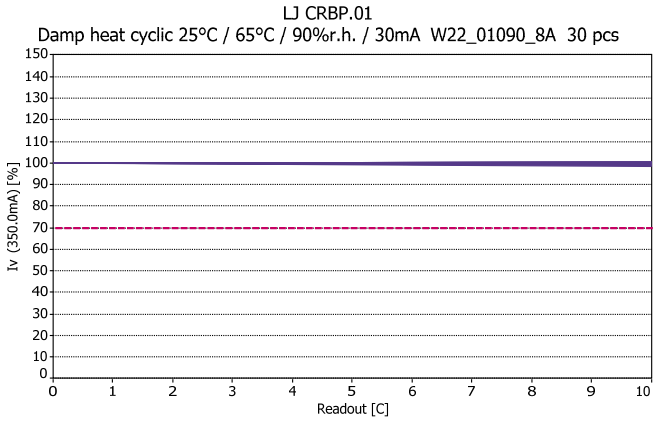
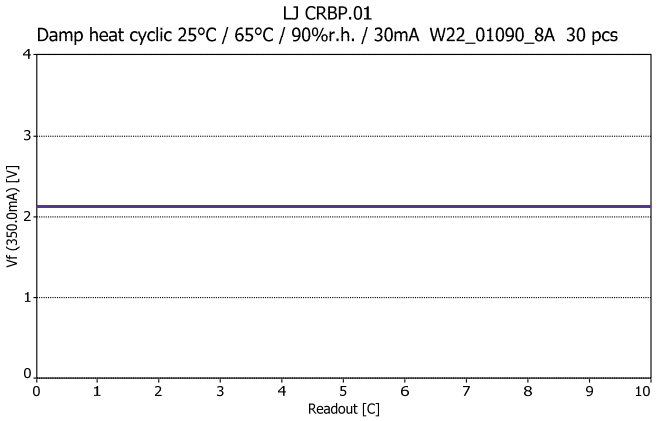
TC -40°C / 125°C W22_01090_10D 30 pcs
Vf (350.0mA) [V]
Readout [C]

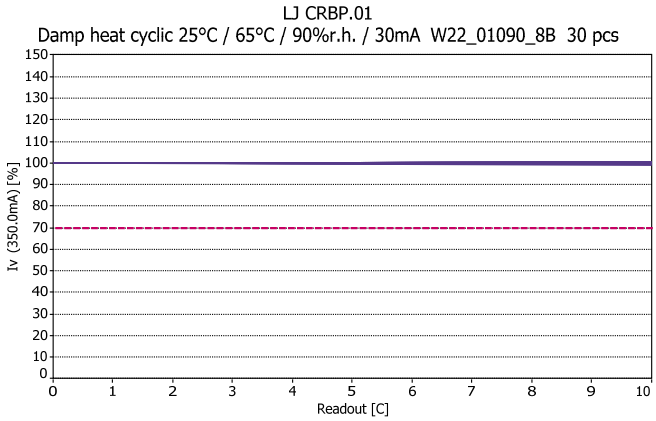
Damp heat cyclic 25°C / 65°C / 90% r.h. / 30mA

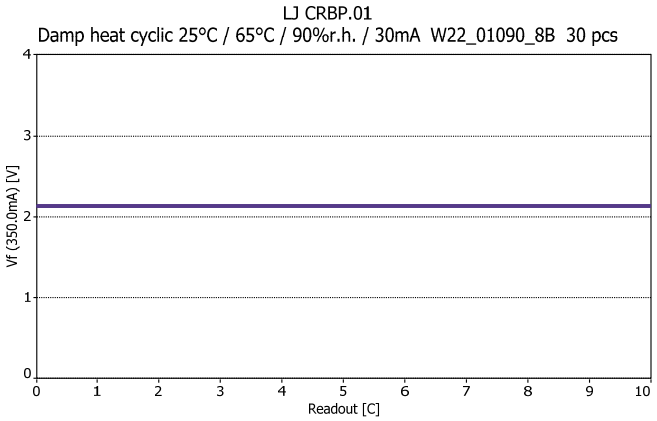
Lot A



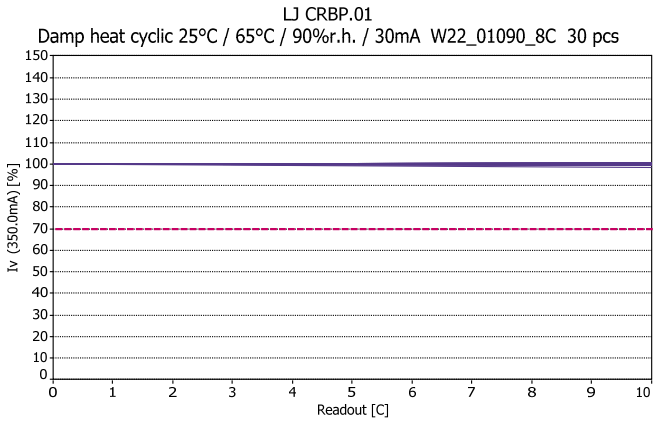


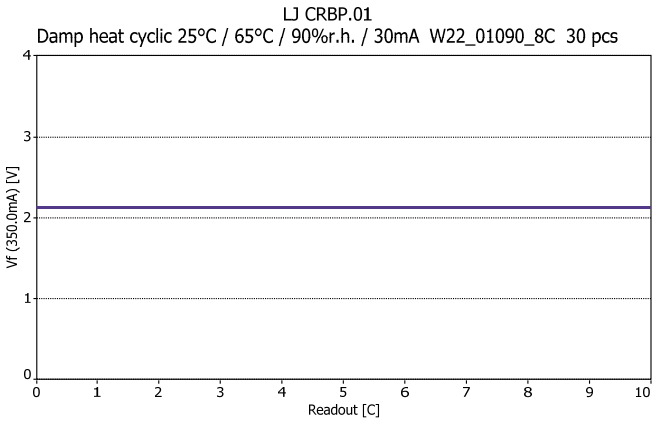
Lot B



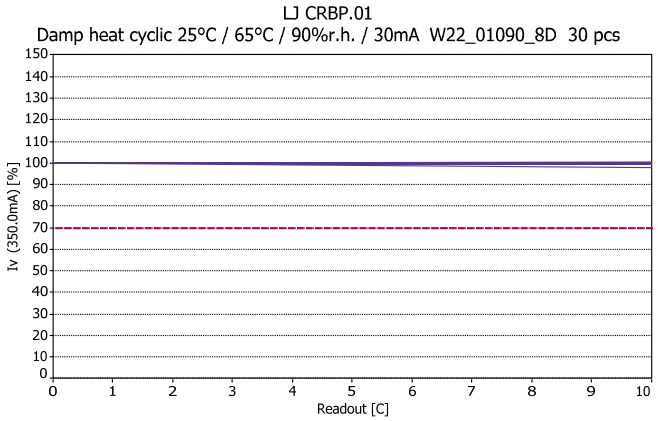


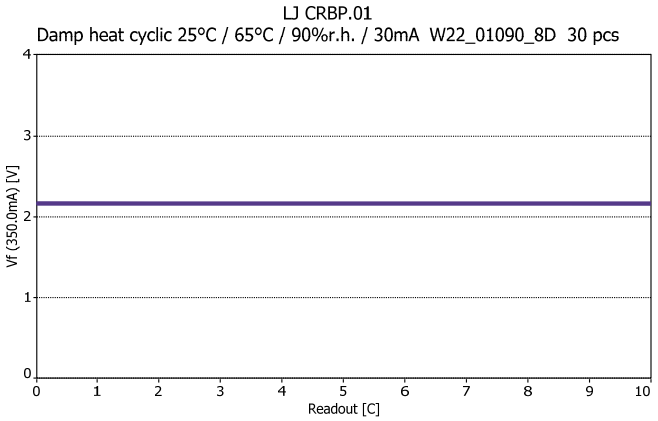
Lot C





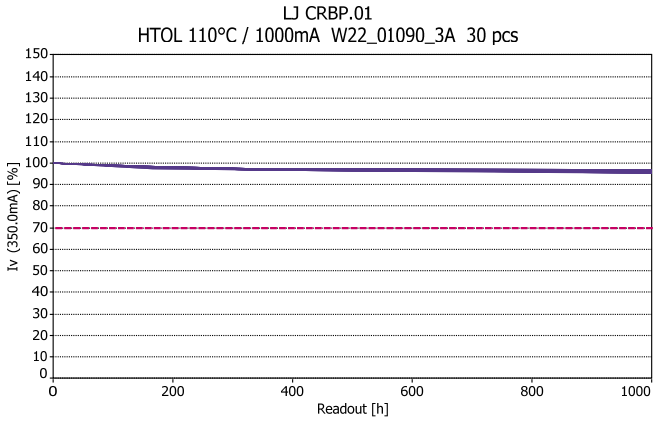
Lot D

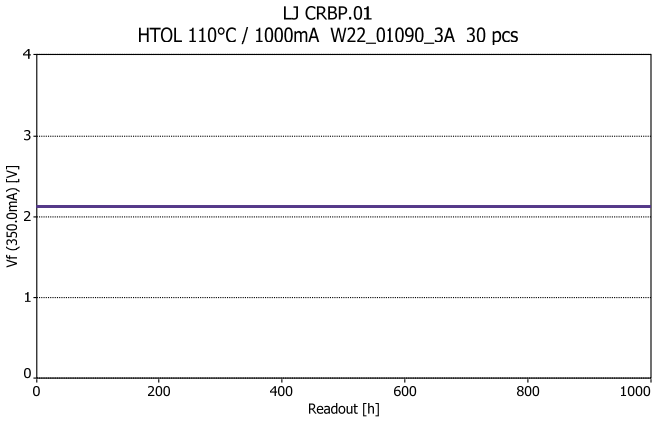

LJ CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_01090_8D 30 pcs
Iv (350.0mA) [%]
Readout [C]


LJ CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_01090_8D 30 pcs
Vf (350.0mA) [V]
Readout [C]

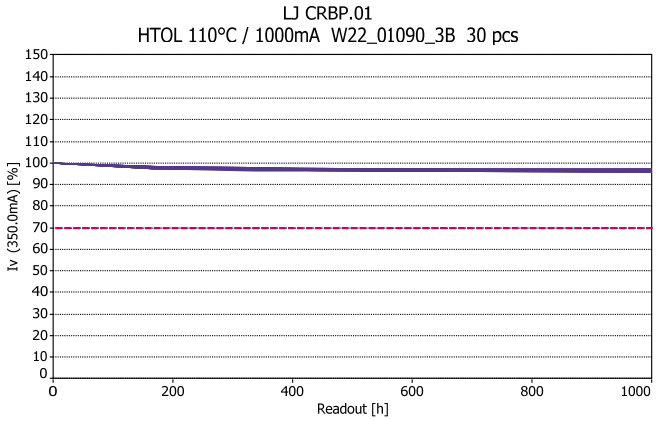
HTOL 110°C / 1000mA

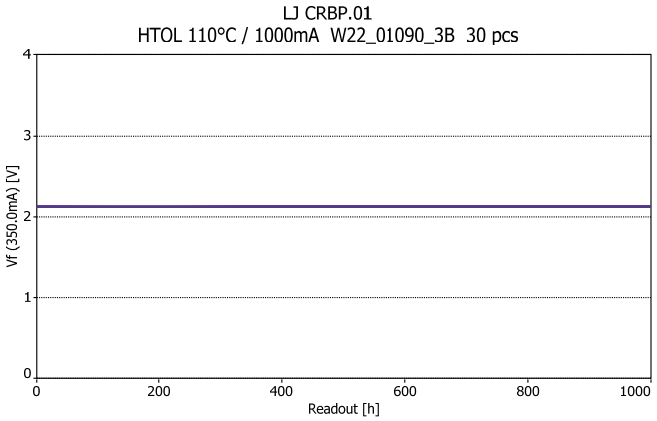
Lot A



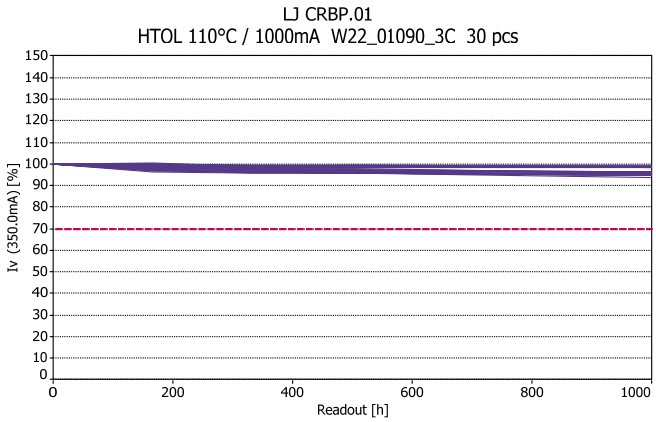


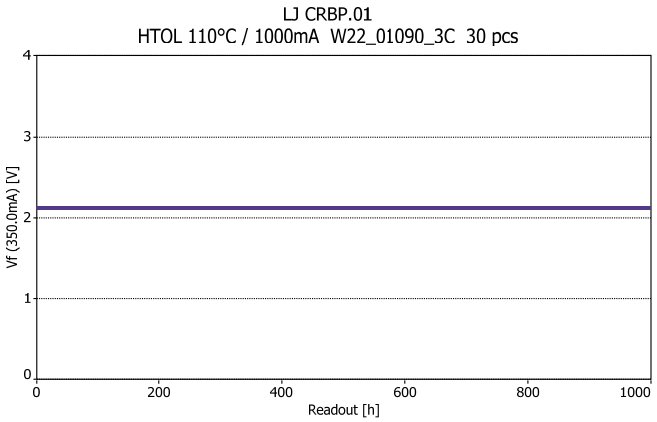
Lot B



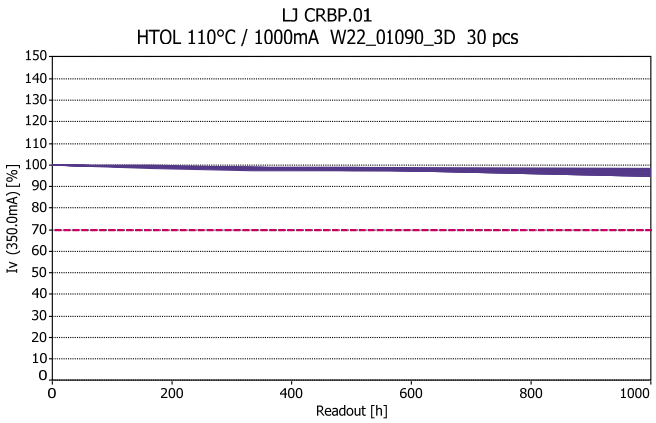


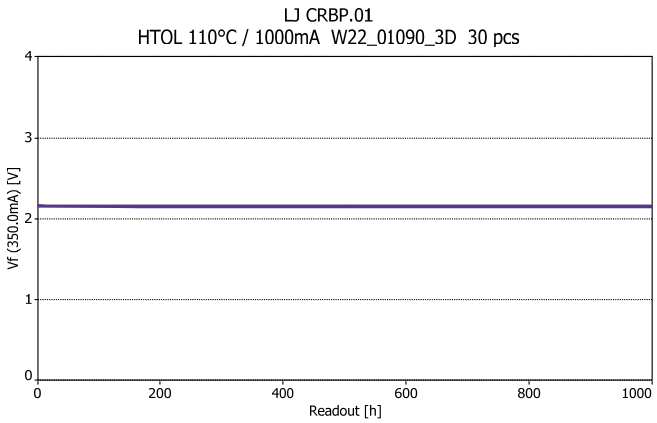
Lot C





Lot D


LJ CRBP.01
HTOL 110°C / 1000mA W22_01090_3D 30 pcs
Iv (350.0mA) [%]
Readout [h]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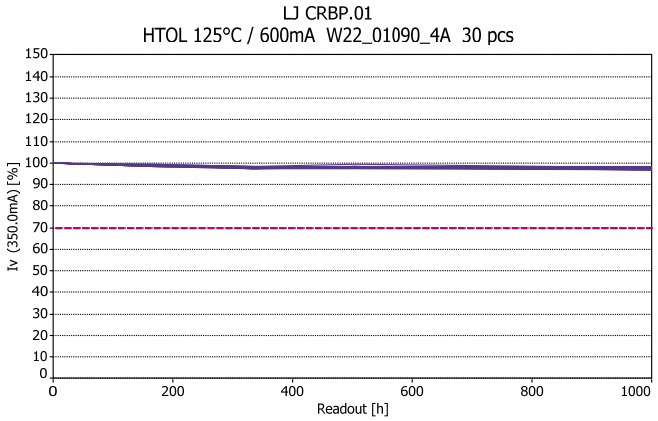
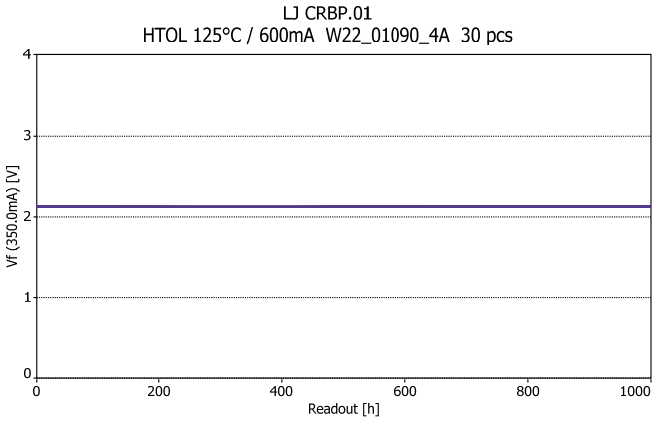
HTOL 110°C / 1000mA W22_01090_3D 30 pcs
Vf (350.0mA) [V]
Readout [h]

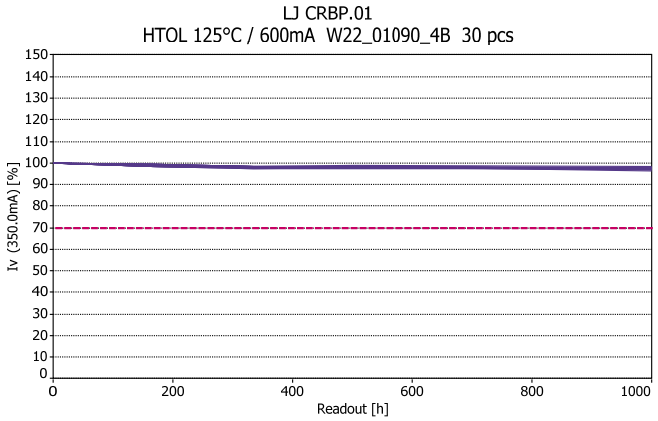
HTOL 125°C / 600mA

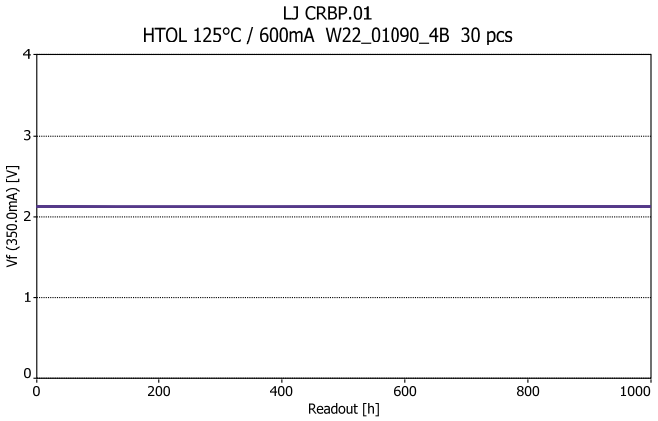
Lot A



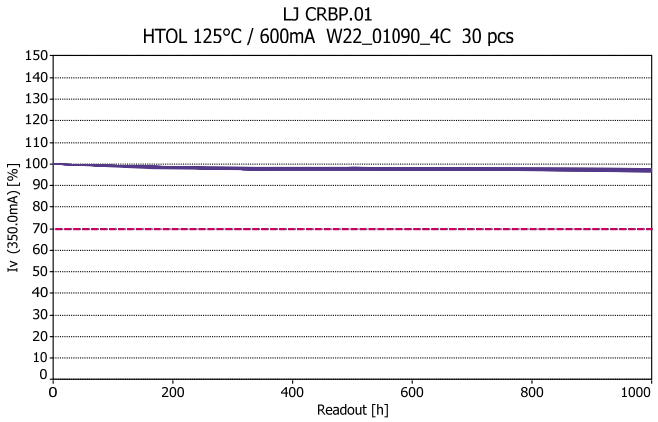


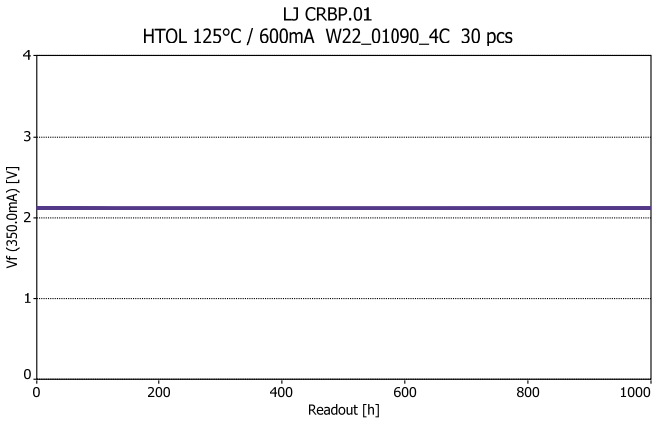
Lot B



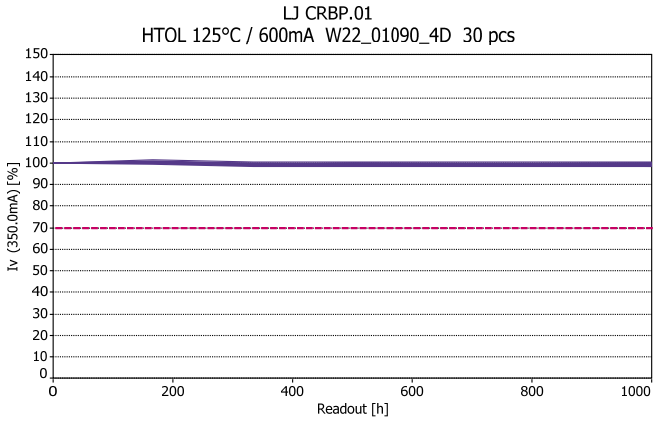


Lot C





Lot D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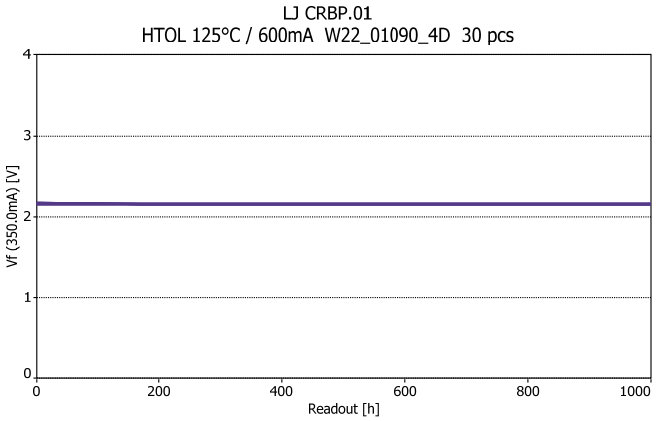
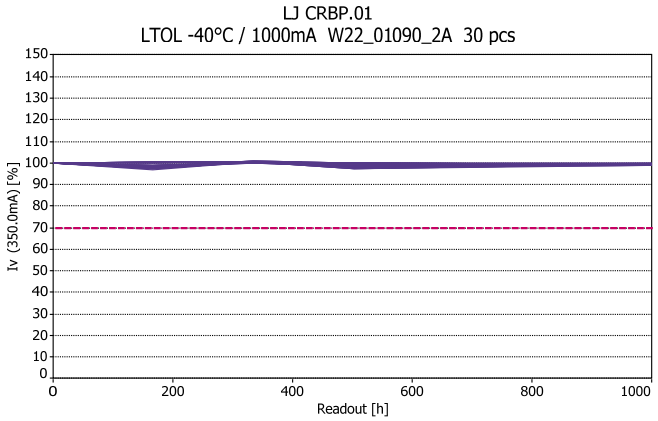
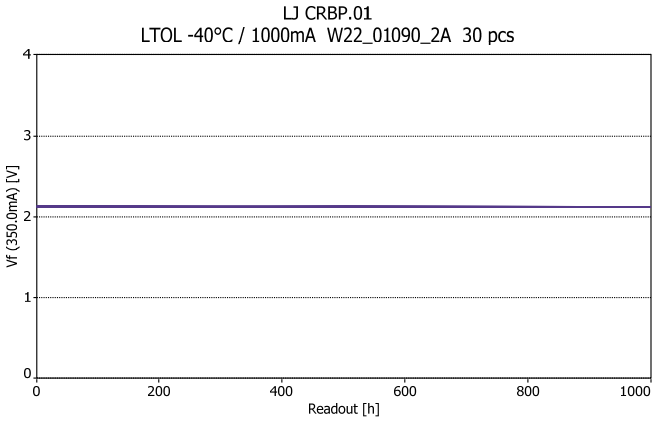
HTOL 125°C / 600mA W22_01090_4D 30 pcs
Iv (350.0mA) [%]
Readout [h]


LJ CRBP.01
HTOL 125°C / 600mA W22_01090_4D 30 pcs
Vf (350.0mA) [V]
Readout [h]

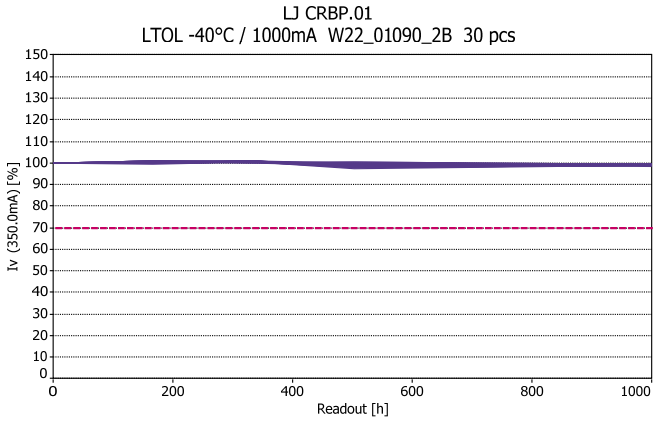
LTOL -40°C / 1000mA

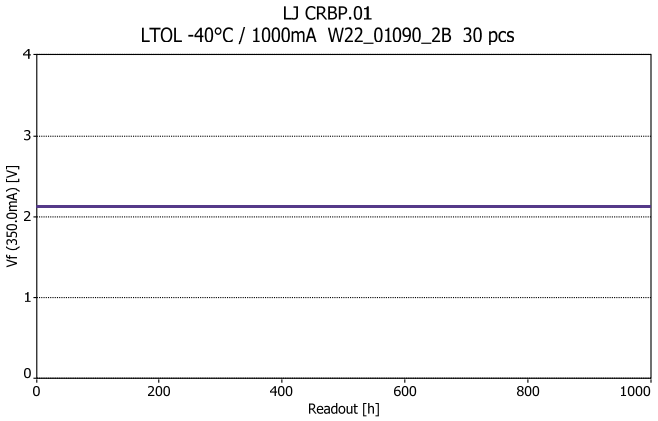
Lot A



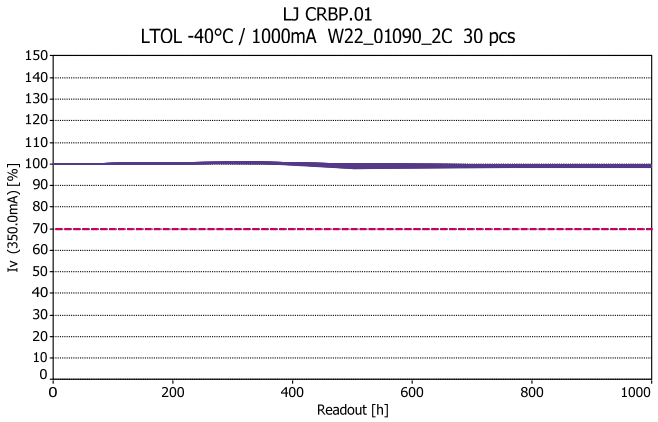


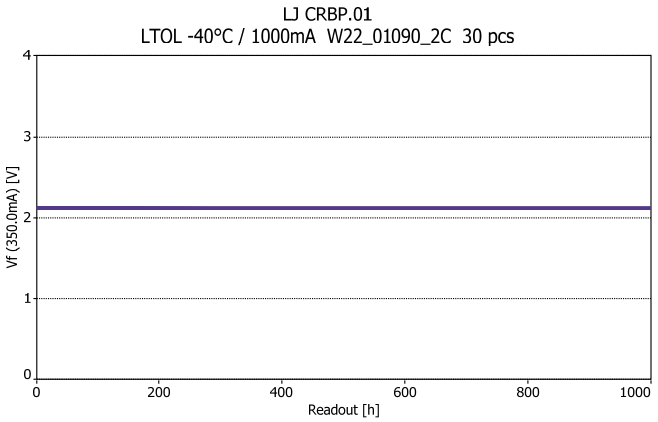
Lot B



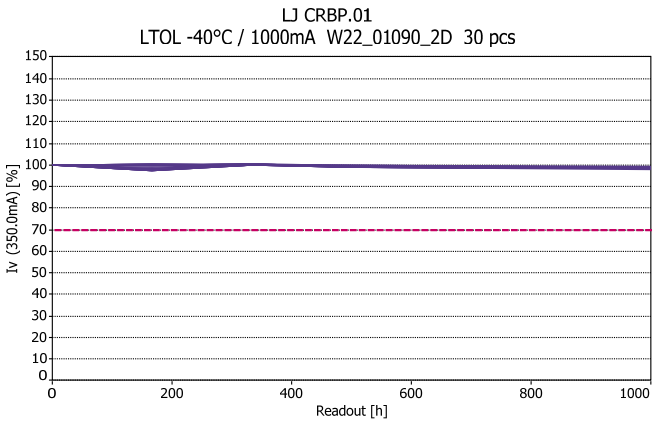


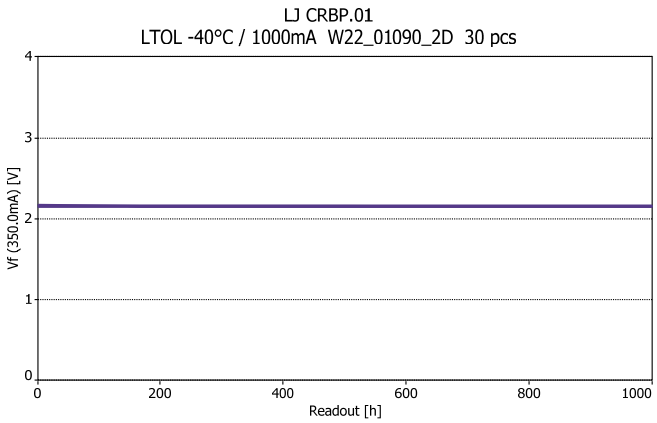
Lot C





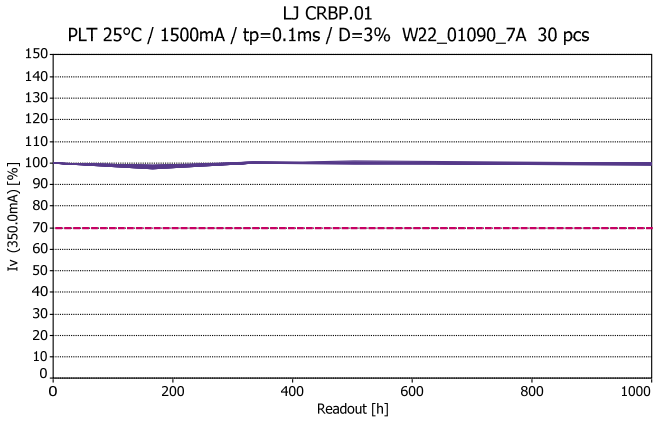
Lot D

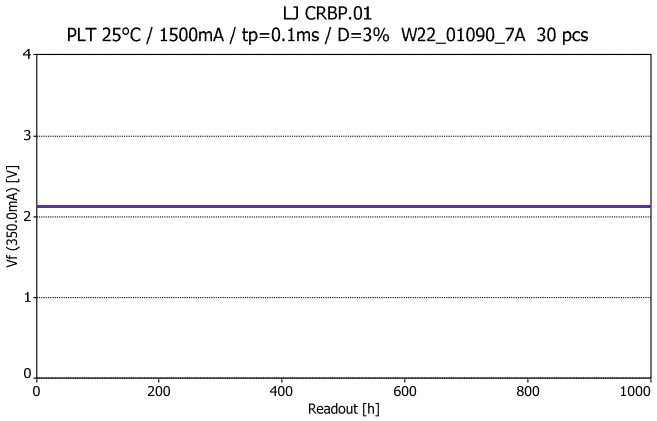

LJ CRBP.01
LTOL -40°C / 1000mA W22_01090_2D 30 pcs
Iv (350.0mA) [%]
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0
0
200
400
600
800
1000
Readout [h]


LJ CRBP.01
LTOL -40°C / 1000mA W22_01090_2D 30 pcs
Vf (350.0mA) [V]
4
3
2
1
0
0
200
400
600
800
1000
Readout [h]

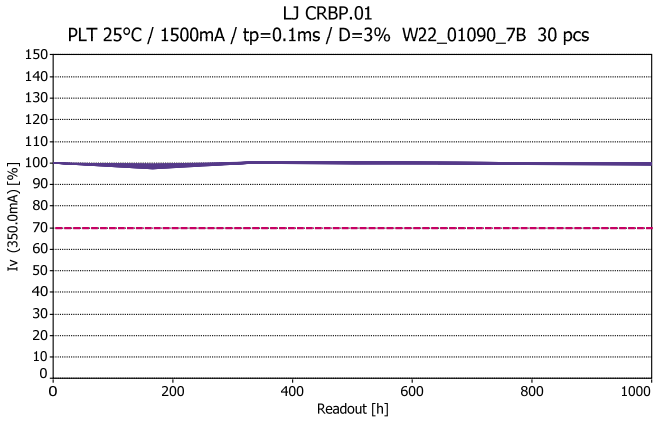
PLT 25°C / 1500mA / tp=0,1ms / D =3%

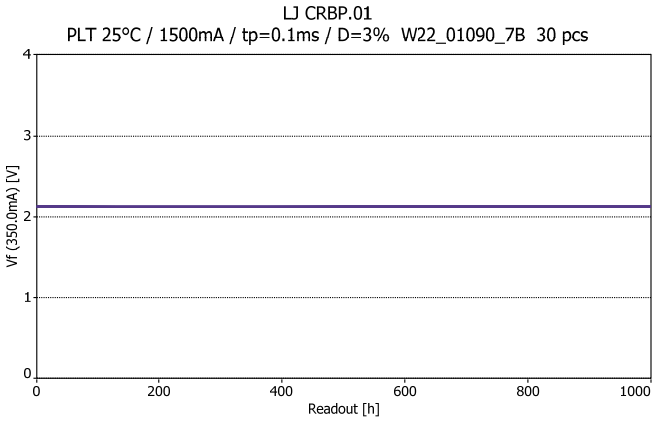
Lot A



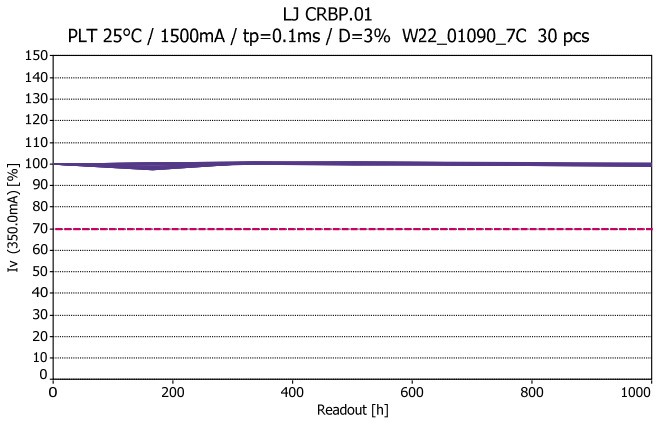


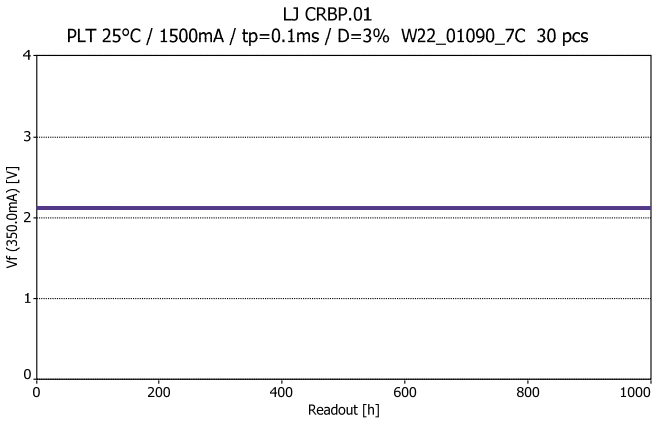
Lot B



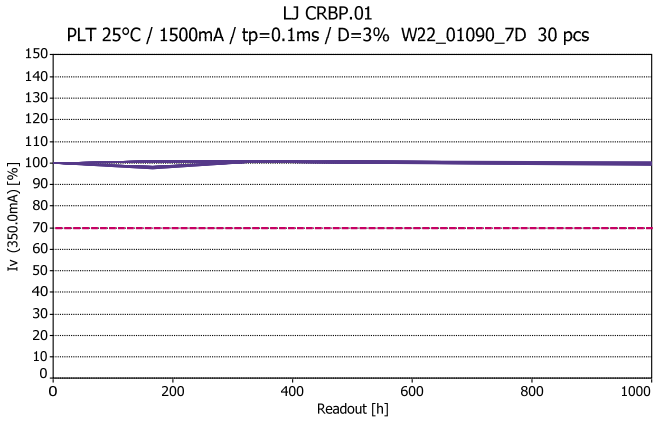


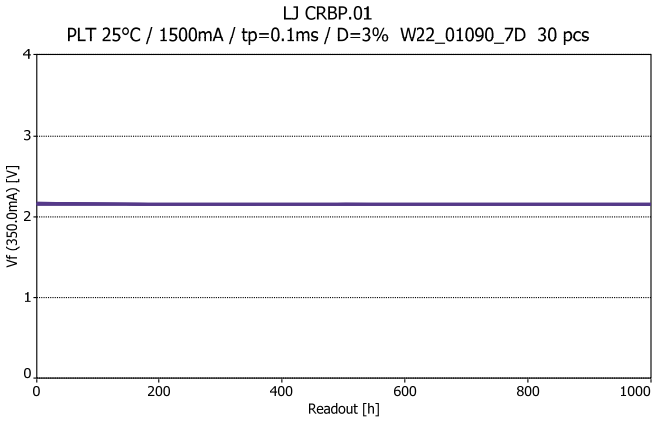
Lot C





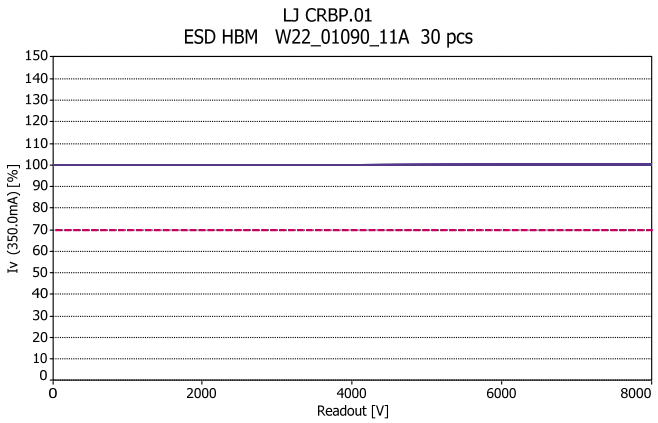
Lot D

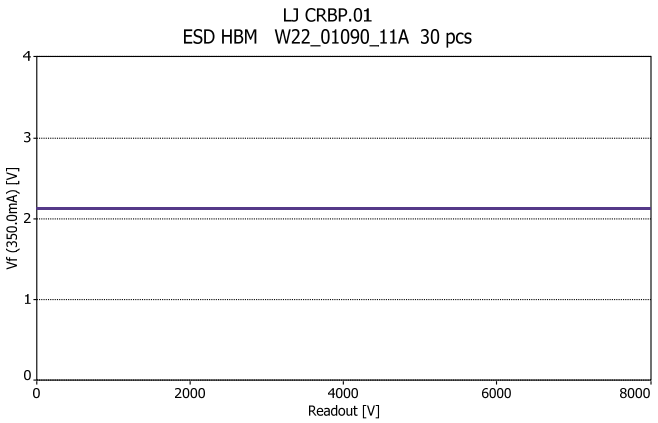

LJ CRBP.01
PLT 25°C / 1500mA / tp=0.1ms / D=3% W22_01090_7D 30 pcs
Iv (350.0mA) [%]
Readout [h]


LJ CRBP.01
PLT 25°C / 1500mA / tp=0.1ms / D=3% W22_01090_7D 30 pcs
Vf (350.0mA) [V]
Readout [h]

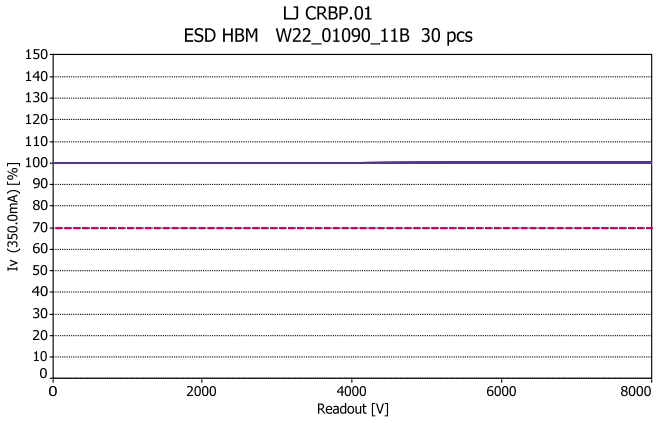
ESD HBM

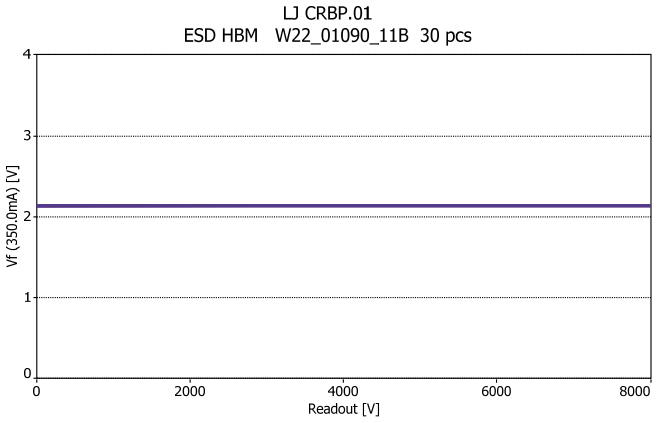
Lot A



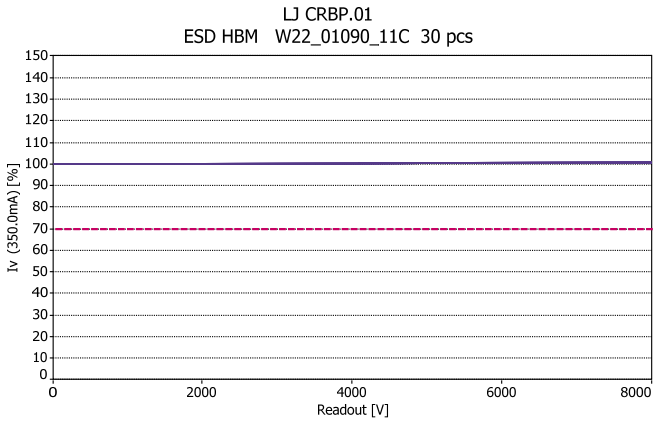


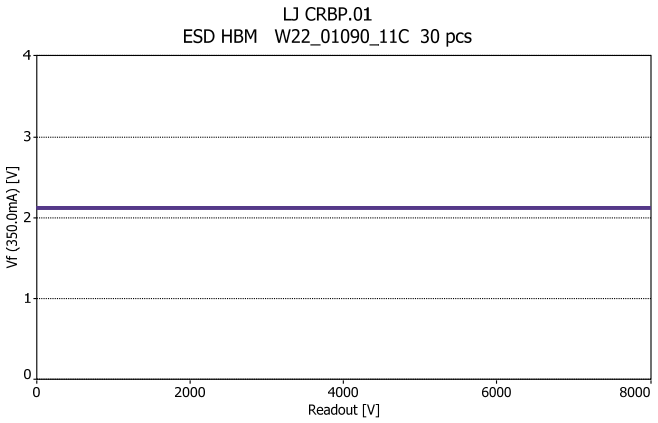
Lot B



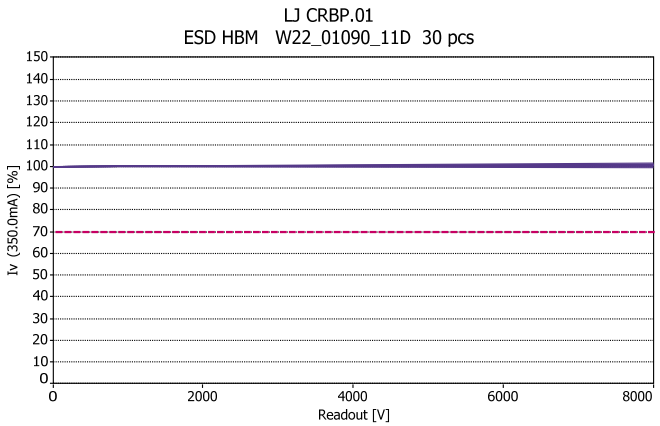


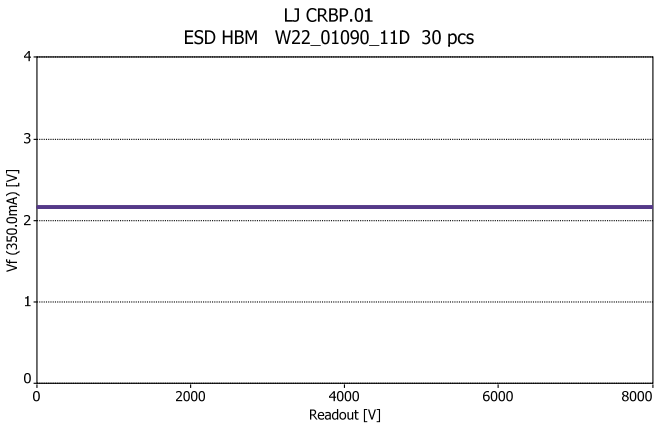
Lot C





Lot D


LJ CRBP.01
ESD HBM W22_01090_11D 30 pcs
Iv (350.0mA) [%]
Readout [V]


LJ CRBP.01
ESD HBM W22_01090_11D 30 pcs
Vf (350.0mA) [V]
Readout [V]

END OF DOCUMENT

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8141 Premstaetten, Austria
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ams-osram.com

Qualification Report 230043C1

Subject	Qualification report for OSLON Signal LB CRBP.01, LCY CRBP.01 and LUW CRBP.01 according to OS-PCN-2023-030-A
Date	15.03.2023
Tested device	LUW CRBP.01
Brand (including sub brands)	OSLON Signal
Applies to	LB CRBP.01, LCY CRBP.01, LUW CRBP.01

ams-OSRAM AG
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8141 Premstaetten, Austria
Phone +43 3136 500-0
ams-osram.com

Pre-conditioning according to Jedec Level 2

Test Performed	Condition	Duration	Sample Size	Failures El.	Failures Opt.	Failures Vis
Low Temperature Operating Life LTOL *JESD22-A108*	T_A = -40°C I_F = 1200mA	1000h	4x30	0	0	0
High Temperature Operating Life HTOL *JESD22-A108*	T_A = 100°C I_F = 1200mA	1000h	4x30	0	0	0
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C r.H.= 93% I_F = 30mA	1000h	4x30	0	0	0
Wet High Temperature Operating Life WHTOL *JESD22-A101*	T_A = 60°C r.H.= 93% I_F = 1200mA	1000h	4x30	0	0	0
Pulse life test PLT *JESD22-A108*	T_A = 25°C I_F = 2000mA t_p = 0.1ms; D = 3%	1000h	4x30	0	0	0
Temperature cycle TC *JESD22-A104*	T_A = -40°C/+125°C 15min each extreme	1000h	4x30	0	0	0
Electrostatic Discharge HBM *ANSI/ESDA/ JEDEC JS-001*	Human Body Model	1000h	4x30	0	0	0
Gas corrosion test *IEC 60068-2-60*	T_A = 25°C r.H.= 75% Methode 4	500h	4x30	0	0	0
Damp heat cyclic *IEC 60068-2-30*	$T_{A,min}$ = 25°C; $T_{A,max}$ = 65°C r.H.= 90% I_F = 30mA	10c	4x30	0	0	0

Note: Lot A-C evaluation lot, Lot D control lot

Failure criteria:

Electrical failures:	Vf (If =350mA)	> 3.25V; ± 10% from initial value
Optical failures:	Φv (If =350mA) Cx/Cy (If=350mA)	> ± 30% from initial value ± 0.01 from initial value
Visual failures:	acc JEDEC JESD22-B101	

Conclusion: The tested device fulfills the reliability requirements.

Disclaimer

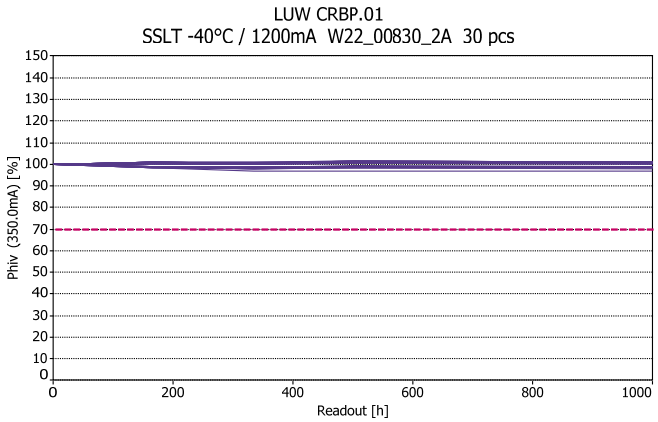
PLEASE CAREFULLY READ THE BELOW TERMS AND CONDITIONS BEFORE USING THE INFORMATION.
IF YOU DO NOT AGREE WITH ANY OF THESE TERMS AND CONDITIONS, DO NOT USE THE INFORMATION.

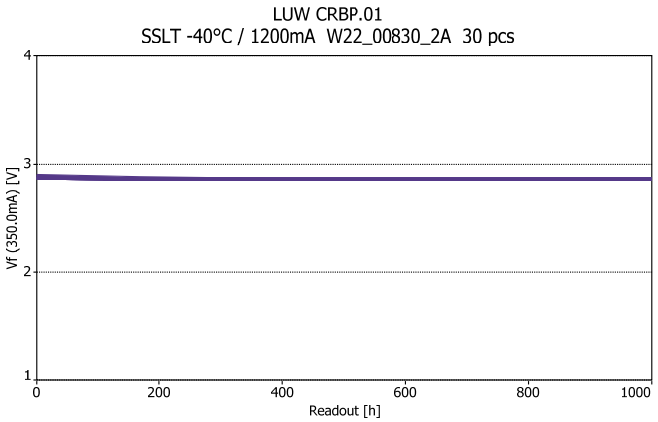
The Information contained in this Document does not constitute an independent warranty. The committed behavior is described in the Product data sheet and/or further, mutually agreed specifications.
Distribution of part or all of the contents of this Document to any 3rd party in any form without the prior permission of ams-OSRAM International GmbH is prohibited except in accordance with applicable mandatory law.

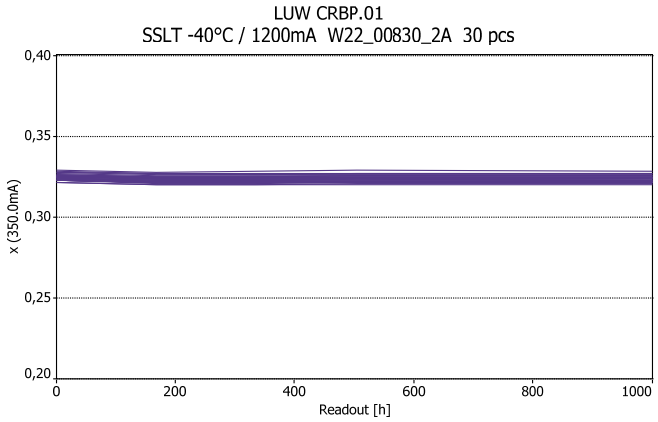
Further explanations:
Data: The Data used in this Document consider the reliability test results under the mentioned driving conditions only. For Product information on the maximum operating conditions and the OSRAM standard qualification profile please refer to the Product data sheet or contact your local sales partner.
Conditions: The conditions for the generation of the Data are as follows:
1. The Data and curves shown in this Document are based on experiments carried out under laboratory conditions on a random sample size of LED/IRED/Laser/Detector with readouts at discrete readout times (where applicable). Thus, the Data above represent a limited number of production lots only and may differ between different assembly lots over time (including chip or package changes). Thus, the behavior of the LED/IRED/Laser/Detector in the final application may differ from the Data. The behavior of the LED/IRED/Laser/Detector at conditions or readout times deviating from those stated above may not be deduced from the Data.
2. If applicable:
    a) Extended driving conditions:
    The tested driving conditions exceed the maximum limits stated in the Product data sheet. Therefore, a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
    b) Extended testing duration:
    The testing duration exceed the OSRAM standard qualification profile of the mentioned Product. Failure limits noted in the Document refer to the testing duration according to the OSRAM standard Product qualification profile and not to the actual testing duration.
    c) Exceeding standard qualification conditions – (Product data sheet limits not affected):
    The tested driving conditions exceed the OSRAM standard qualification profile of the mentioned Product. Therefore a reduced lifetime or an accelerated degradation is expected. Failure limits noted in the Document refer to the testing condition according to the OSRAM standard Product qualification profile and not to the actual testing condition.
3. For long term operation additional failure modes of the chip or package can occur which are not shown in this Document.
4. Possible differences in the thermal management of OSRAM and customer’s setup may lead to a different aging behavior.

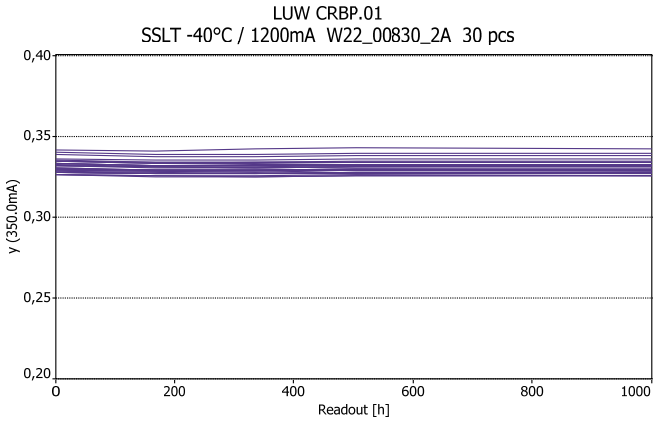
LTOL -40°C / 1200mA

Lot A

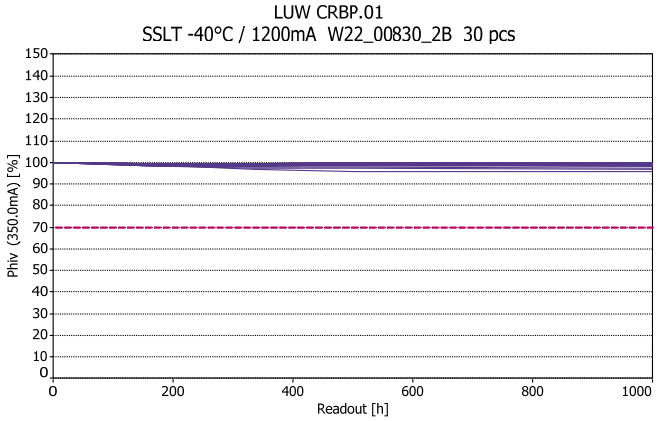


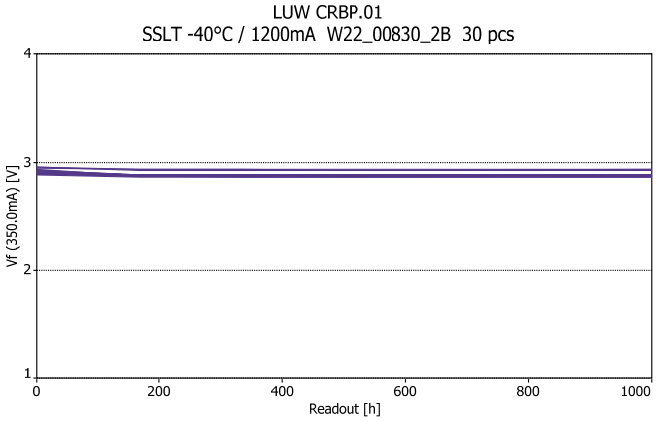






Lot B


LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2B 30 pcs
Phiv (350.0mA) [%]
Readout [h]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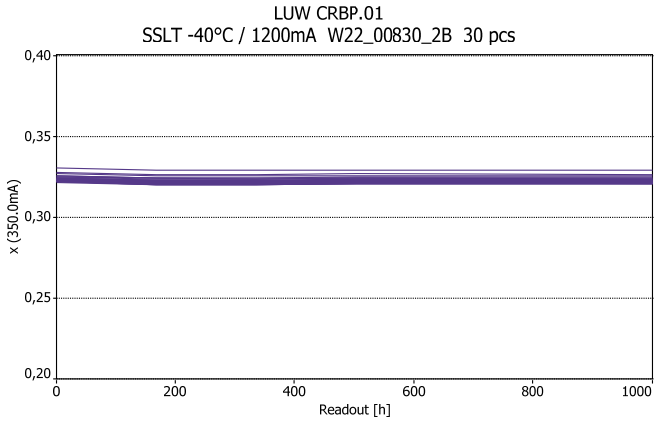
SSLT -40°C / 1200mA W22_00830_2B 30 pcs
Vf (350.0mA) [V]
Readout [h]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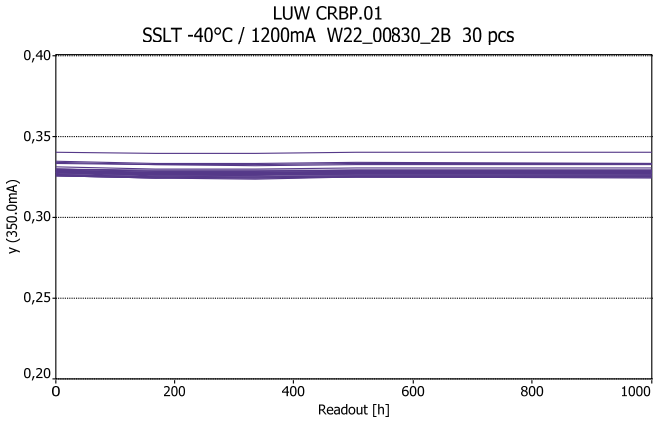
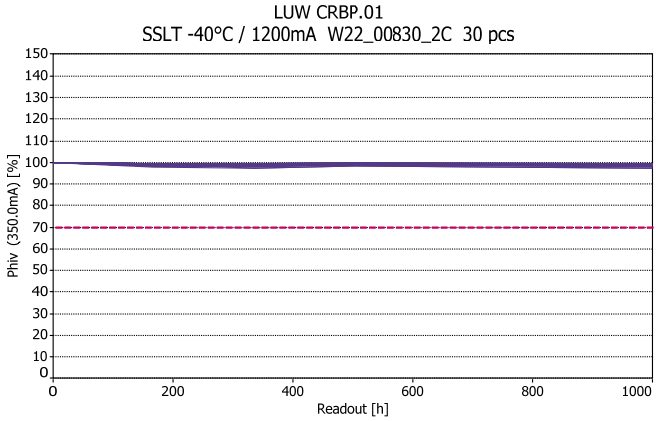
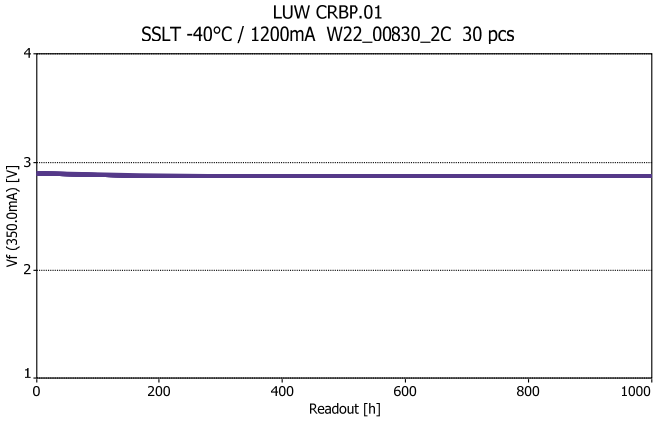
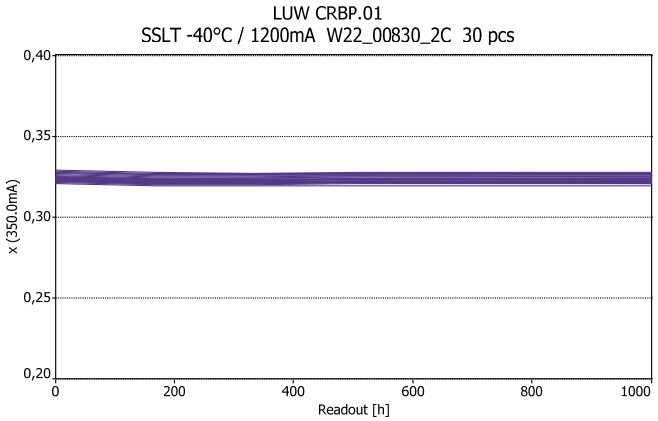
SSLT -40°C / 1200mA W22_00830_2B 30 pcs
x (350.0mA)
Readout [h]

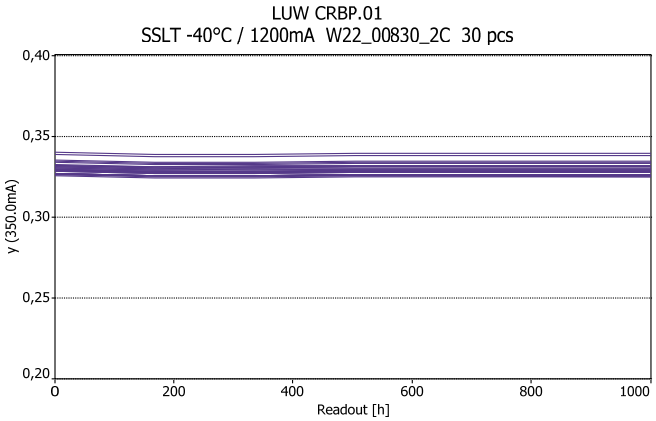

LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2B 30 pcs
y (350.0mA)
Readout [h]

Lot C

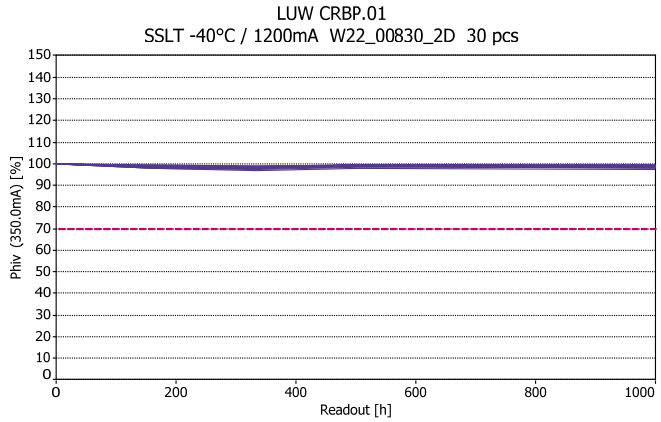

LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2C 30 pcs
Phiv (350.0mA) [%]
Readout [h]

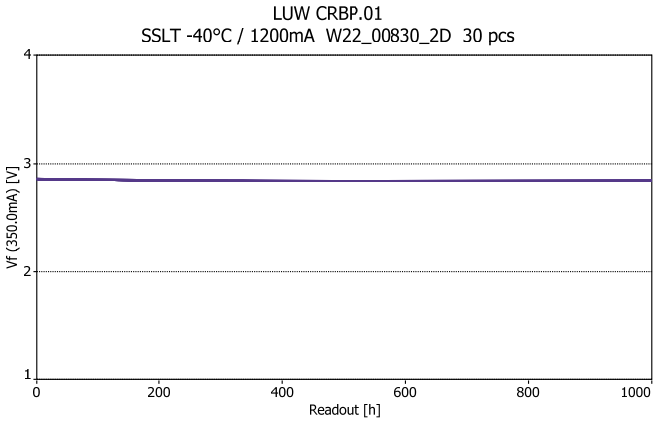

LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2C 30 pcs
Vf (350.0mA) [V]
Readout [h]


LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2C 30 pcs
x (350.0mA)
Readout [h]


LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2D 30 pcs
Phiv (350.0mA) [%]
Readout [h]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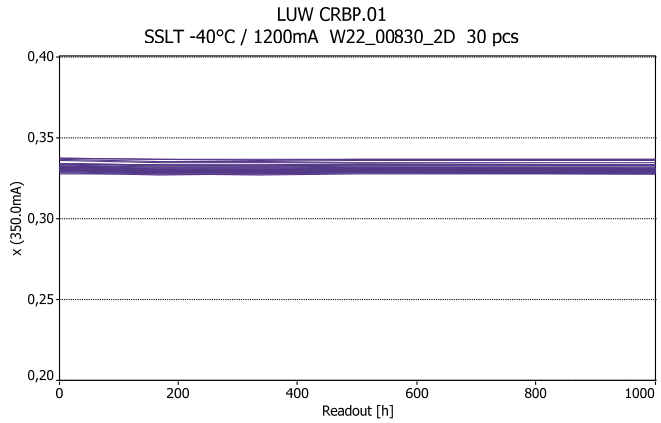
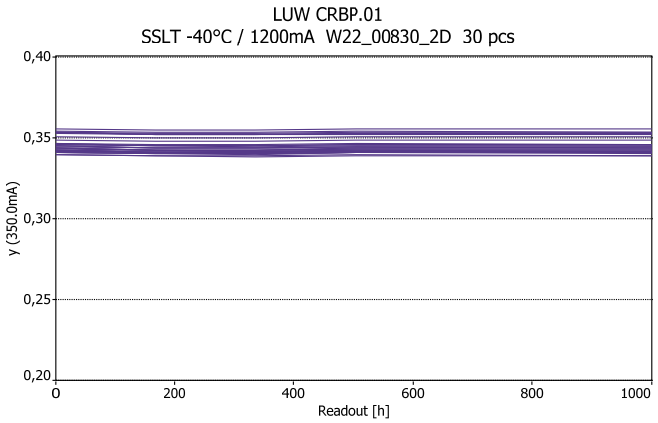
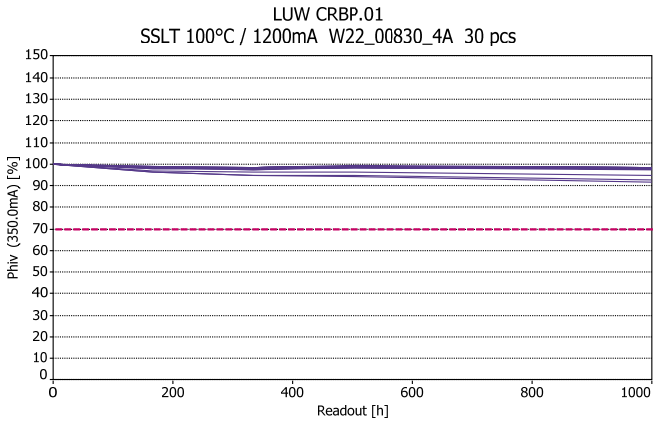
SSLT -40°C / 1200mA W22_00830_2D 30 pcs
Vf (350.0mA) [V]
Readout [h]

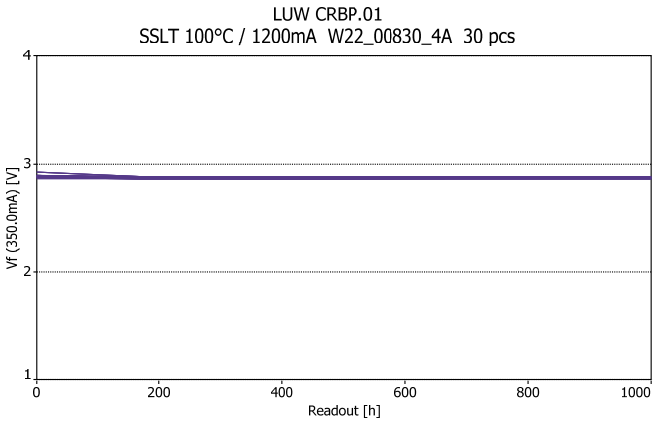

LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2D 30 pcs
x (350.0mA)
Readout [h]

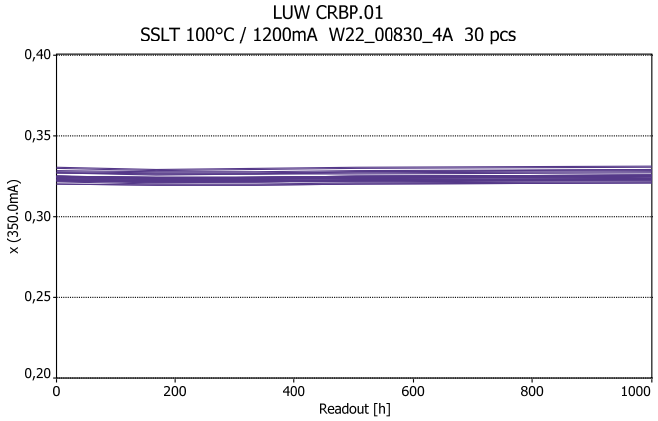

LUW CRBP.01
SSLT -40°C / 1200mA W22_00830_2D 30 pcs
y (350.0mA)
Readout [h]

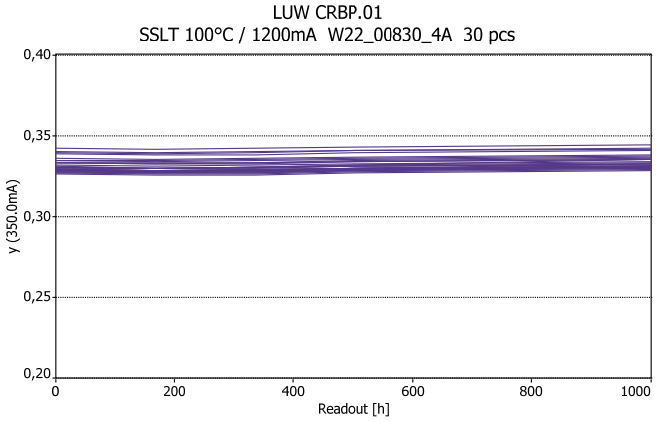
HTOL 100°C / 1200mA

Lot A

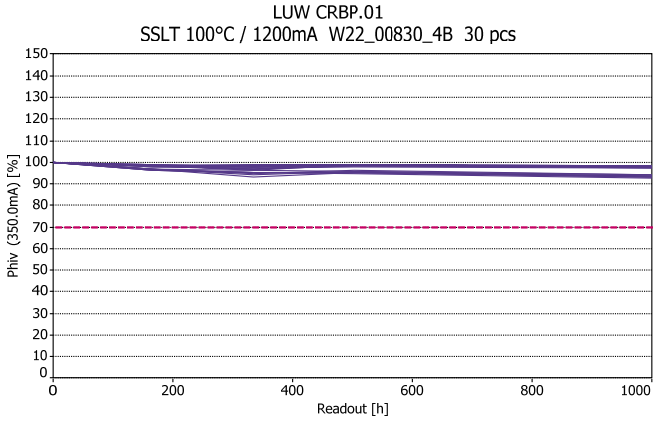


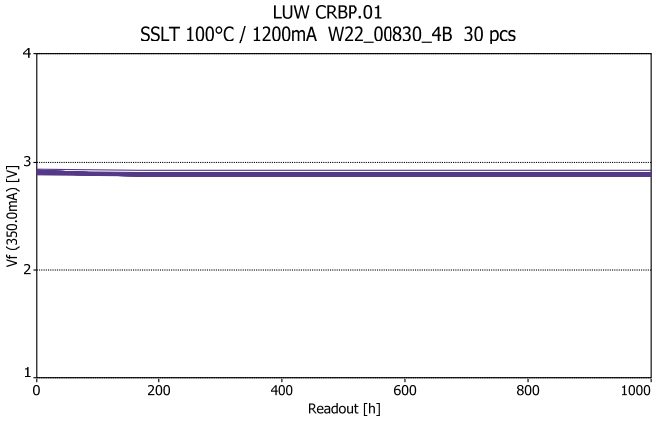


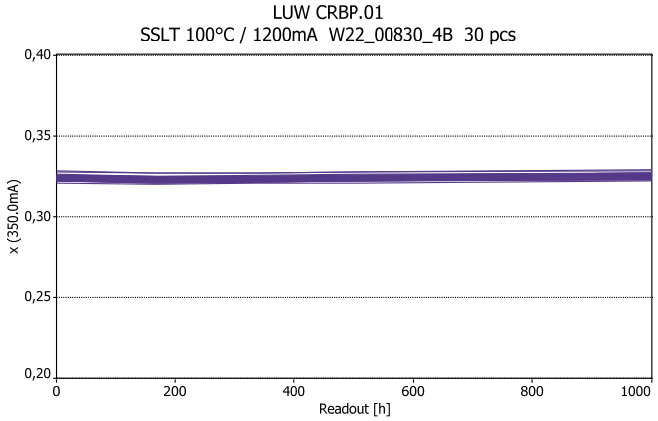


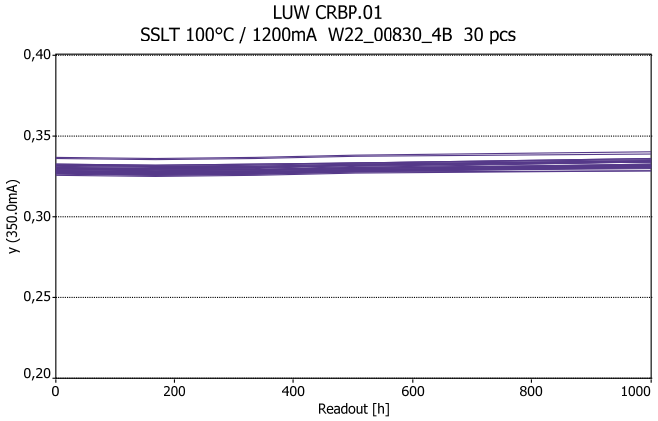


Lot B

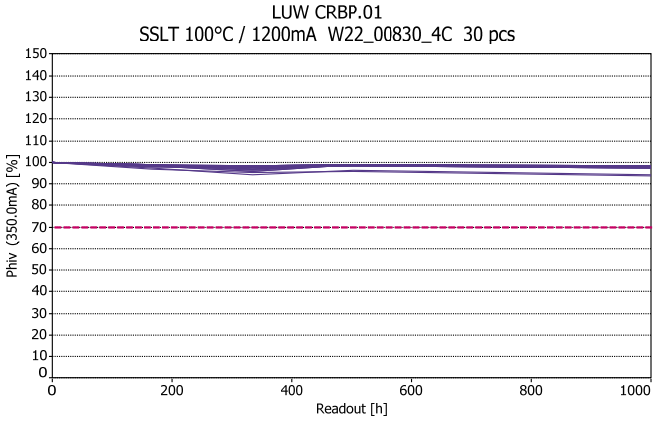

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4B 30 pcs
Phiv (350.0mA) [%]
Readout [h]

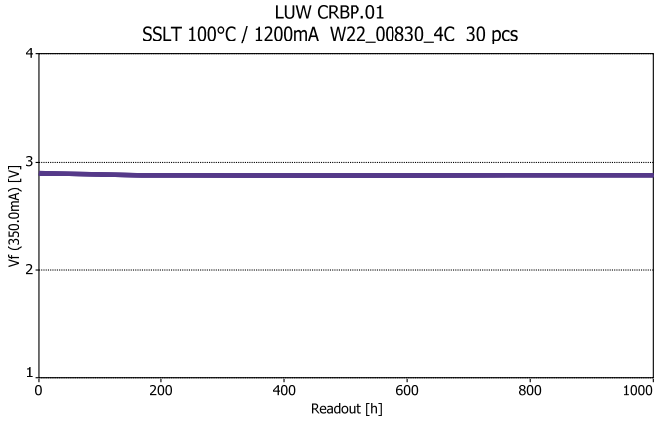

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4B 30 pcs
Vf (350.0mA) [V]
Readout [h]

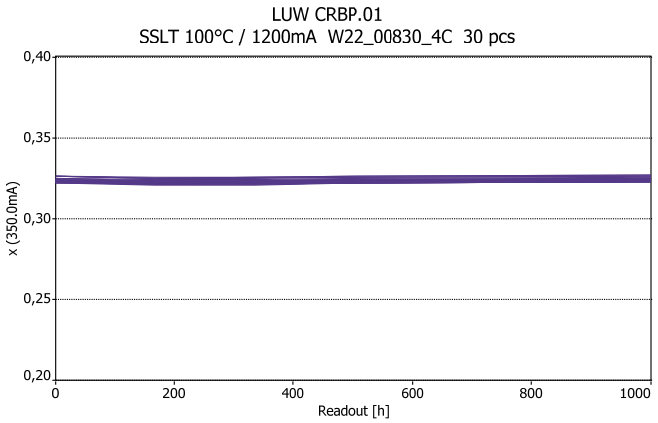

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4B 30 pcs
x (350.0mA)
Readout [h]

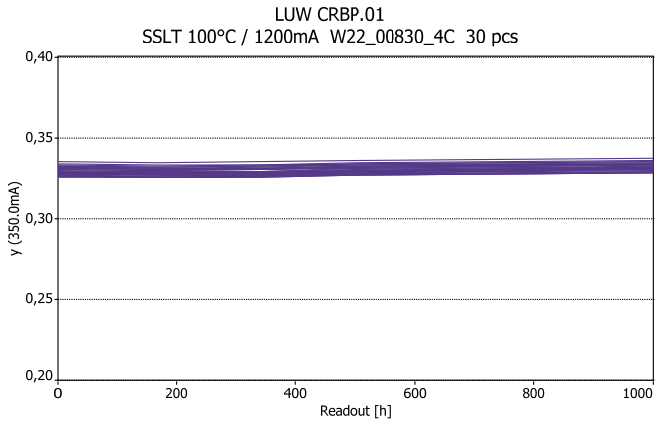

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4B 30 pcs
y (350.0mA)
Readout [h]

Lot C

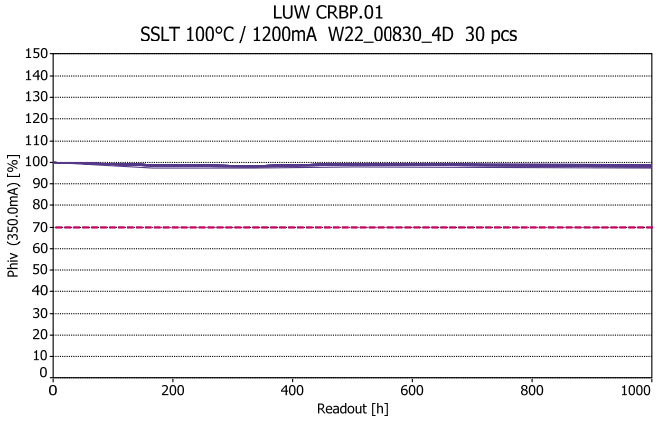

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4C 30 pcs
Phiv (350.0mA) [%]
Readout [h]

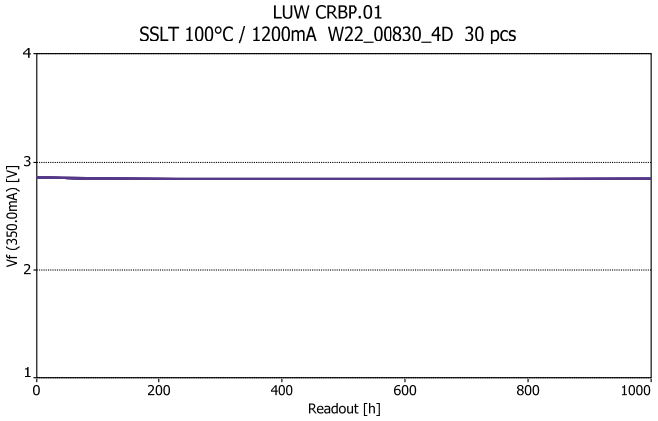

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4C 30 pcs
Vf (350.0mA) [V]
Readout [h]

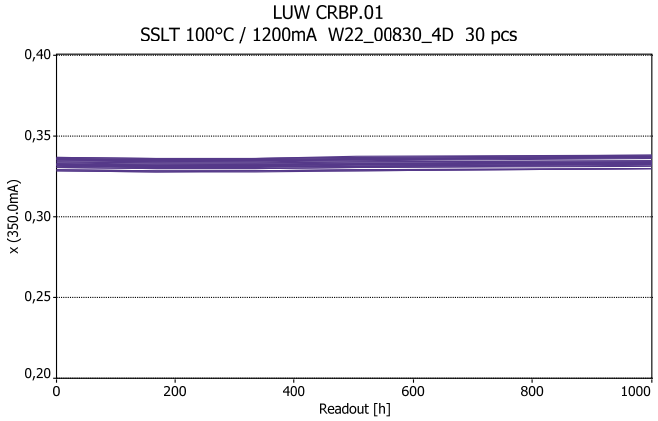

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4C 30 pcs
x (350.0mA)
Readout [h]

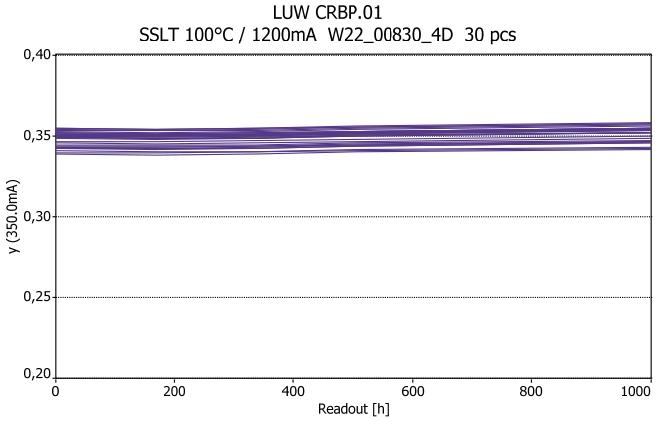

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4D 30 pcs
Phiv (350.0mA) [%]
Readout [h]

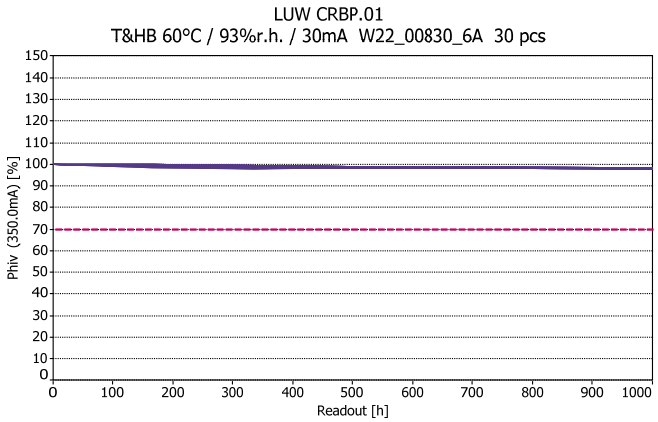

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4D 30 pcs
Vf (350.0mA) [V]
Readout [h]

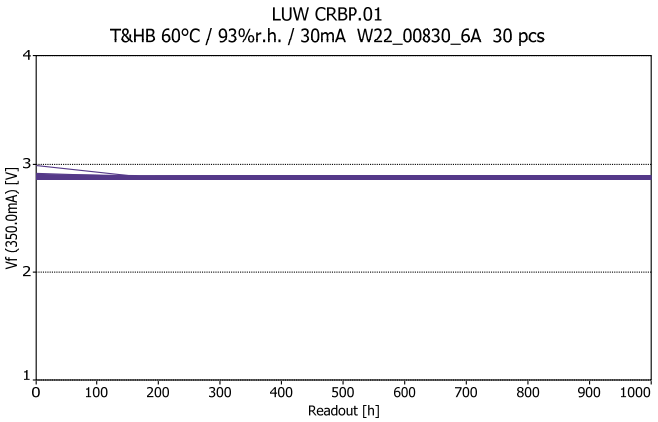

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4D 30 pcs
x (350.0mA)
Readout [h]

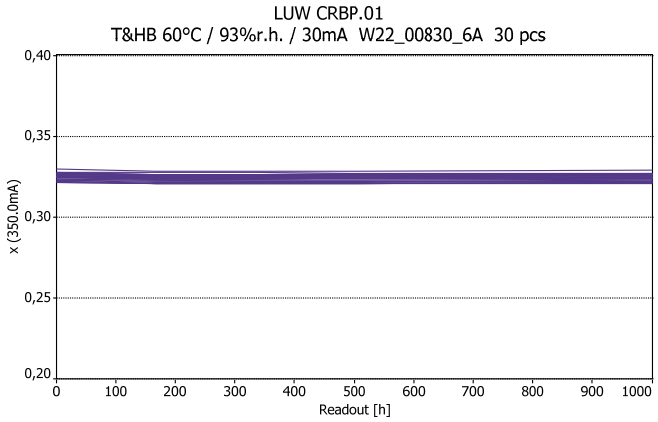

LUW CRBP.01
SSLT 100°C / 1200mA W22_00830_4D 30 pcs
y (350.0mA)
Readout [h]

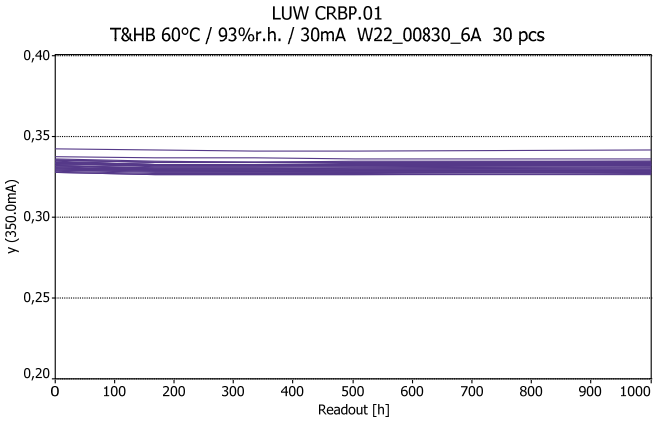
WHTOL 60°C / 93%r.h. / 30mA

Lot A

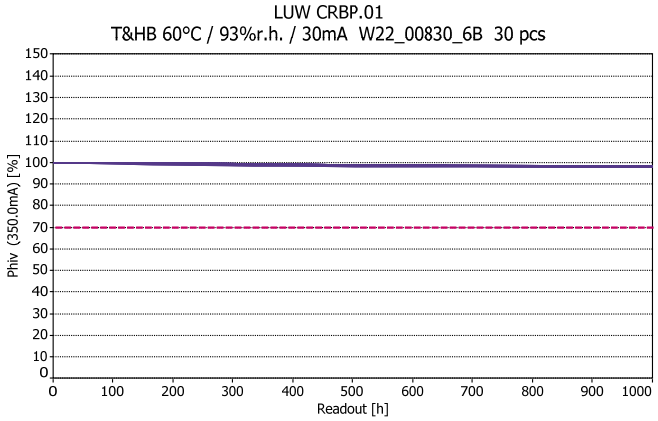


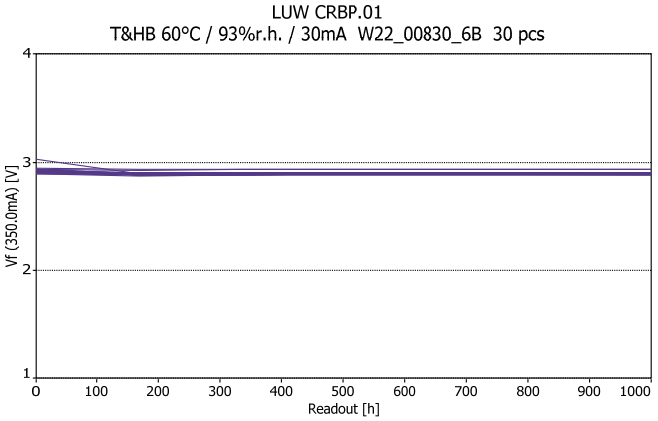


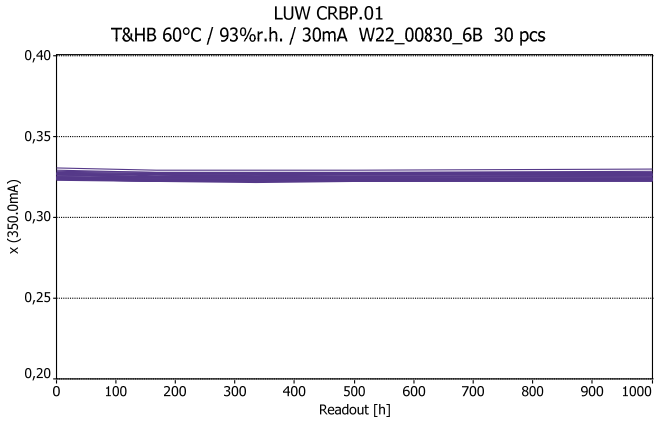


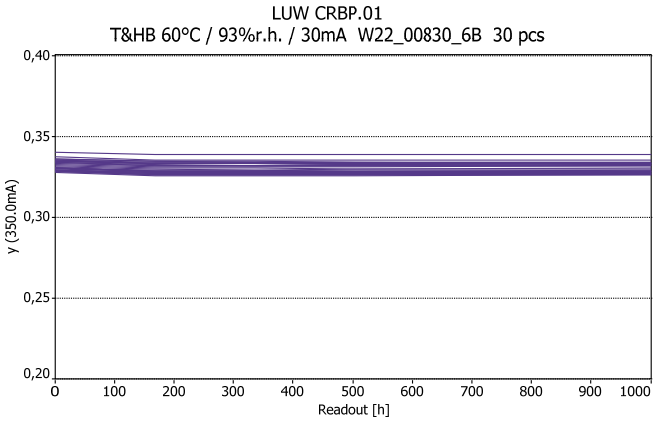


Lot B

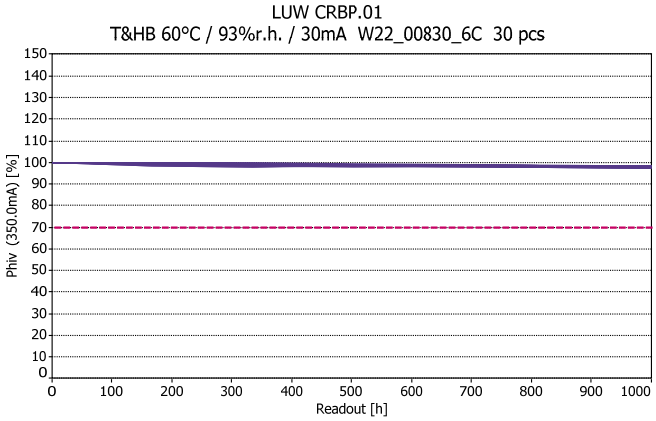

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6B 30 pcs
Phiv (350.0mA) [%]
Readout [h]

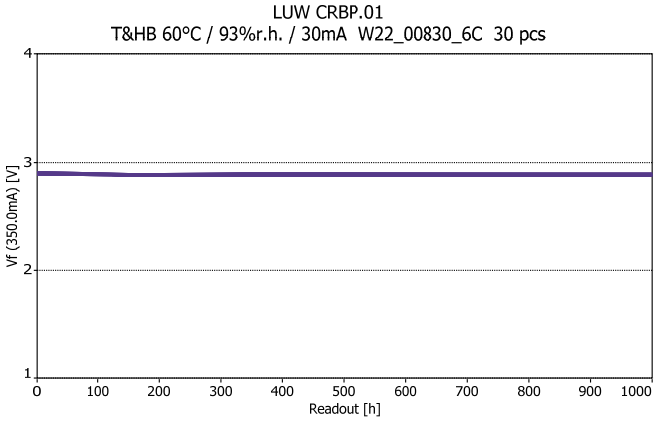

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6B 30 pcs
Vf (350.0mA) [V]
Readout [h]

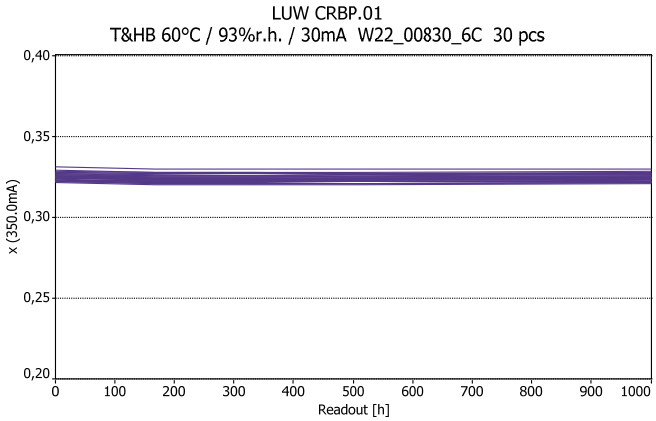

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6B 30 pcs
x (350.0mA)
Readout [h]


LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6B 30 pcs
y (350.0mA)
Readout [h]

Lot C


LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6C 30 pcs
Phiv (350.0mA) [%]
Readout [h]


LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6C 30 pcs
Vf (350.0mA) [V]
Readout [h]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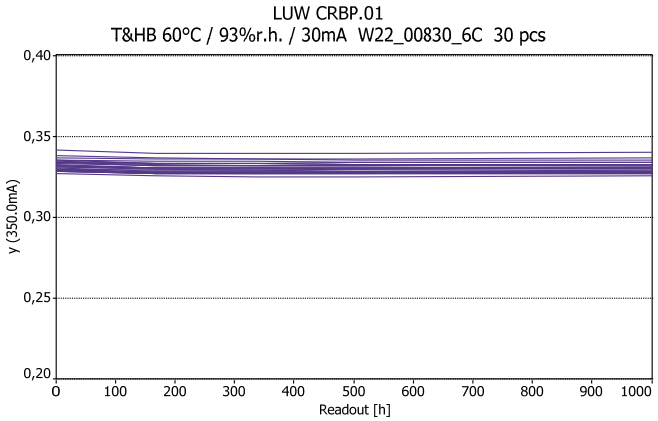
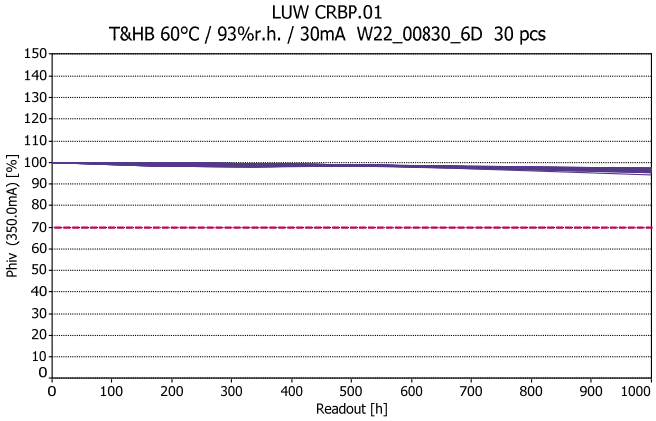
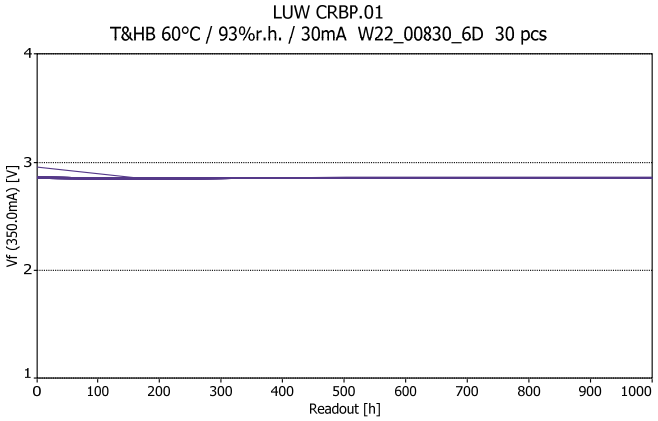
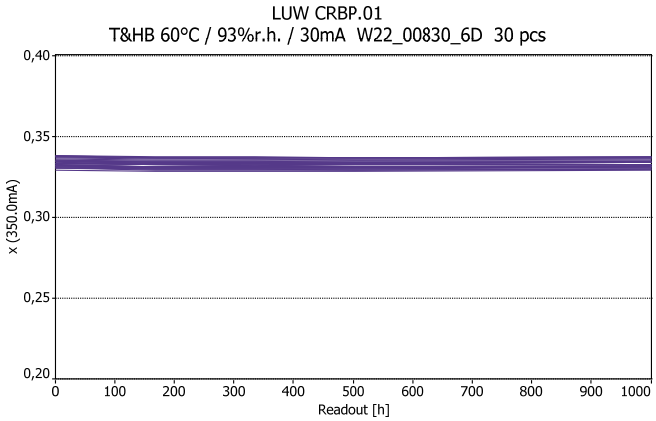
T&HB 60°C / 93%r.h. / 30mA W22_00830_6C 30 pcs
x (350.0mA)
Readout [h]

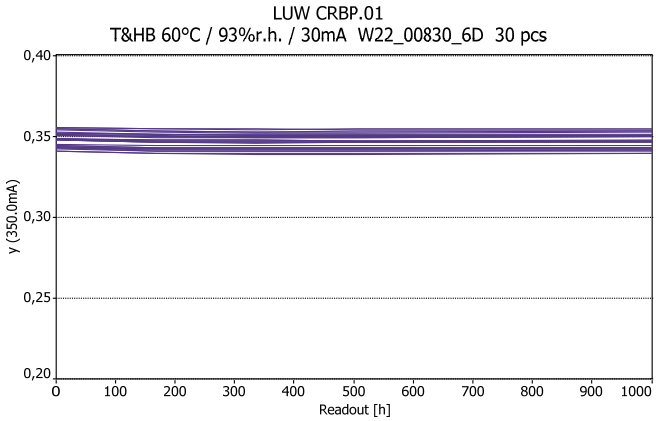

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6D 30 pcs
Phiv (350.0mA) [%]
Readout [h]

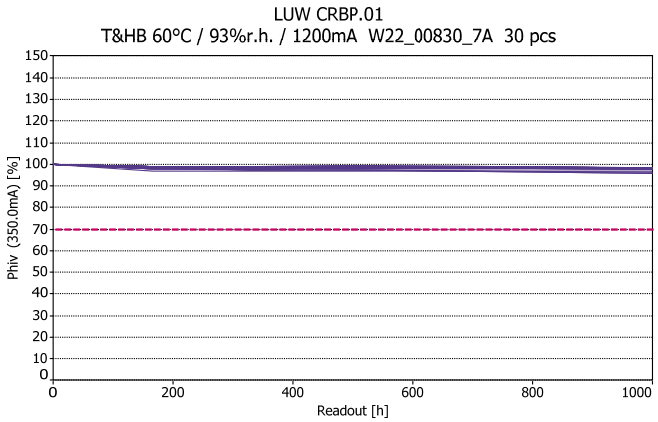

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6D 30 pcs
Vf (350.0mA) [V]
Readout [h]

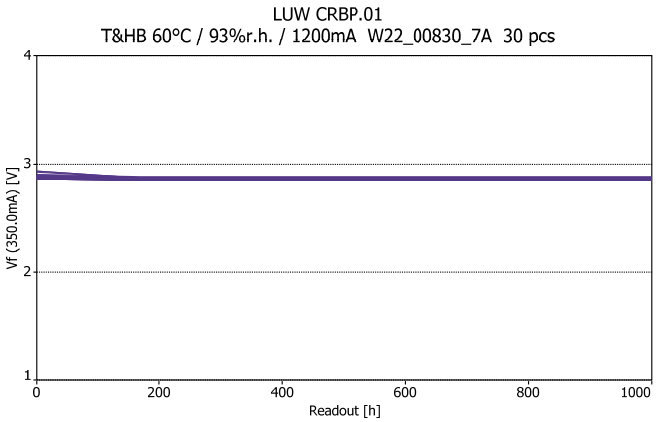

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6D 30 pcs
x (350.0mA)
Readout [h]

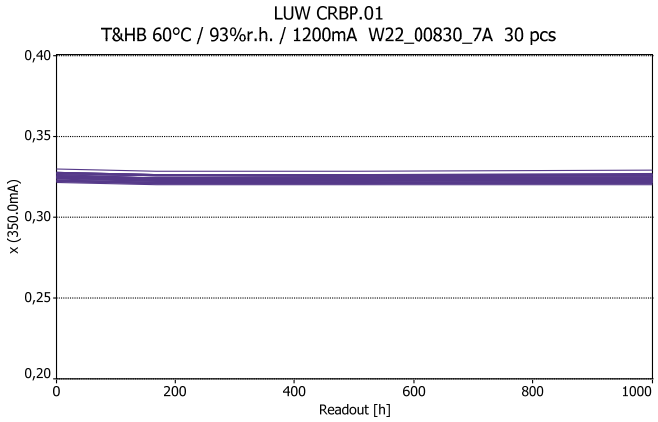

LUW CRBP.01
T&HB 60°C / 93%r.h. / 30mA W22_00830_6D 30 pcs
y (350.0mA)
Readout [h]

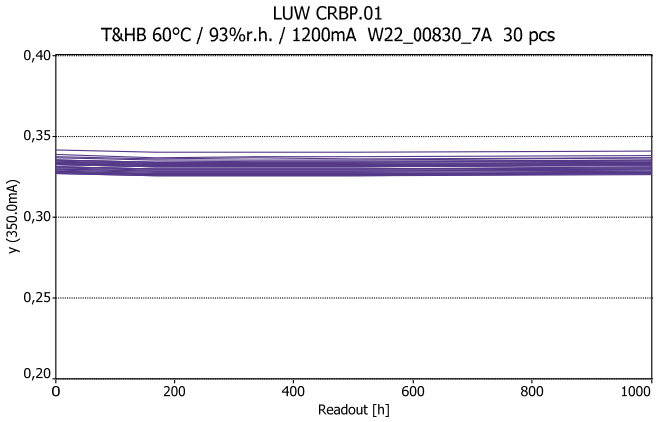
WHTOL 60°C / 93%r.h. / 1200mA

Lot A

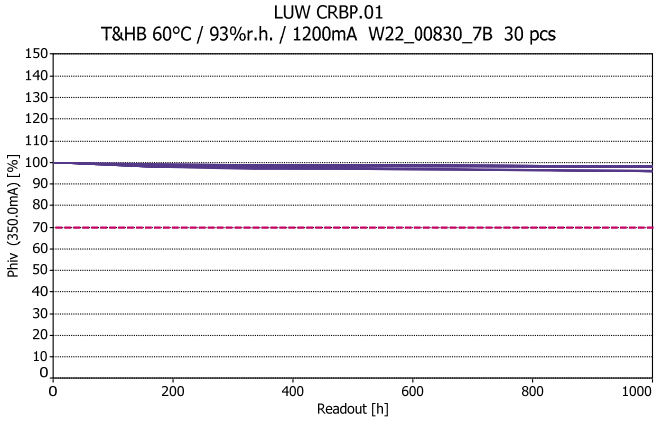








Lot B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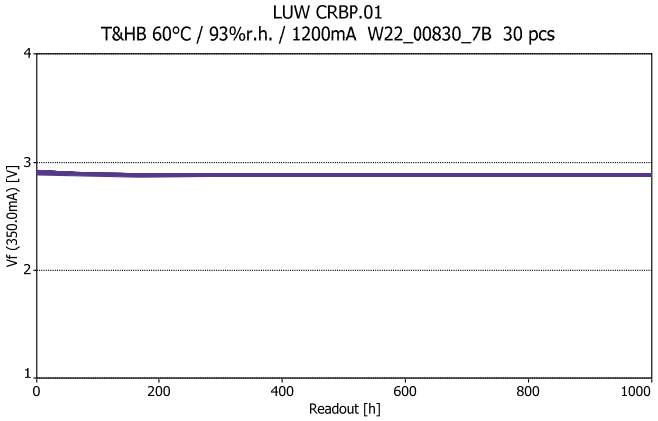
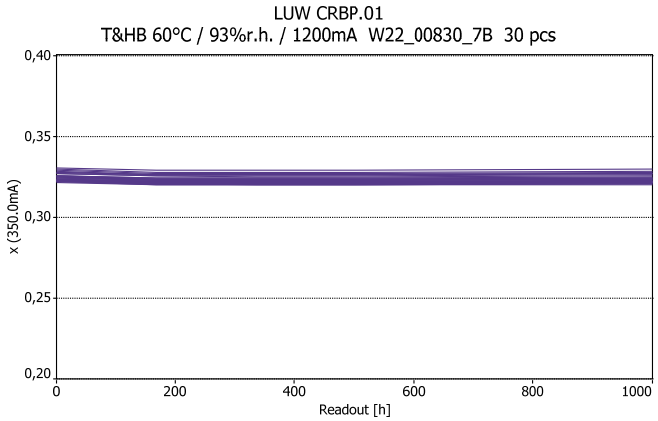
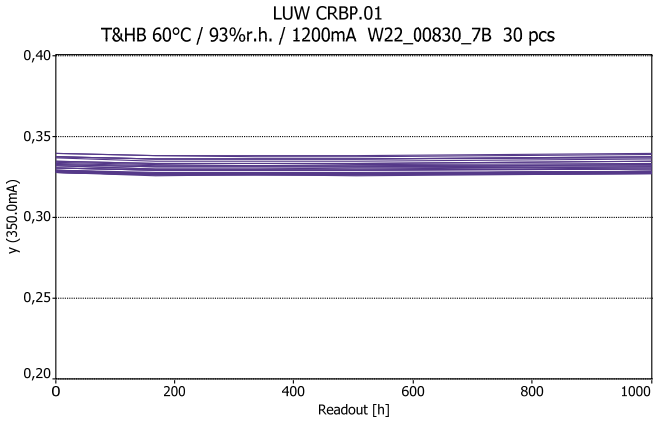
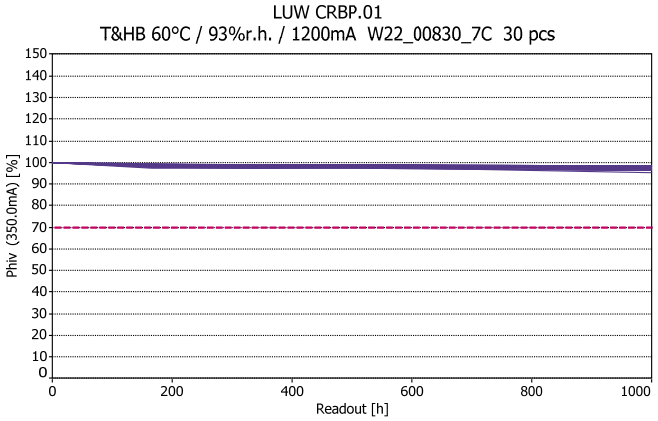
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7B 30 pcs
Phiv (350.0mA) [%]
Readout [h]

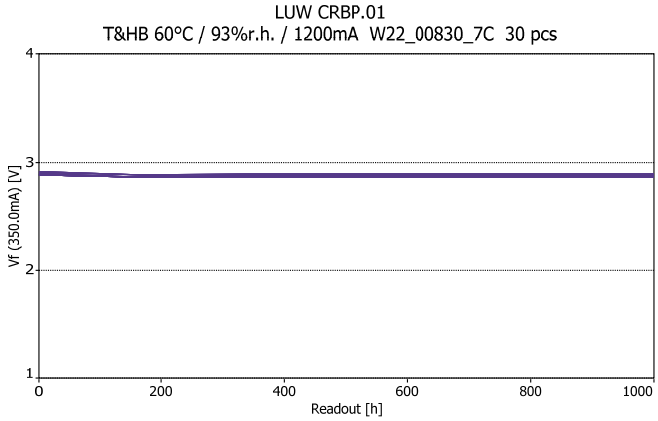

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7B 30 pcs
Vf (350.0mA) [V]
Readout [h]

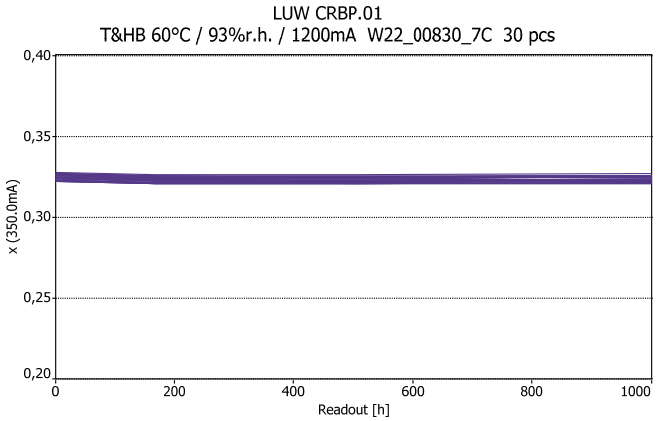

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7B 30 pcs
x (350.0mA)
Readout [h]


LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7B 30 pcs
y (350.0mA)
Readout [h]

Lot C


LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7C 30 pcs
Phiv (350.0mA) [%]
Readout [h]


LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7C 30 pcs
Vf (350.0mA) [V]
Readout [h]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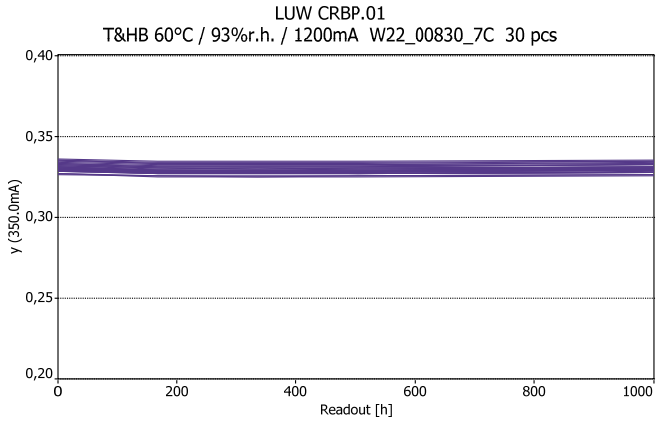
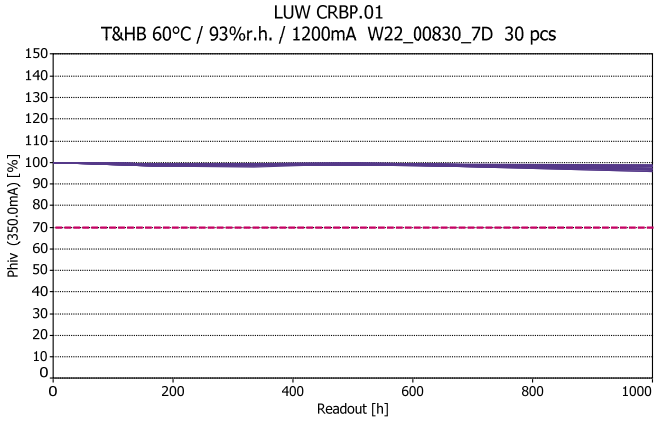
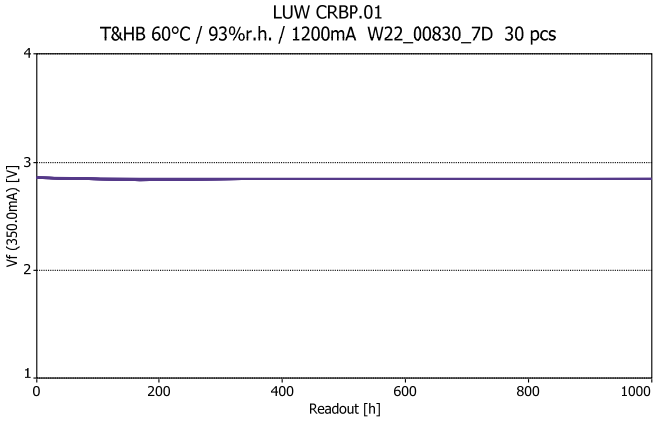
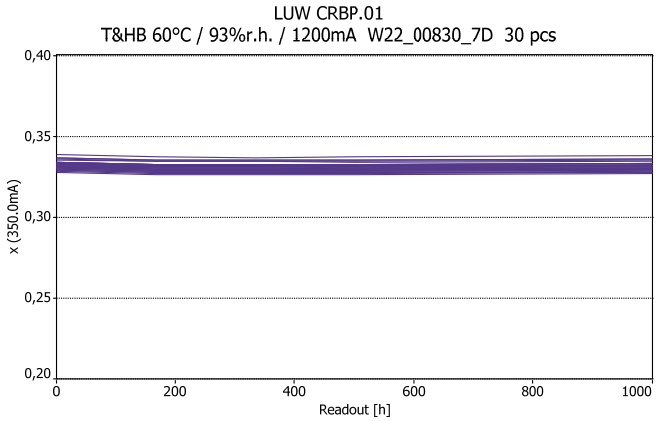
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7C 30 pcs
x (350.0mA)
Readout [h]

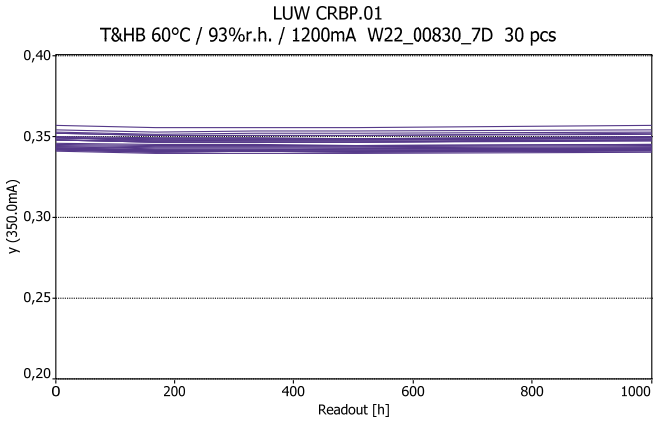

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7D 30 pcs
Phiv (350.0mA) [%]
Readout [h]

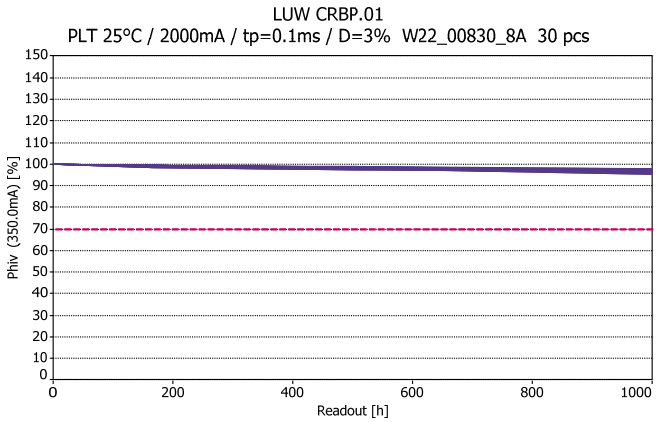

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7D 30 pcs
Vf (350.0mA) [V]
Readout [h]

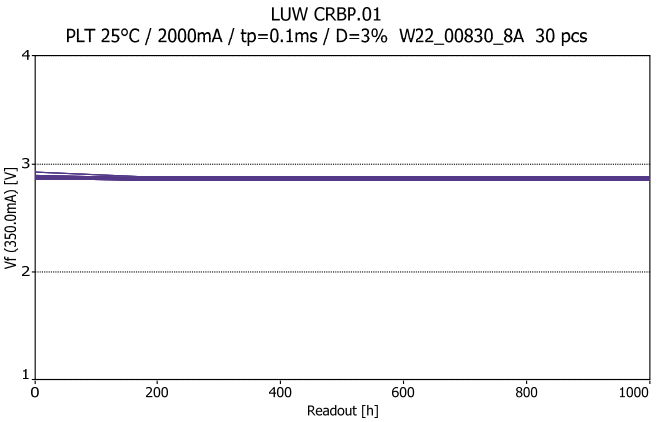

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7D 30 pcs
x (350.0mA)
Readout [h]

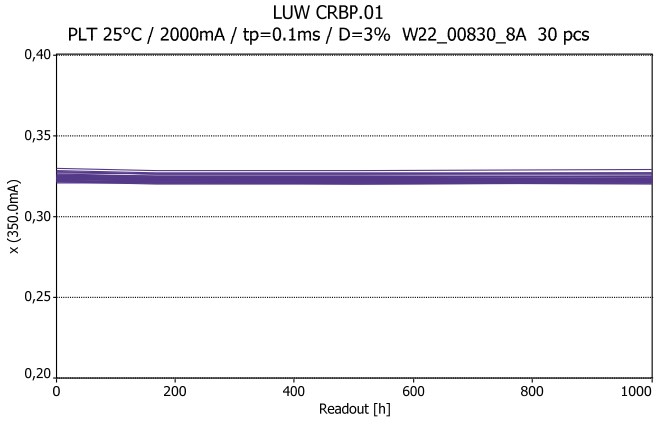

LUW CRBP.01
T&HB 60°C / 93%r.h. / 1200mA W22_00830_7D 30 pcs
y (350.0mA)
Readout [h]

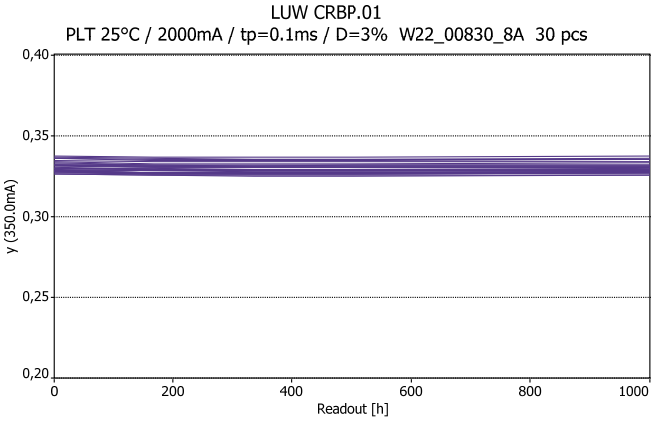
PLT 25°C / 2000mA / tp=0.1ms / D=3%

Lot A

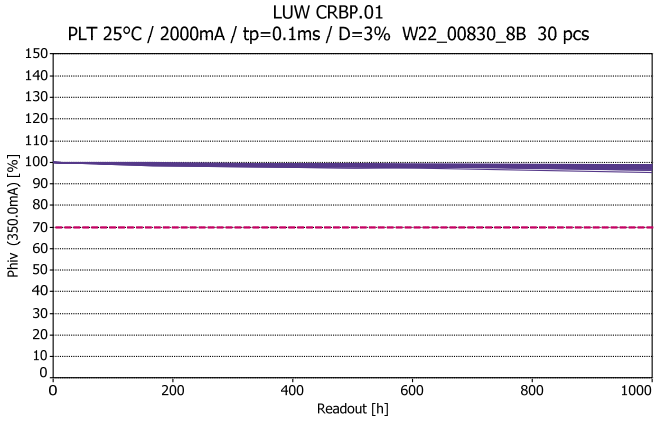


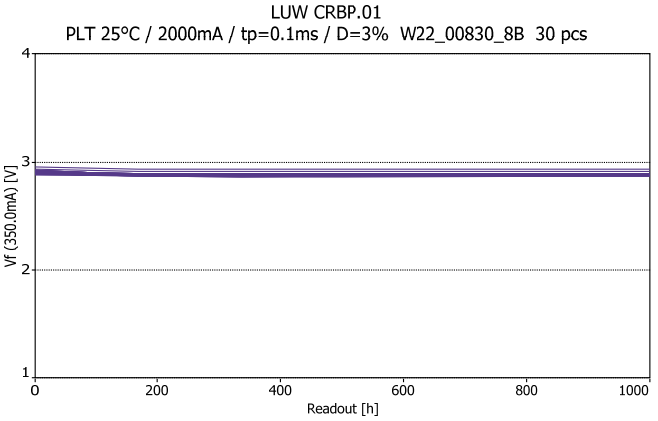


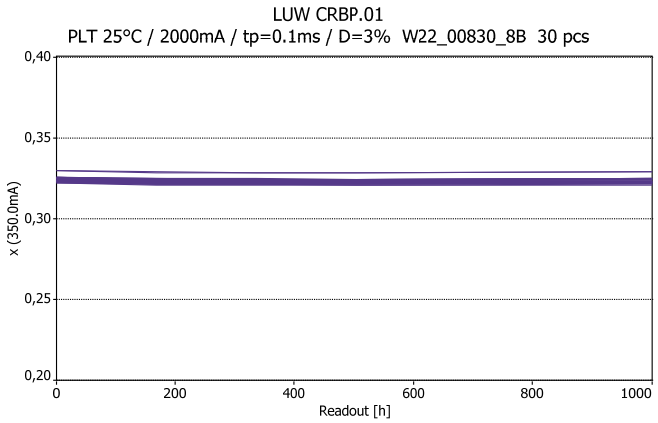


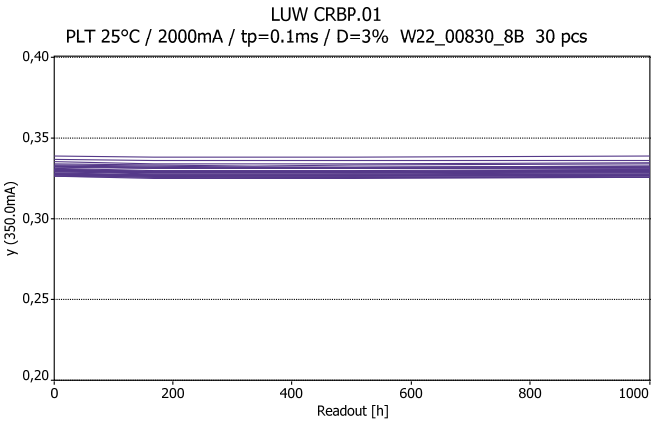


Lot B

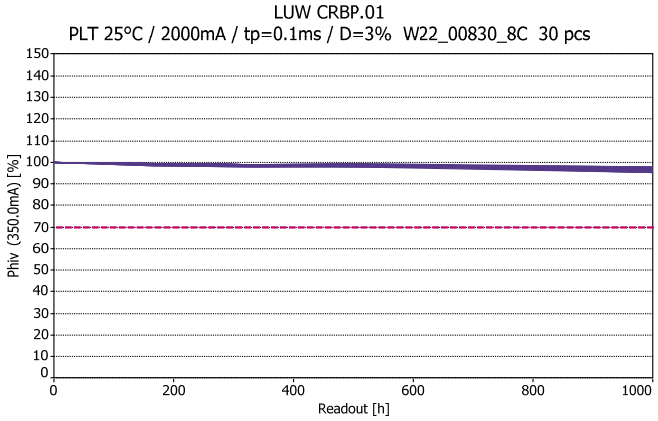

LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8B 30 pcs
Phiv (350.0mA) [%]
Readout [h]

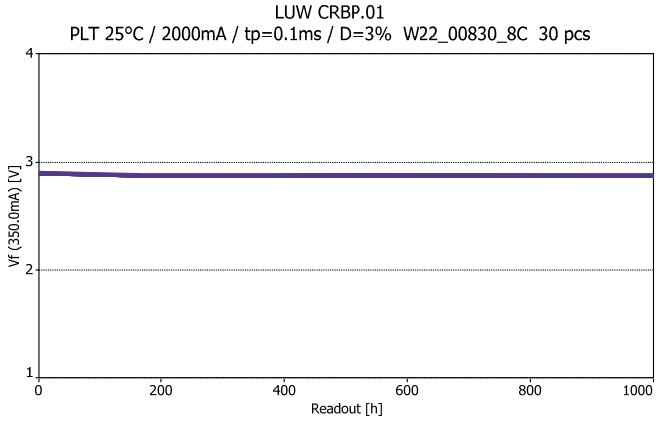

LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8B 30 pcs
Vf (350.0mA) [V]
Readout [h]

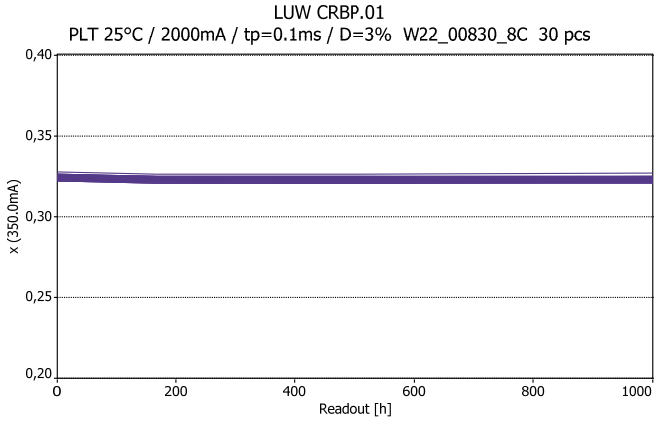

LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8B 30 pcs
x (350.0mA)
Readout [h]


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8B 30 pcs
y (350.0mA)
Readout [h]

Lot C


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8C 30 pcs
Phiv (350.0mA) [%]
Readout [h]


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8C 30 pcs
Vf (350.0mA) [V]
Readout [h]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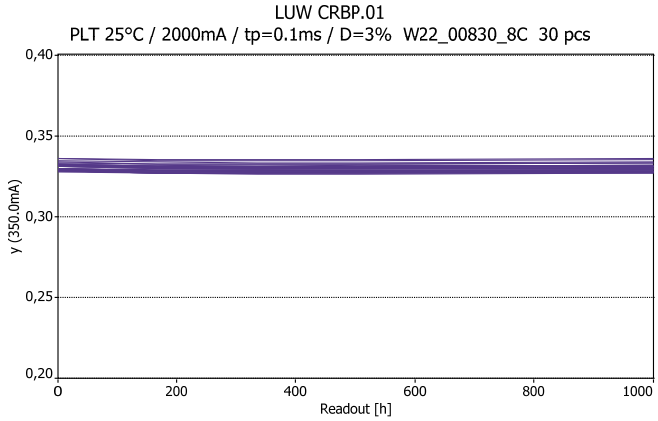
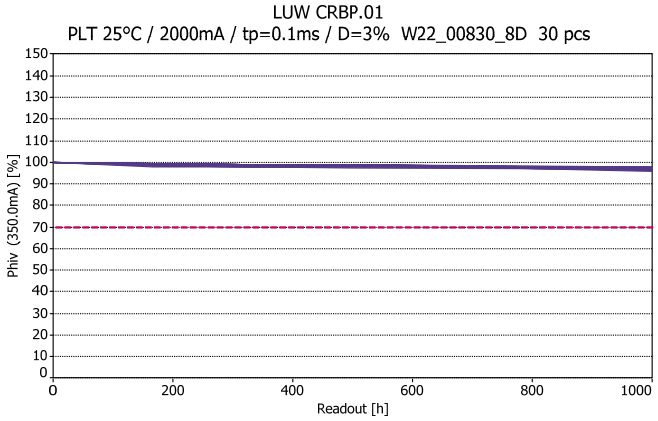
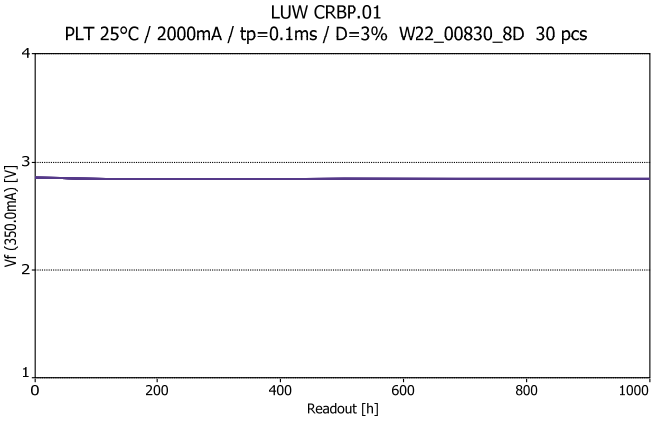
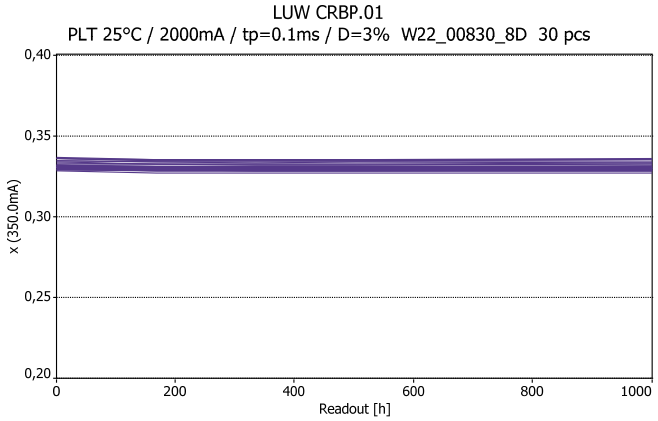
x (350.0mA)
Readout [h]


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8D 30 pcs
Phiv (350.0mA) [%]
Readout [h]


LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8D 30 pcs
Vf (350.0mA) [V]
Readout [h]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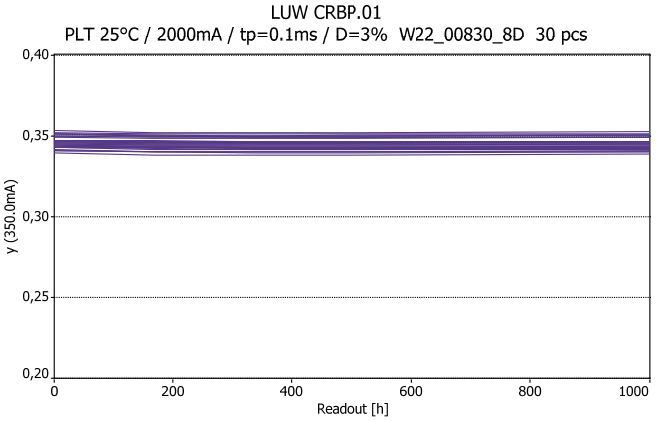
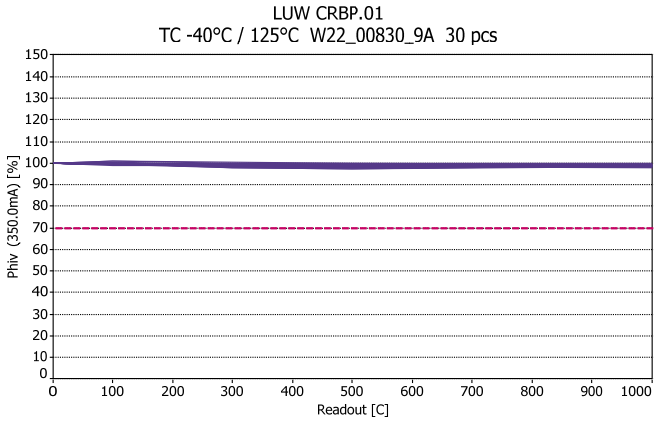
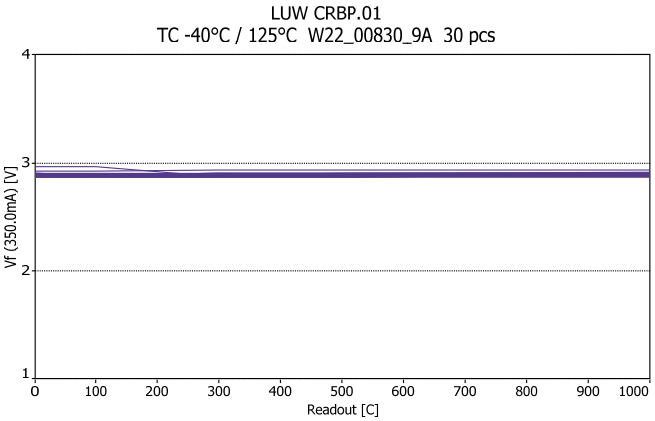
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8D 30 pcs
x (350.0mA)
Readout [h]

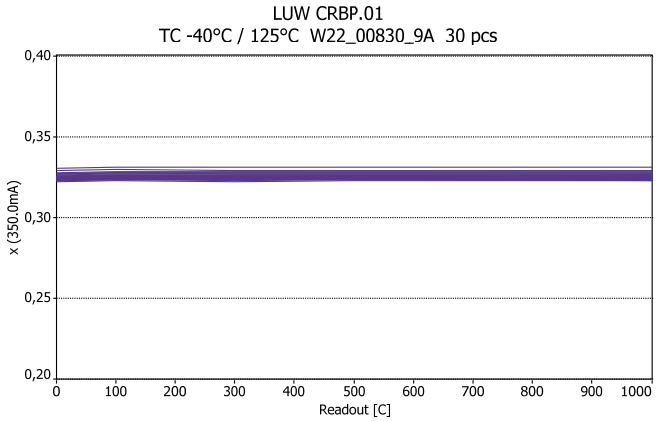

LUW CRBP.01
PLT 25°C / 2000mA / tp=0.1ms / D=3% W22_00830_8D 30 pcs
y (350.0mA)
Readout [h]

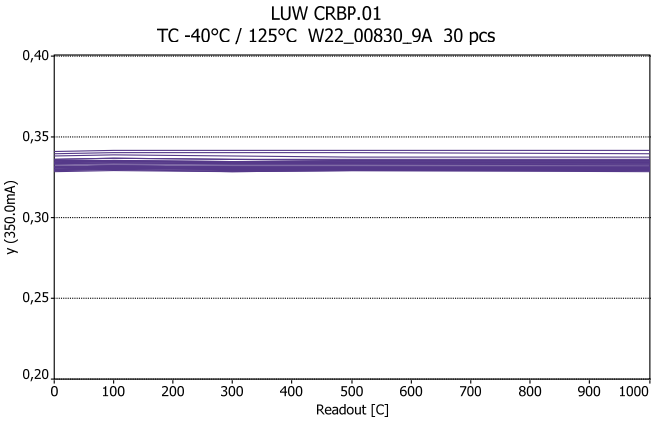
TC -40°C / 125°C

Lot A

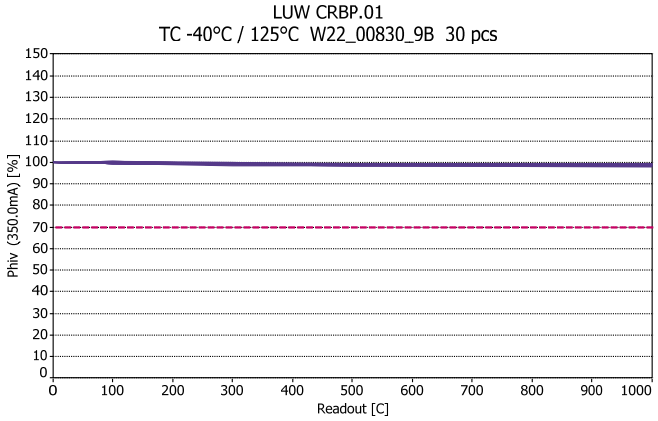


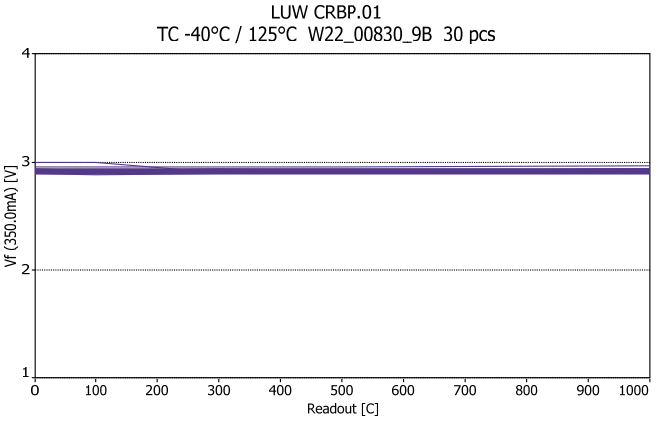


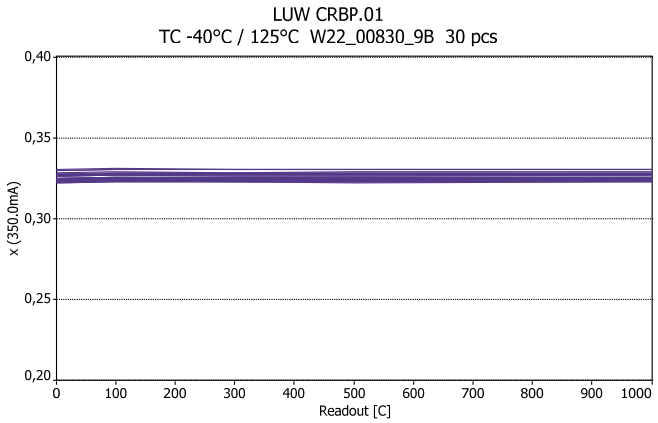


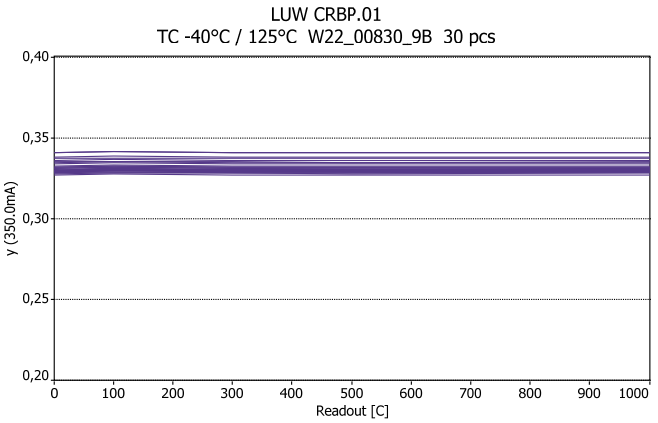


Lot B

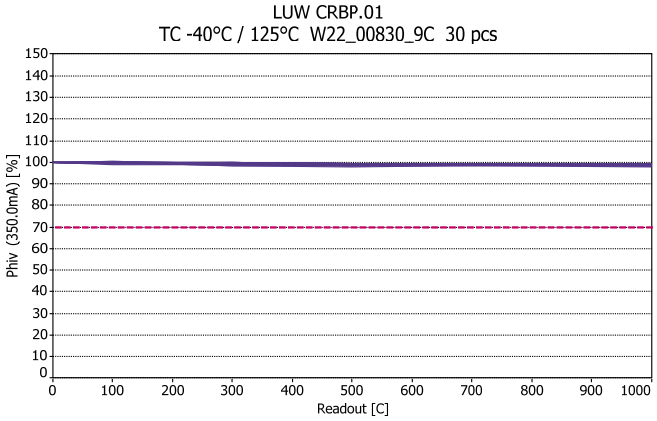

LUW CRBP.01
TC -40°C / 125°C W22_00830_9B 30 pcs
Phiv (350.0mA) [%]
Readout [C]

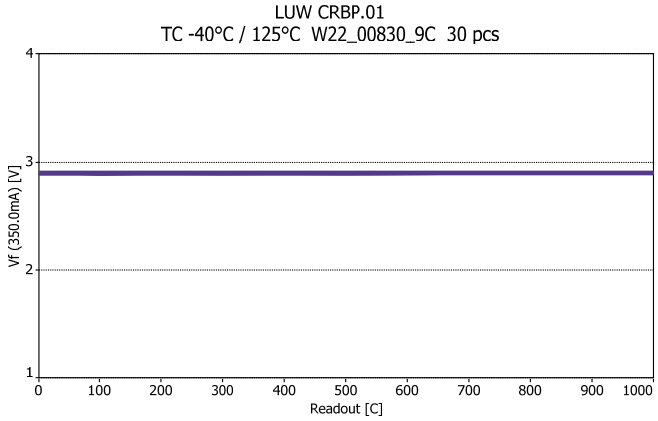

LUW CRBP.01
TC -40°C / 125°C W22_00830_9B 30 pcs
Vf (350.0mA) [V]
Readout [C]

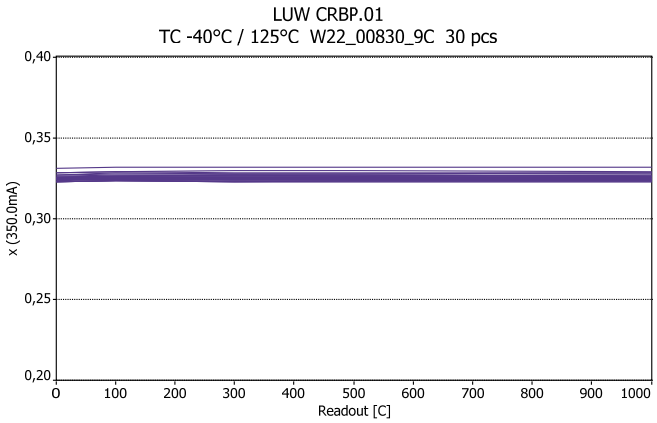

LUW CRBP.01
TC -40°C / 125°C W22_00830_9B 30 pcs
x (350.0mA)
Readout [C]

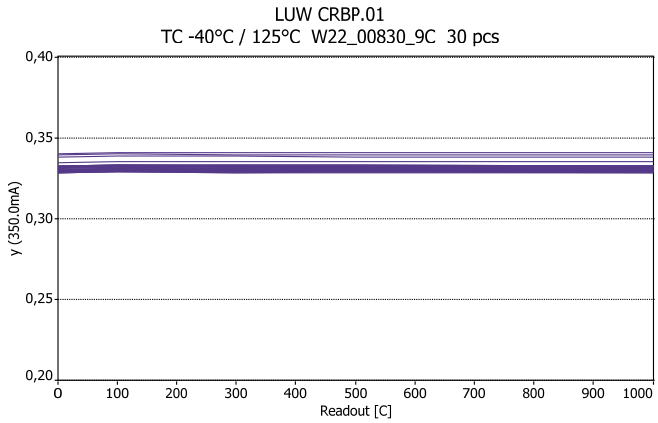

LUW CRBP.01
TC -40°C / 125°C W22_00830_9B 30 pcs
y (350.0mA)
Readout [C]

Lot C

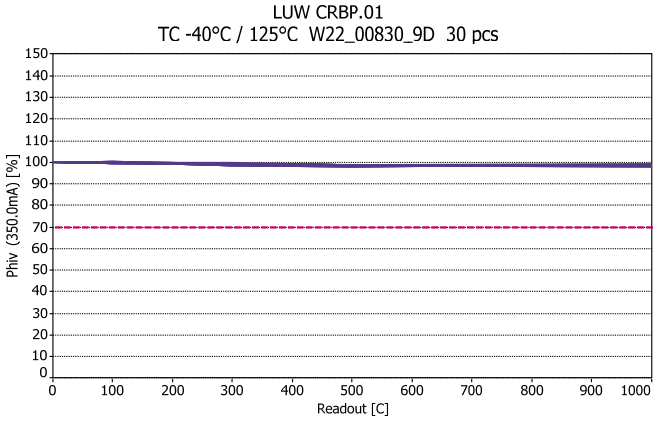

LUW CRBP.01
TC -40°C / 125°C W22_00830_9C 30 pcs
Phiv (350.0mA) [%]
Readout [C]

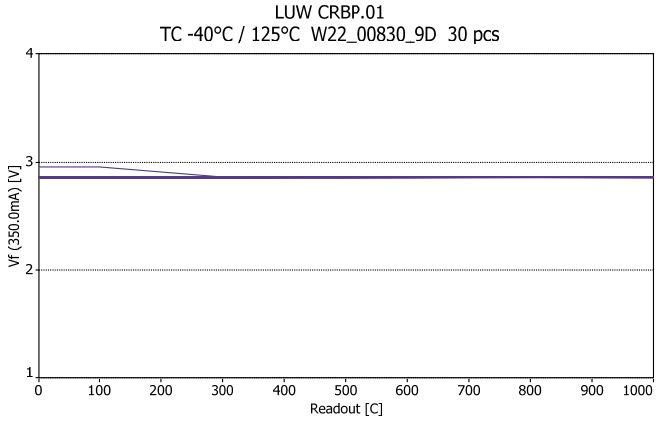

LUW CRBP.01
TC -40°C / 125°C W22_00830_9C 30 pcs
Vf (350.0mA) [V]
Readout [C]

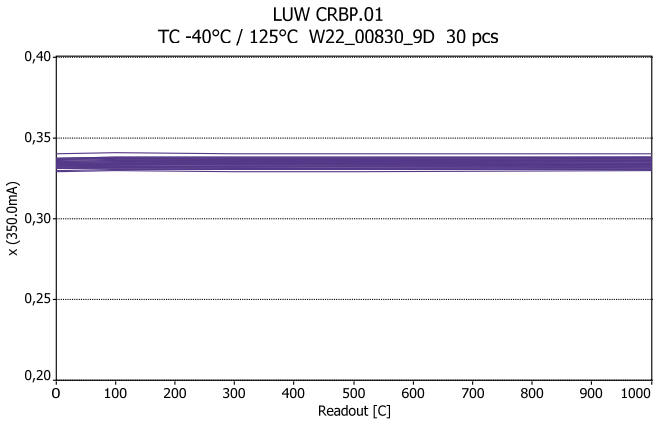

LUW CRBP.01
TC -40°C / 125°C W22_00830_9C 30 pcs
x (350.0mA)
Readout [C]

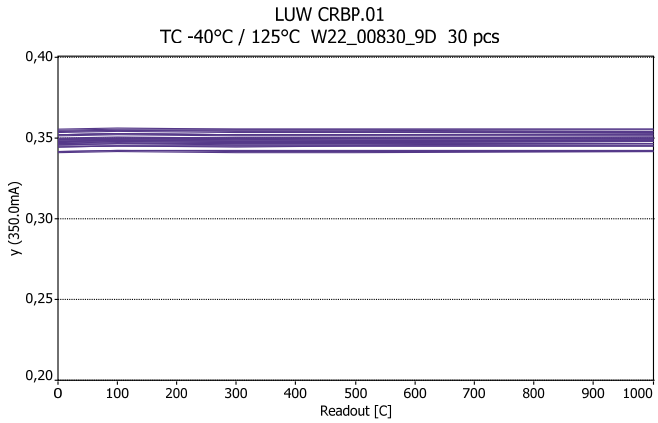

LUW CRBP.01
TC -40°C / 125°C W22_00830_9C 30 pcs
y (350.0mA)
Readout [C]

Lot D


LUW CRBP.01
TC -40°C / 125°C W22_00830_9D 30 pcs
Phiv (350.0mA) [%]
Readout [C]

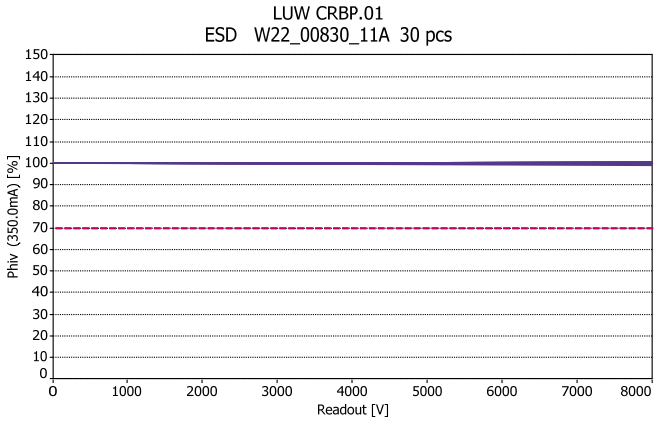

LUW CRBP.01
TC -40°C / 125°C W22_00830_9D 30 pcs
Vf (350.0mA) [V]
Readout [C]

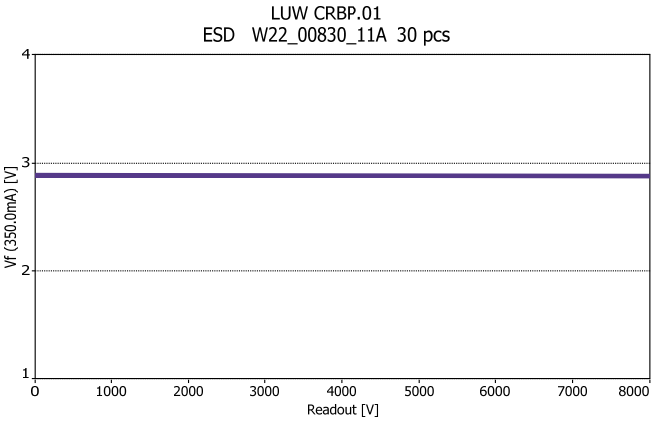

LUW CRBP.01
TC -40°C / 125°C W22_00830_9D 30 pcs
x (350.0mA)
Readout [C]

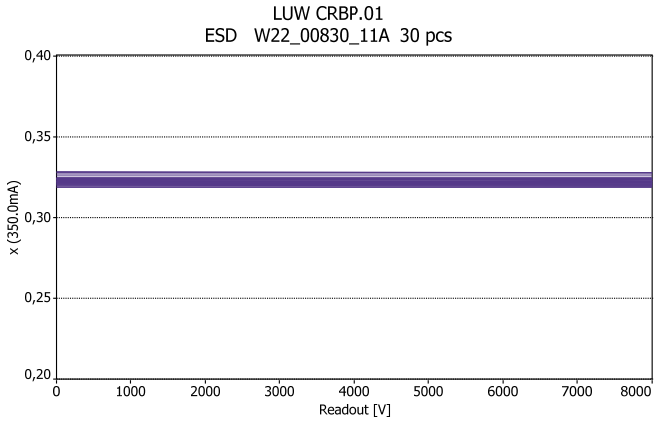

LUW CRBP.01
TC -40°C / 125°C W22_00830_9D 30 pcs
y (350.0mA)
Readout [C]

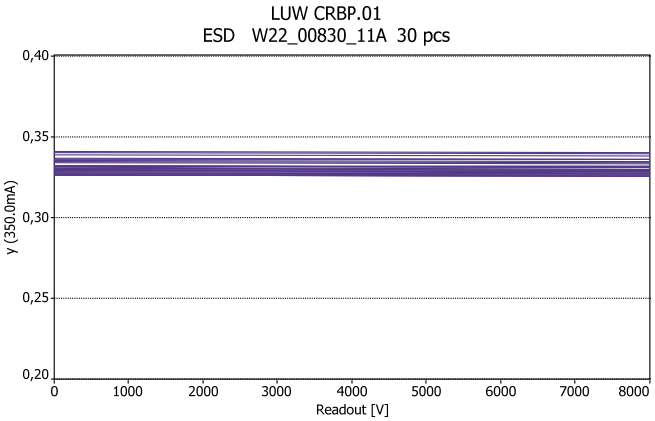
ESD HBM

Lot A

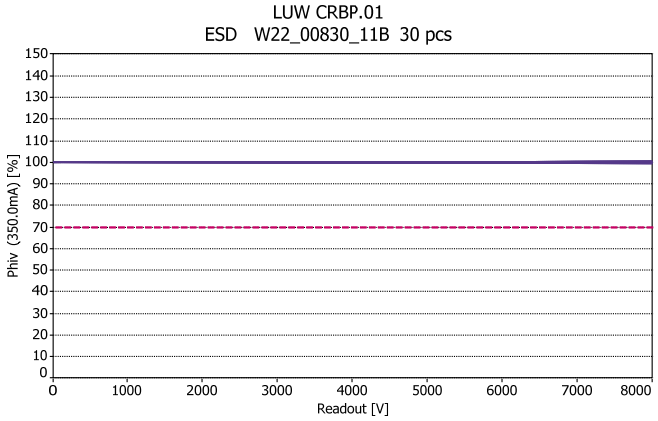

LUW CRBP.01
ESD W22_00830_11A 30 pcs
Phiv (350.0mA) [%]
Readout [V]

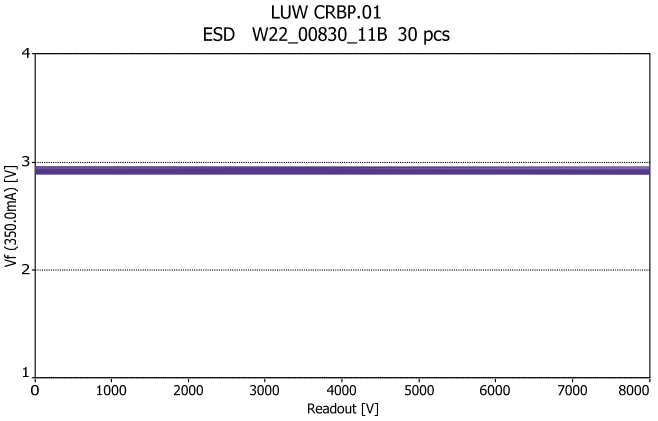

LUW CRBP.01
ESD W22_00830_11A 30 pcs
Vf (350.0mA) [V]
Readout [V]

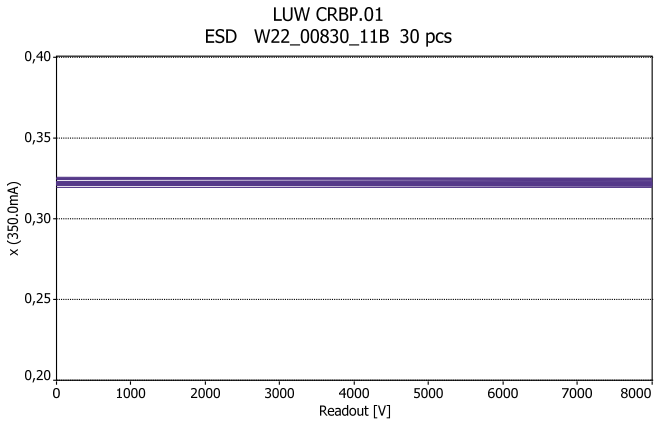

LUW CRBP.01
ESD W22_00830_11A 30 pcs
x (350.0mA)
Readout [V]

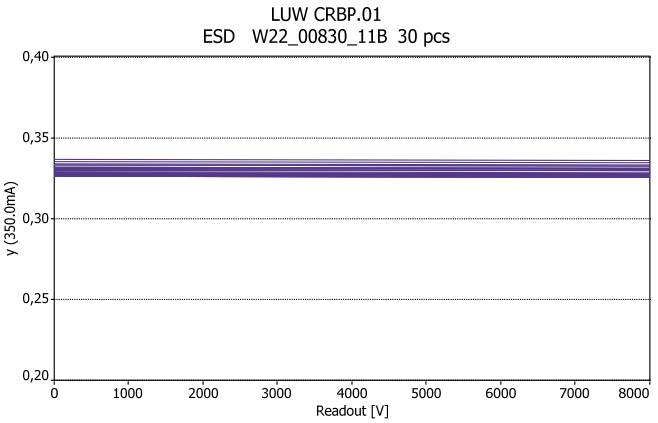

LUW CRBP.01
ESD W22_00830_11A 30 pcs
y (350.0mA)
Readout [V]

Lot B

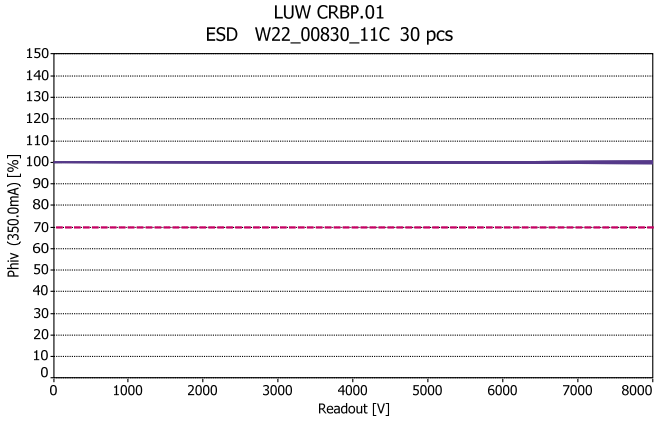

LUW CRBP.01
ESD W22_00830_11B 30 pcs
Phiv (350.0mA) [%]
Readout [V]

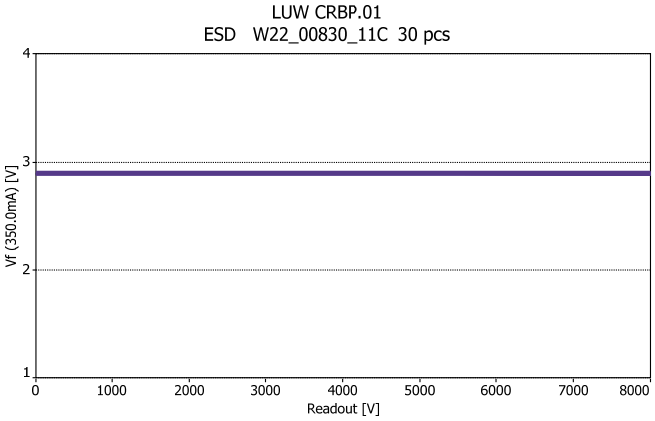

LUW CRBP.01
ESD W22_00830_11B 30 pcs
Vf (350.0mA) [V]
Readout [V]

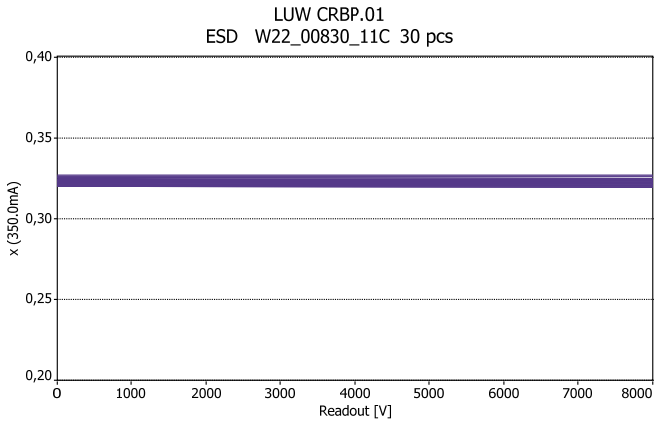

LUW CRBP.01
ESD W22_00830_11B 30 pcs
x (350.0mA)
Readout [V]

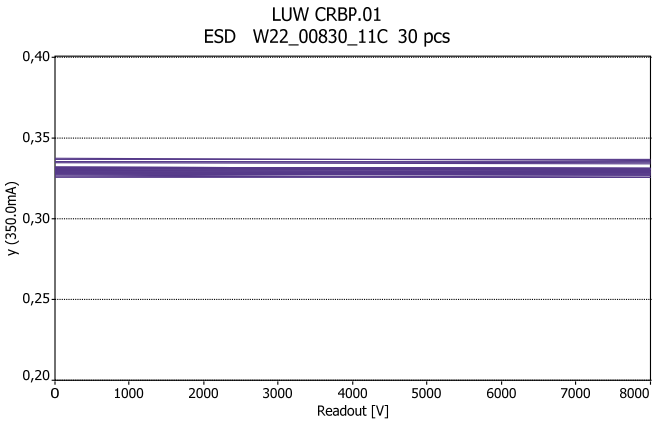

LUW CRBP.01
ESD W22_00830_11B 30 pcs
y (350.0mA)
Readout [V]

Lot C

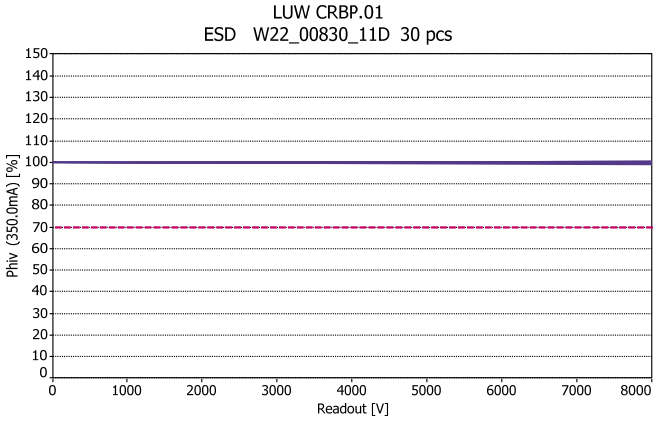

LUW CRBP.01
ESD W22_00830_11C 30 pcs
Phiv (350.0mA) [%]
Readout [V]

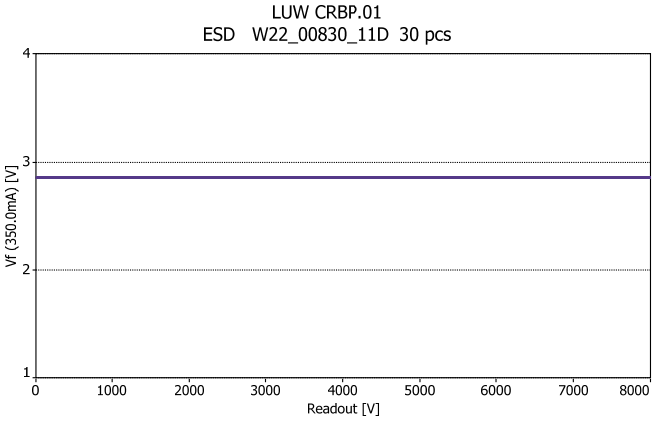

LUW CRBP.01
ESD W22_00830_11C 30 pcs
Vf (350.0mA) [V]
Readout [V]

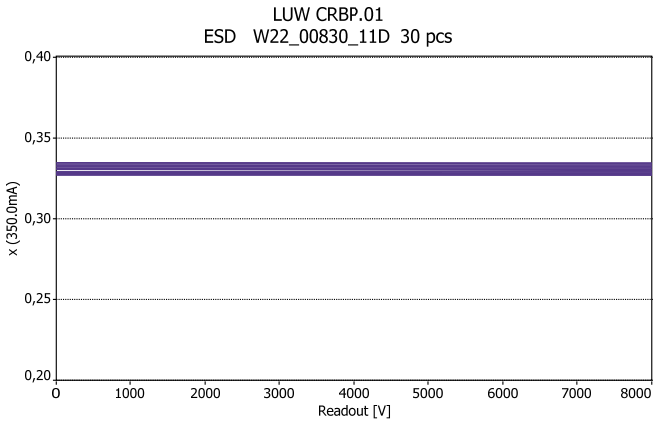

LUW CRBP.01
ESD W22_00830_11C 30 pcs
x (350.0mA)
Readout [V]

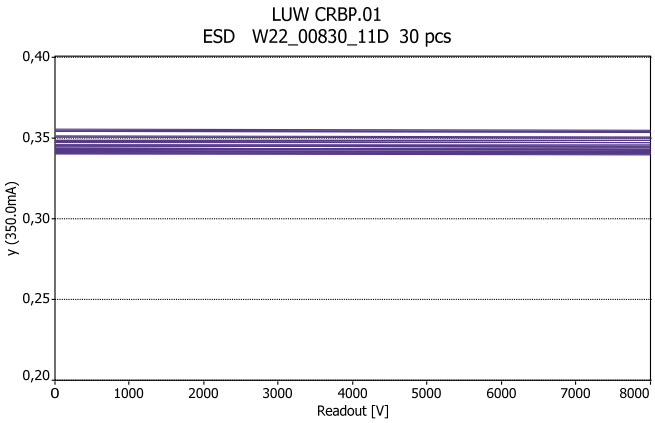

LUW CRBP.01
ESD W22_00830_11C 30 pcs
y (350.0mA)
Readout [V]

Lot D


LUW CRBP.01
ESD W22_00830_11D 30 pcs
Phiv (350.0mA) [%]
Readout [V]

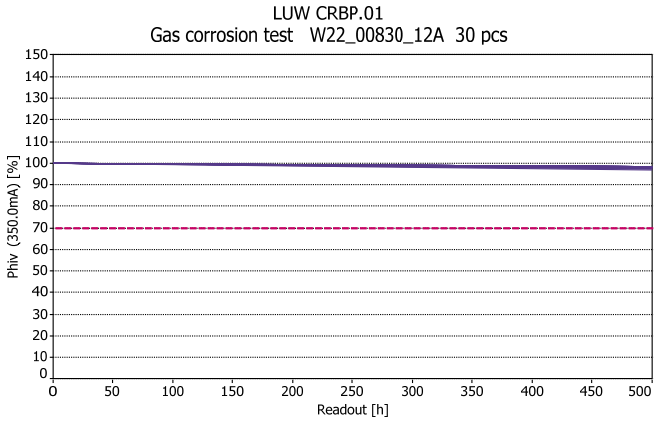

LUW CRBP.01
ESD W22_00830_11D 30 pcs
Vf (350.0mA) [V]
Readout [V]

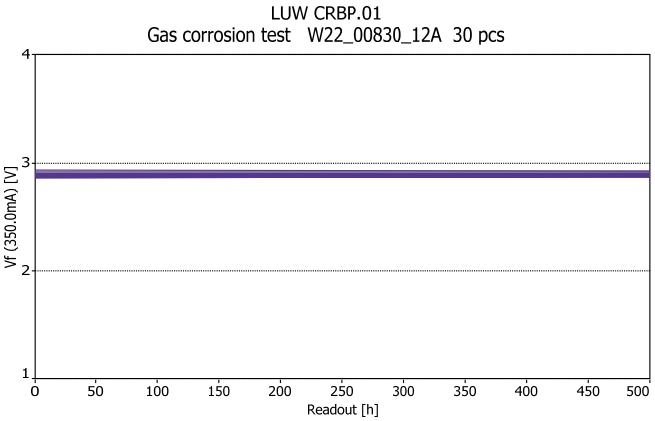

LUW CRBP.01
ESD W22_00830_11D 30 pcs
x (350.0mA)
Readout [V]

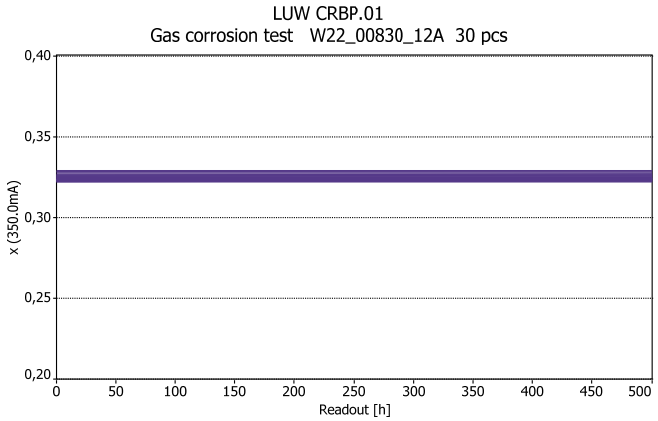

LUW CRBP.01
ESD W22_00830_11D 30 pcs
y (350.0mA)
Readout [V]

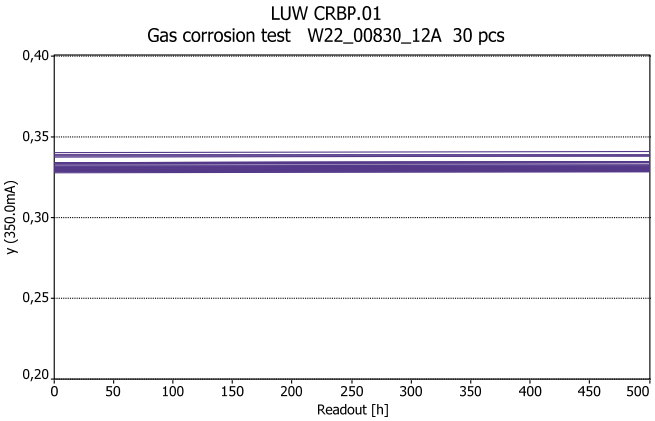
Gas corrosion test

Lot A

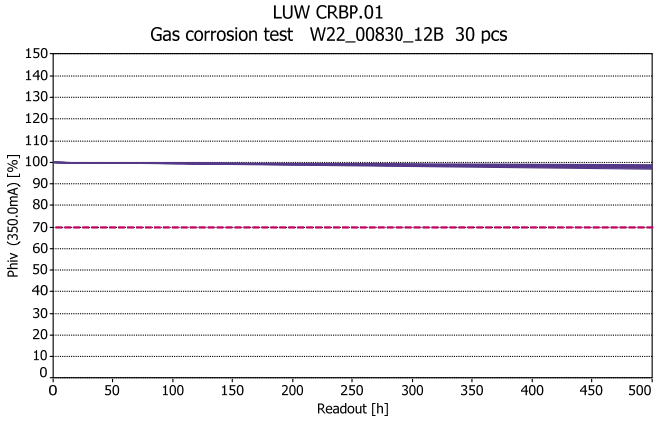


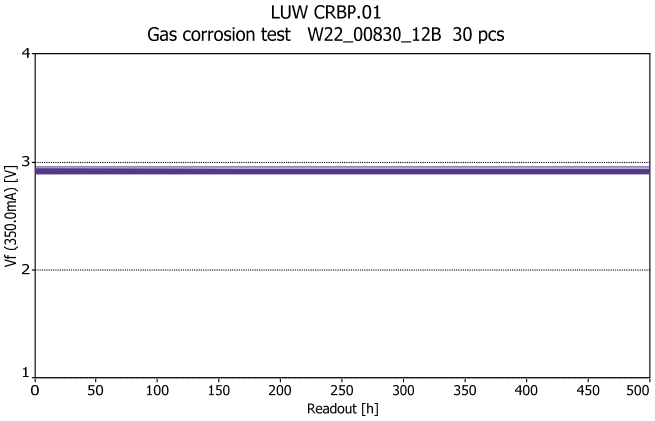


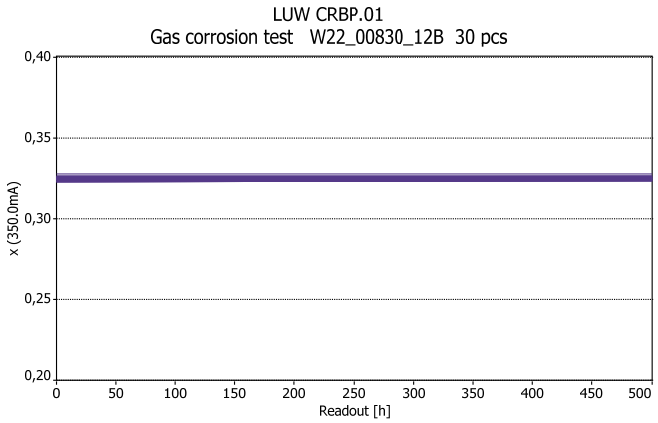


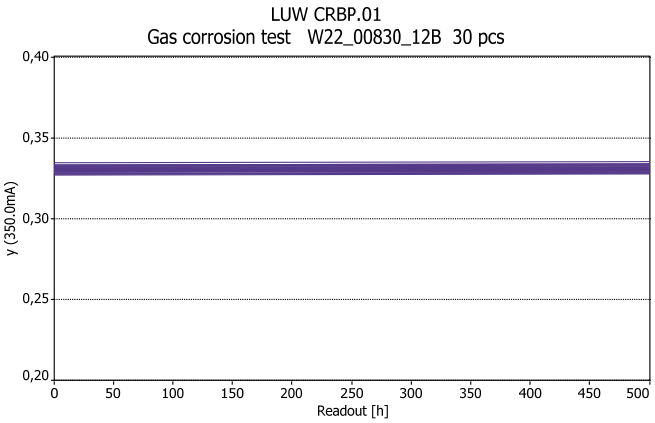


Lot B

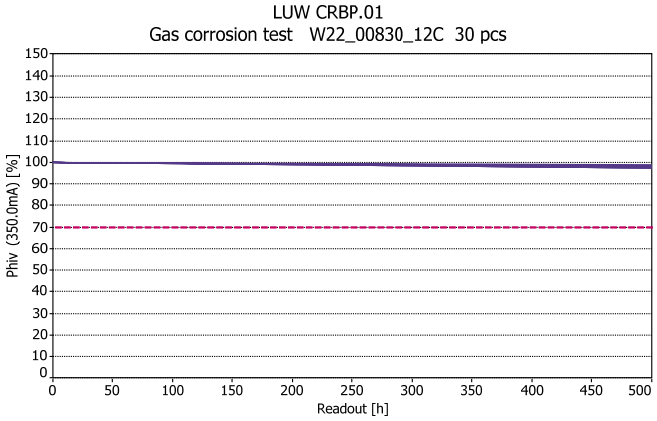

LUW CRBP.01
Gas corrosion test W22_00830_12B 30 pcs
Phiv (350.0mA) [%]
Readout [h]

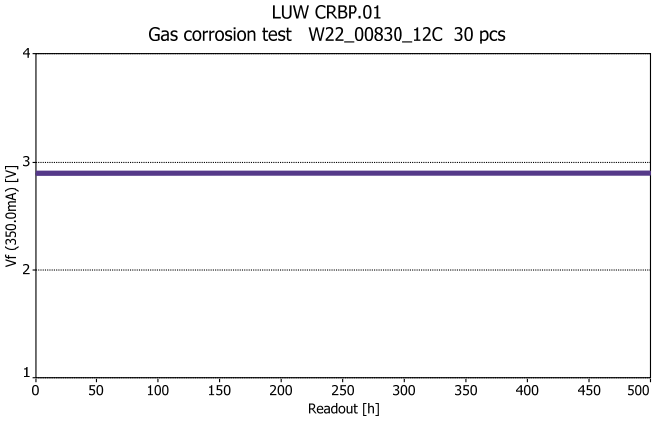

LUW CRBP.01
Gas corrosion test W22_00830_12B 30 pcs
Vf (350.0mA) [V]
Readout [h]

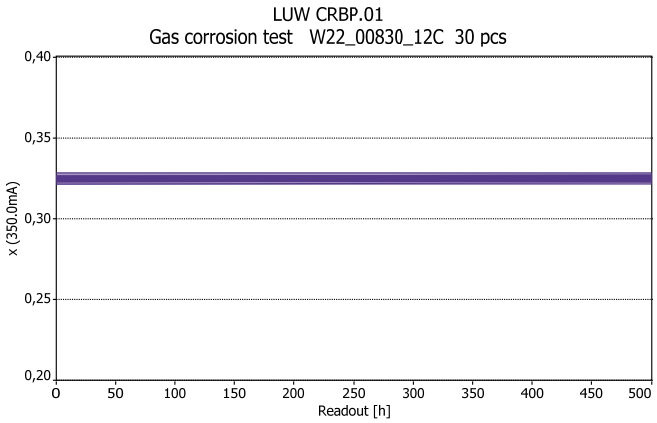

LUW CRBP.01
Gas corrosion test W22_00830_12B 30 pcs
x (350.0mA)
Readout [h]

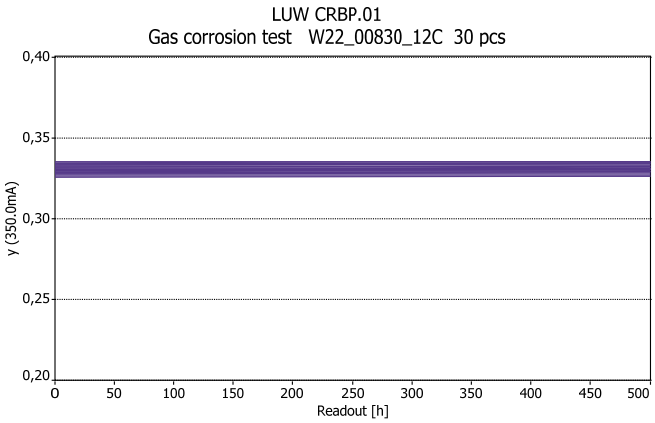

LUW CRBP.01
Gas corrosion test W22_00830_12B 30 pcs
y (350.0mA)
Readout [h]

Lot C

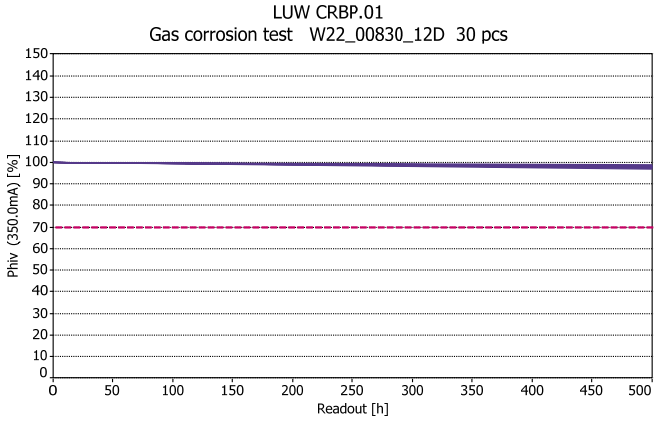

LUW CRBP.01
Gas corrosion test W22_00830_12C 30 pcs
Phiv (350.0mA) [%]
Readout [h]

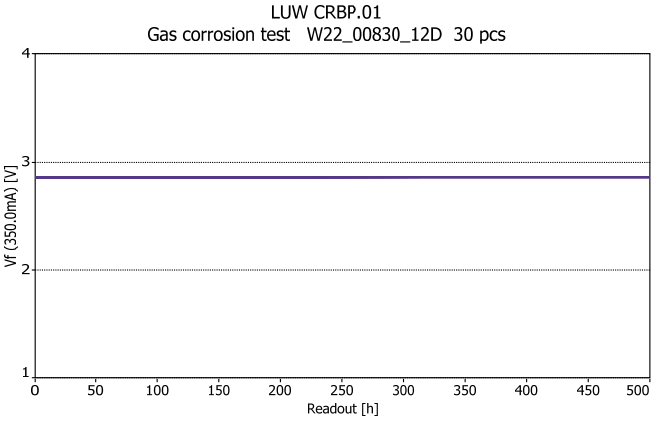

LUW CRBP.01
Gas corrosion test W22_00830_12C 30 pcs
Vf (350.0mA) [V]
Readout [h]

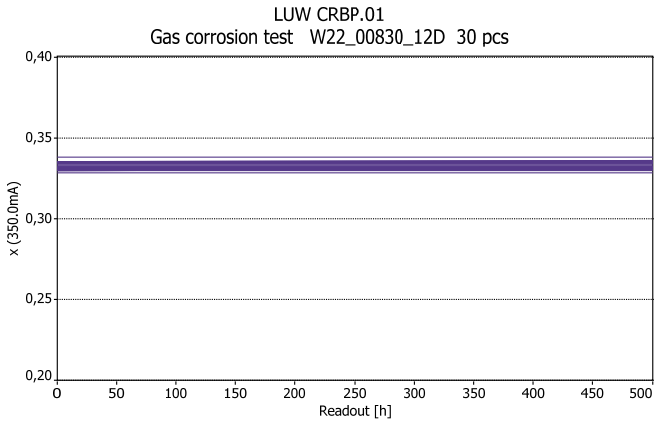

LUW CRBP.01
Gas corrosion test W22_00830_12C 30 pcs
x (350.0mA)
Readout [h]

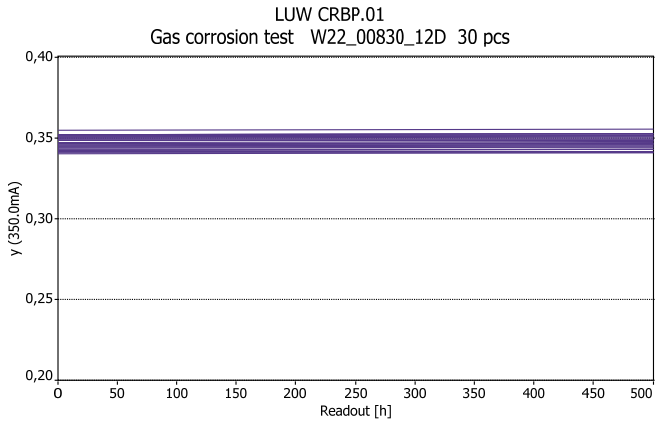

LUW CRBP.01
Gas corrosion test W22_00830_12C 30 pcs
y (350.0mA)
Readout [h]

Lot D


LUW CRBP.01
Gas corrosion test W22_00830_12D 30 pcs
Phiv (350.0mA) [%]
Readout [h]

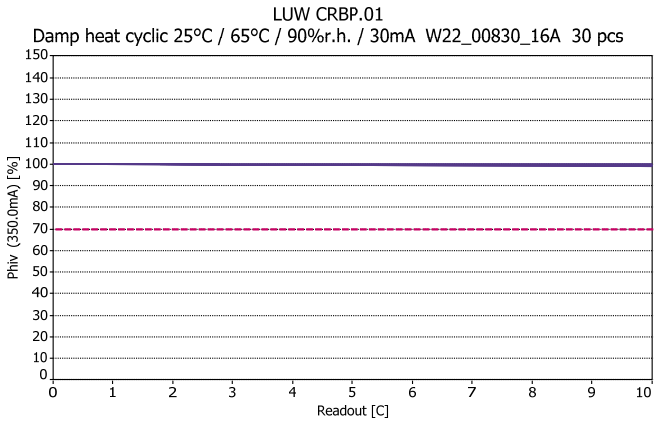

LUW CRBP.01
Gas corrosion test W22_00830_12D 30 pcs
Vf (350.0mA) [V]
Readout [h]

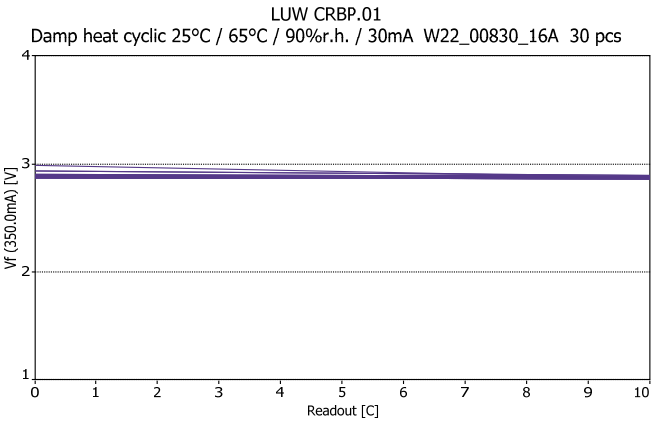

LUW CRBP.01
Gas corrosion test W22_00830_12D 30 pcs
x (350.0mA)
Readout [h]

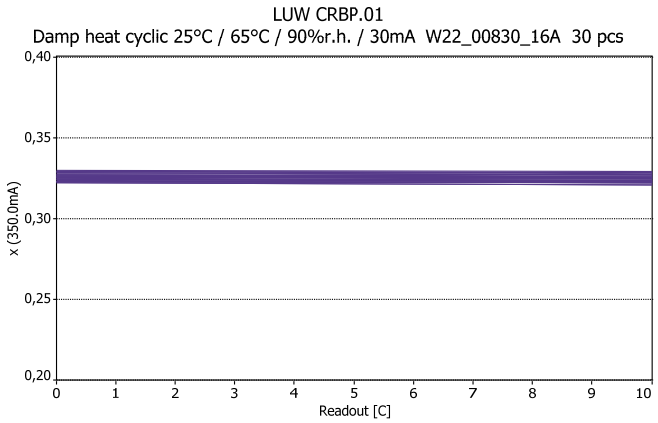

LUW CRBP.01
Gas corrosion test W22_00830_12D 30 pcs
y (350.0mA)
Readout [h]

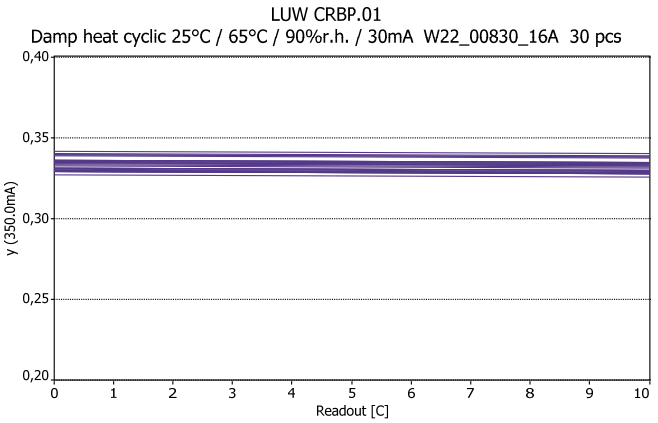
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA

Lot A

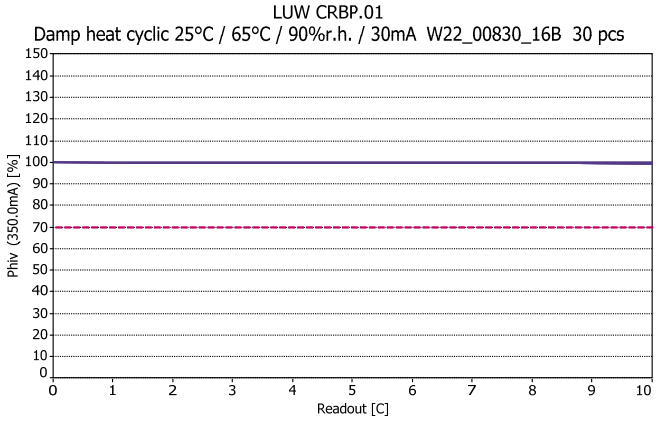


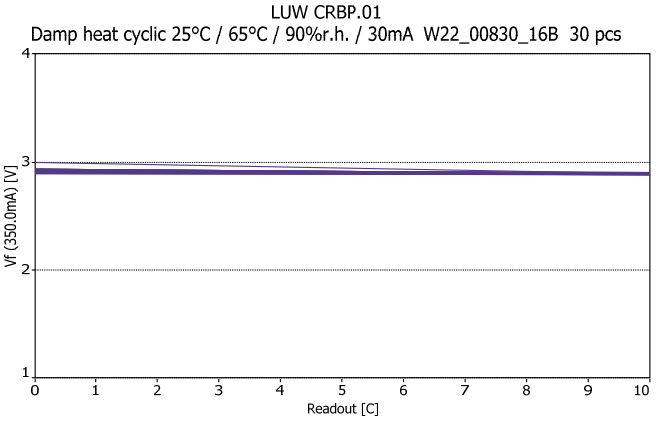


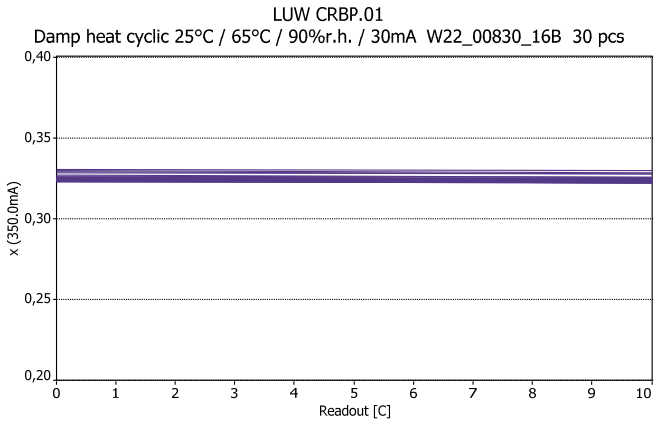


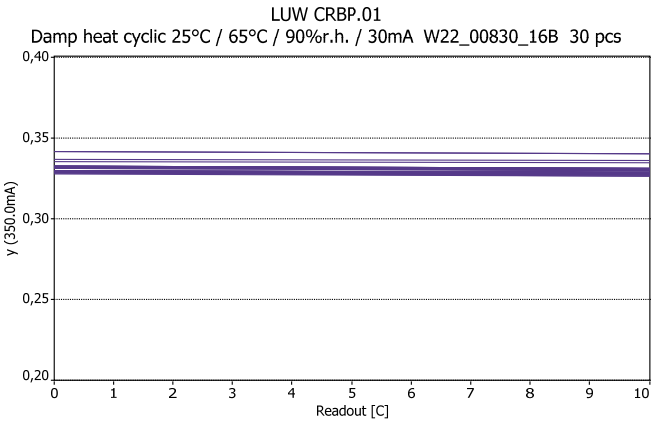


Lot B

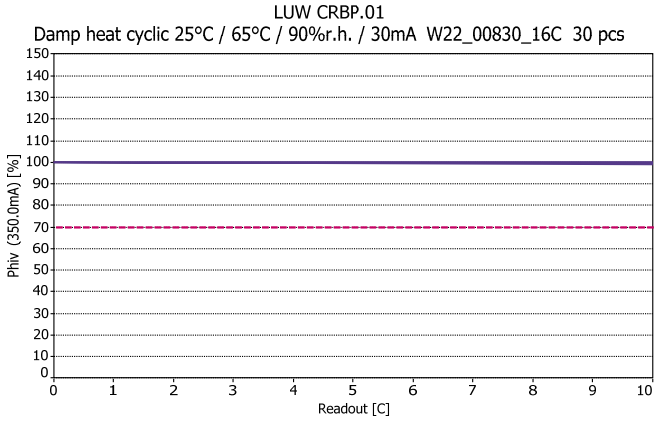

LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16B 30 pcs
Phiv (350.0mA) [%]
Readout [C]

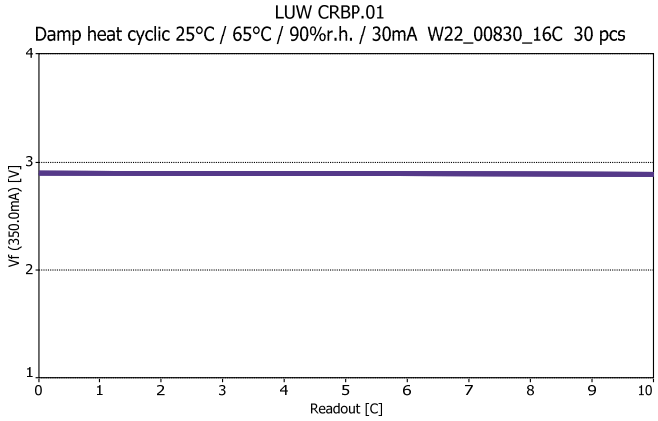

LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16B 30 pcs
Vf (350.0mA) [V]
Readout [C]


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16B 30 pcs
x (350.0mA)
Readout [C]


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16B 30 pcs
y (350.0mA)
Readout [C]

Lot C


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16C 30 pcs
Phiv (350.0mA) [%]
Readout [C]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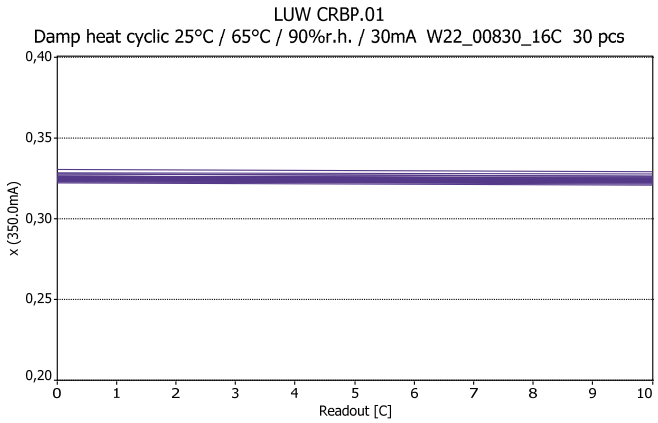
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16C 30 pcs
Vf (350.0mA) [V]
Readout [C]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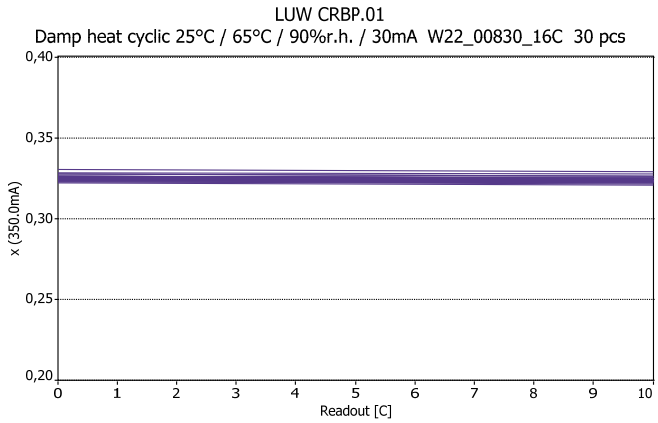
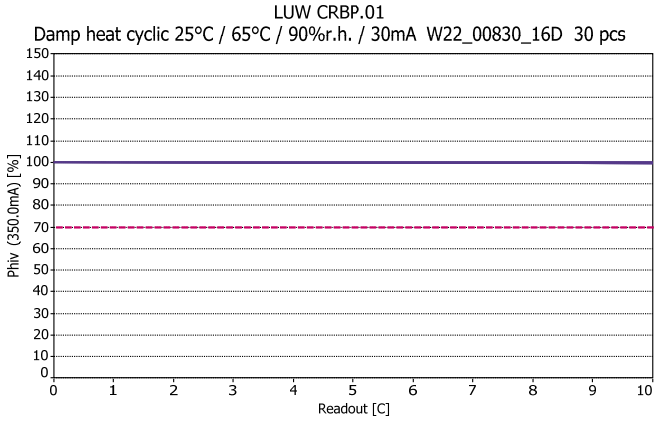
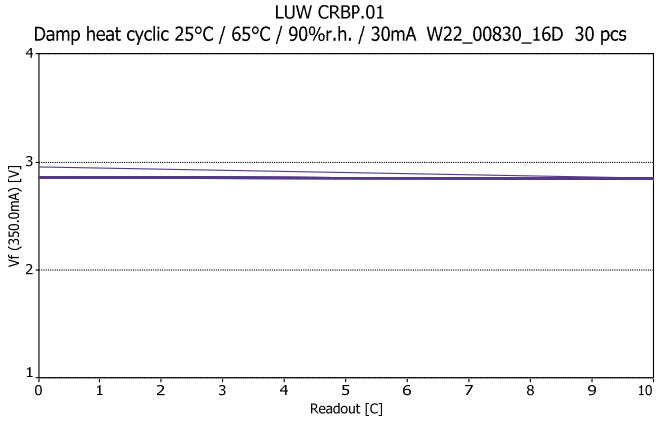
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16C 30 pcs
x (350.0mA)
Readout [C]


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16C 30 pcs
x (350.0mA)
Readout [C]

Lot D


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16D 30 pcs
Phiv (350.0mA) [%]
Readout [C]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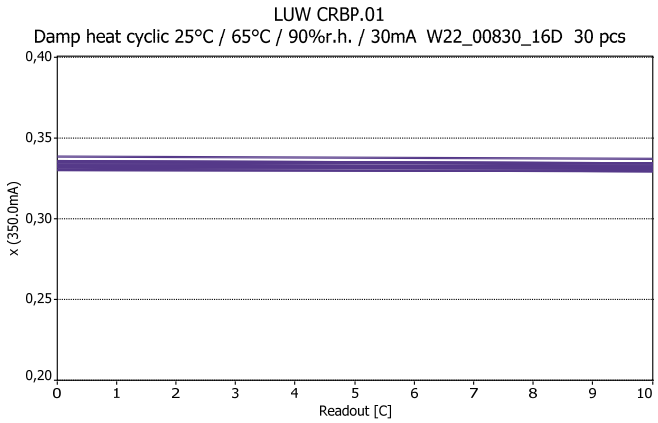
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16D 30 pcs
Vf (350.0mA) [V]
Readout [C]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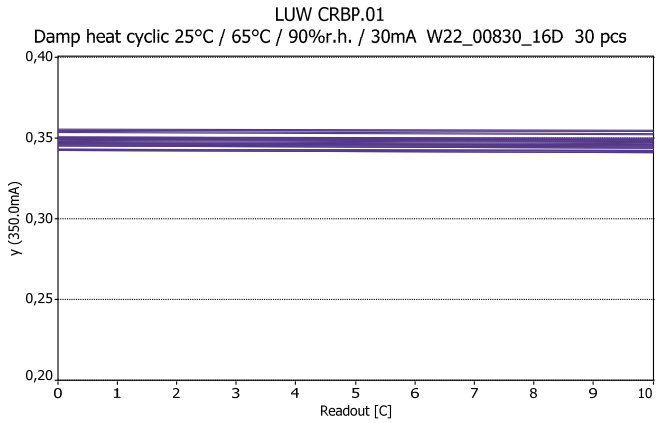
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16D 30 pcs
x (350.0mA)
Readout [C]


LUW CRBP.01
Damp heat cyclic 25°C / 65°C / 90%r.h. / 30mA W22_00830_16D 30 pcs
y (350.0mA)
Readout [C]

END OF DOCUMENT

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