

CMUT3904 NPN  
CMUT3906 PNP

**SURFACE MOUNT SILICON  
COMPLEMENTARY TRANSISTORS**



**SOT-523 CASE**



[www.centralemi.com](http://www.centralemi.com)

**DESCRIPTION:**

The CENTRAL SEMICONDUCTOR CMUT3904 and CMUT3906 are complementary silicon transistors manufactured by the epitaxial planar process, epoxy molded in an SOT-523 surface mount package, designed for small signal general purpose amplifier and switching applications.

**MARKING CODES: CMUT3904: AC1  
CMUT3906: AC2**

**MAXIMUM RATINGS:** ( $T_A=25^{\circ}\text{C}$ )

Collector-Base Voltage  
Collector-Emitter Voltage  
Emitter-Base Voltage  
Continuous Collector Current  
Power Dissipation  
Operating and Storage Junction Temperature  
Thermal Resistance

SYMBOL	CMUT3904	CMUT3906	UNITS
$V_{CBO}$	60	40	V
$V_{CEO}$	40	40	V
$V_{EBO}$	6.0	5.0	V
$I_C$	200		mA
$P_D$	250		mW
$T_J, T_{stg}$	-65 to +150		$^{\circ}\text{C}$
$\Theta_{JA}$	500		$^{\circ}\text{C/W}$

**ELECTRICAL CHARACTERISTICS:** ( $T_A=25^{\circ}\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		UNITS
		MIN	MAX	MIN	MAX	
$I_{CEV}$	$V_{CE}=30\text{V}, V_{EB}=3.0\text{V}$	-	50	-	50	nA
$BV_{CBO}$	$I_C=10\mu\text{A}$	60	-	40	-	V
$BV_{CEO}$	$I_C=1.0\text{mA}$	40	-	40	-	V
$BV_{EBO}$	$I_E=10\mu\text{A}$	6.0	-	5.0	-	V
$V_{CE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	-	0.20	-	0.25	V
$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.30	-	0.40	V
$V_{BE(SAT)}$	$I_C=10\text{mA}, I_B=1.0\text{mA}$	0.65	0.85	0.65	0.85	V
$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=5.0\text{mA}$	-	0.95	-	0.95	V
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=0.1\text{mA}$	40	-	60	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=1.0\text{mA}$	70	-	80	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=10\text{mA}$	100	300	100	300	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=50\text{mA}$	60	-	60	-	
$h_{FE}$	$V_{CE}=1.0\text{V}, I_C=100\text{mA}$	30	-	30	-	

CMUT3904 NPN  
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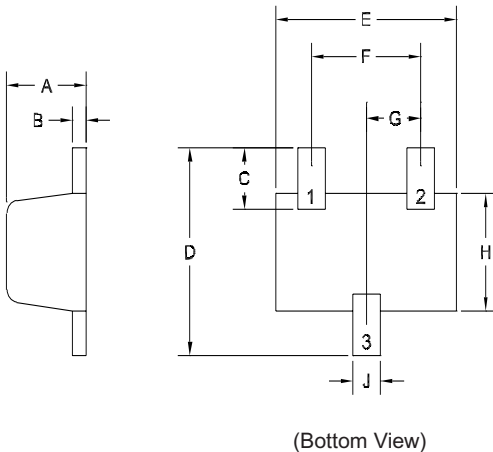
**SURFACE MOUNT SILICON  
COMPLEMENTARY TRANSISTORS**



**ELECTRICAL CHARACTERISTICS - Continued:** ( $T_A=25^\circ\text{C}$  unless otherwise noted)

SYMBOL	TEST CONDITIONS	CMUT3904		CMUT3906		UNITS
		MIN	MAX	MIN	MAX	
$f_T$	$V_{CE}=20\text{V}$ , $I_C=10\text{mA}$ , $f=100\text{MHz}$	300	-	250	-	MHz
$C_{ob}$	$V_{CB}=5.0\text{V}$ , $I_E=0$ , $f=1.0\text{MHz}$	-	4.0	-	4.5	pF
$C_{ib}$	$V_{BE}=0.5\text{V}$ , $I_C=0$ , $f=1.0\text{MHz}$	-	12	-	12	pF
$h_{ie}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	10	2.0	12	k $\Omega$
$h_{re}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	0.5	8.0	0.1	10	$\times 10^{-4}$
$h_{fe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	100	400	100	400	
$h_{oe}$	$V_{CE}=10\text{V}$ , $I_C=1.0\text{mA}$ , $f=1.0\text{kHz}$	1.0	40	3.0	60	$\mu\text{S}$
NF	$V_{CE}=5.0\text{V}$ , $I_C=100\mu\text{A}$ , $R_S=1.0\text{k}\Omega$ $f=10\text{Hz}$ to $15.7\text{kHz}$	-	5.0	-	4.0	dB
$t_d$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$	-	35	-	35	ns
$t_r$	$V_{CC}=3.0\text{V}$ , $V_{BE}=0.5\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=1.0\text{mA}$	-	35	-	35	ns
$t_s$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$	-	170	-	170	ns
$t_f$	$V_{CC}=3.0\text{V}$ , $I_C=10\text{mA}$ , $I_{B1}=I_{B2}=1.0\text{mA}$	-	80	-	80	ns

**SOT-523 CASE - MECHANICAL OUTLINE**



DIMENSIONS				
SYMBOL	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.023	0.031	0.58	0.78
B	0.002	0.008	0.04	0.20
C	0.013	0.021	0.34	0.54
D	0.059	0.067	1.50	1.70
E	0.059	0.067	1.50	1.70
F	0.035	0.043	0.90	1.10
G	0.020		0.50	
H	0.031	0.039	0.78	0.98
J	0.010	0.014	0.25	0.35

SOT-523 (REV: R2)

**LEAD CODE:**

- 1) Base
- 2) Emitter
- 3) Collector

**MARKING CODES:**

CMUT3904: AC1  
CMUT3906: AC2

R6 (15-September 2022)

## OUTSTANDING SUPPORT AND SUPERIOR SERVICES



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### PRODUCT SUPPORT

Central's operations team provides the highest level of support to insure product is delivered on-time.

- Supply management (Customer portals)
- Inventory bonding
- Consolidated shipping options
- Custom bar coding for shipments
- Custom product packing

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### DESIGNER SUPPORT/SERVICES

Central's applications engineering team is ready to discuss your design challenges. Just ask.

- Free quick ship samples (2<sup>nd</sup> day air)
- Online technical data and parametric search
- SPICE models
- Custom electrical curves
- Environmental regulation compliance
- Customer specific screening
- Up-screening capabilities
- Special wafer diffusions
- PbSn plating options
- Package details
- Application notes
- Application and design sample kits
- Custom product and package development

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### REQUESTING PRODUCT PLATING

1. If requesting Tin/Lead plated devices, add the suffix "TIN/LEAD" to the part number when ordering (example: 2N2222A TIN/LEAD).
2. If requesting Lead (Pb) Free plated devices, add the suffix "PBFREE" to the part number when ordering (example: 2N2222A PBFREE).

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### CONTACT US

#### Corporate Headquarters & Customer Support Team

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**Worldwide Field Representatives:**  
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**Worldwide Distributors:**  
[www.centrasemi.com/wwdistributors](http://www.centrasemi.com/wwdistributors)

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For the latest version of Central Semiconductor's **LIMITATIONS AND DAMAGES DISCLAIMER**, which is part of Central's Standard Terms and Conditions of sale, visit: [www.centrasemi.com/terms](http://www.centrasemi.com/terms)



<https://www.centrasemi.com>

# Product End of Life Notification

PDN ID:	PDN01276
Notification Date:	2/19/25
Last Buy Date:	8/19/25
Last Shipment Date	2/19/26

Summary: All devices manufactured in the SOT-523 package are discontinued and now classified as End of Life (EOL).

Available options are:

1. Orders will be accepted for products with available inventory.
2. Last Time Buy (LTB) may be available for certain items.
3. A replacement product not available at the time of this notice, may be under development.

Please contact your Central Semiconductor Customer Service Representative at 001.631.435.1110

Although Central Semiconductor makes every effort to continue to produce devices that have been proclaimed EOL (End of Life) by other manufacturers, it is an accepted industry practice to discontinue certain devices when customer demand falls below a minimum level of sustainability. Accordingly, the following product(s) have been transitioned to End of Life status as part of Central's ongoing Product Portfolio Management. Any replacement products are noted below. The effective date for placing last purchase orders will be six (6) months from the date of this notice and twelve (12) months from the notice date for final shipments, and minimum order quantities may apply. The last purchase and shipment dates may be extended if inventory is available.

**\* All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.**

Central Part Number	Suggested Replacement
BC846AT BK	N/A
BC846AT TR	N/A
BC846BT BK	N/A
BC846BT TR	N/A
BC847AT BK	N/A
BC847AT TR	N/A
BC847BT BK	N/A
BC847BT TR	N/A
BC847CT BK	N/A
BC847CT TR	N/A
BC856AT BK	N/A
BC856AT TR	N/A
BC856BT BK	N/A
BC856BT TR	N/A
BC857AT BK	N/A
BC857AT TR	N/A
BC857BT BK	N/A
BC857BT TR	N/A
BC857CT BK	N/A
BC857CT TR	N/A
CMUDM7001 BK	N/A
CMUDM7001 TR	N/A
CMUDM7004 BK	N/A
CMUDM7004 TR	N/A
CMUDM7005 BK	N/A
CMUDM7005 TR	N/A
CMUDM8001 BK	N/A
CMUDM8001 TR	N/A
CMUDM8004 BK	N/A
CMUDM8004 TR	N/A
CMUDM8005 BK	N/A

\*\*\* CONTINUED \*\*\*

DISCLAIMER: This End of Life (EOL) notification is in accordance with JEDEC standard JESD48 - Product Discontinuance. Central Semiconductor will make every effort to offer life-time buy (LTB) opportunities and/or offer replacement devices to existing customers for discontinued devices, however, one or both may not be possible for all devices. Please contact your local Central Semiconductor sales representative for LTB opportunities/additional information.



<https://www.centrasemi.com>

# Product End of Life Notification

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\*\*\* CONTINUED FROM PRIOR PAGE \*\*\*

\* All Plating types (PBFREE,TIN/LEAD) for each item listed are included in this notice.

Central Part Number	Suggested Replacement
CMUDM8005 TR	N/A
CMUD2838 BK	N/A
CMUD2838 TR	N/A
CMUD4448 BK	N/A
CMUD4448 TR	N/A
CMUD6263AE BK	N/A
CMUD6263AE TR	N/A
CMUD6263CE BK	N/A
CMUD6263CE TR	N/A
CMUD6263E BK	N/A
CMUD6263E TR	N/A
CMUD6263SE BK	N/A
CMUD6263SE TR	N/A
CMUSH05-4 BK	N/A
CMUSH05-4 TR	N/A
CMUT2222A BK	N/A
CMUT2222A TR	N/A
CMUT2907A BK	N/A
CMUT2907A TR	N/A
CMUT3410 BK	N/A
CMUT3410 TR	N/A
CMUT3904 BK	N/A
CMUT3904 TR	N/A
CMUT3906 BK	N/A
CMUT3906 TR	N/A
CMUT4401 BK	N/A
CMUT4401 TR	N/A
CMUT4403 BK	N/A
CMUT4403 TR	N/A
CMUT5087E BK	N/A
CMUT5087E TR	N/A
CMUT5088E BK	N/A
CMUT5088E TR	N/A
CMUT5179 BK	N/A
CMUT5179 TR	N/A
CMUT5401 BK	N/A
CMUT5401 TR	N/A
CMUT5551 BK	N/A
CMUT5551 TR	N/A
CMUT7410 BK	N/A
CMUT7410 TR	N/A

Central would be happy to assist you by providing additional information or technical data to help locate an alternate source if we have no replacement available. If you would like assistance, please visit

<https://my.centrasemi.com/submit-inquiry?type=ER> to submit an online inquiry.

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