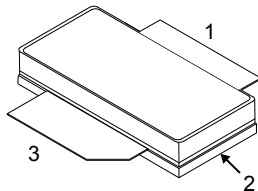


75 W, 28 V, 3.1 to 3.6 GHz RF power LDMOS transistor



B2

Pin connection	
Pin	Connection
1	Gate
2	Source (bottom side)
3	Drain

Features

Order code	Frequency	V _{DD}	P _{OUT}	Gain	Efficiency
RF2L36075CF2	3500 MHz	28 V	75 W	12.5 dB	45%

- High efficiency and linear gain operations
- Integrated ESD protection
- Internal input matching for ease of use
- Large positive and negative gate-source voltage range for improved class C operation
- Excellent thermal stability, low HCI drift
- In compliance with the european directive 2002/95/EC

Applications

- Telecom
- S-Band radar

Description

The **RF2L36075CF2** is a 75 W internally matched LDMOS transistor designed for multicarrier WCDMA/PCS/DCS/LTE base stations and S-Band radar applications in the frequency range from 3.1 to 3.6 GHz. It can be used in class AB, B or C for all typical cellular base station modulation formats.



Product status link
RF2L36075CF2

Product summary	
Order code	RF2L36075CF2
Marking	2L36075
Package	B2
Packing	Tape and reel 13"
Base / Bulk qty	120/120

1 Electrical ratings

Table 1. Absolute maximum ratings ($T_C = 25\text{ °C}$)

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-source voltage	60	V
V_{GS}	Gate-source voltage	-6 to 10	V
V_{DD}	Maximum operating voltage	32	V
T_{STG}	Storage temperature range	-65 to 150	°C
T_J	Maximum junction temperature	200	°C

Table 2. Thermal data

Symbol	Parameter	Value	Unit
$R_{thJC}^{(1)}$	Thermal resistance, junction-to-case	0.35	°C/W

1. $T_C = 85\text{ °C}$, $T_J = 200\text{ °C}$, DC test.

Table 3. ESD protection

Symbol	Parameter	Class
HBM	Human body model (according to ANSI/ESDA/JEDEC JS001-2017)	1B
CDM	Charge device model (according to ANSI/ESDA/JEDEC JS-002-2014)	C3

2 Electrical characteristics

$T_C = 25\text{ }^{\circ}\text{C}$ unless otherwise specified.

Table 4. Static

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
$V_{(BR)DSS}$	Drain-source breakdown voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 100\text{ }\mu\text{A}$	60			V
I_{DSS}	Zero-gate voltage drain current	$V_{GS} = 0\text{ V}$, $V_{DS} = 28\text{ V}$			1	μA
		$V_{GS} = 0\text{ V}$, $V_{DS} = 50\text{ V}$				
I_{GSS}	Gate-body leakage current	$V_{GS} = -6/10\text{ V}$, $V_{DS} = 0\text{ V}$			± 100	nA
$V_{GS(th)}$	Gate threshold voltage	$V_{DS} = 1\text{ V}$, $I_{DS} = 600\text{ }\mu\text{A}$	1.75		2.50	V
		$V_{DS} = 28\text{ V}$, $I_{DS} = 600\text{ }\mu\text{A}$				
$V_{GS(Q)}$	Gata quiescent voltage	$V_{DS} = 1\text{ V}$, $I_{DS} = 600\text{ mA}$		3		V
$V_{DS(on)}$	Static drain-source on-voltage	$V_{GS} = 10\text{ V}$, $I_{DS} = 800\text{ mA}$	30		170	mV
		$V_{GS} = 10\text{ V}$, $I_{DS} = 3.5\text{ A}$	150		750	
$I_{DS(on)}$	Static drain-source on-current	$V_{GS} = 10\text{ V}$, $V_{DS} = 100\text{ mV}$			2.5	A
$R_{DS(on)}$	Static drain-source on-resistance	$V_{GS} = 10\text{ V}$, $I_{DS} = 800\text{ mA}$			1	Ω
		$V_{GS} = 10\text{ V}$, $I_{DS} = 3.5\text{ A}$				

Table 5. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
f	Frequency		3100		3500	MHz
P_{OUT}	Output power	f = 3500 MHz, 1 dB compression point		75		W
G_{PS}	Power gain			12.5		dB
η_D	Drain efficiency			45		%
VSWR	Load mismatch	at 10 W WCDMA Output Power			10:1	

Note: $V_{DD} = 28\text{ V}$, $I_{DQ} = 600\text{ mA}$, pulsed CW, $PW = 10\text{ }\mu\text{s}$, duty cycle = 10%.

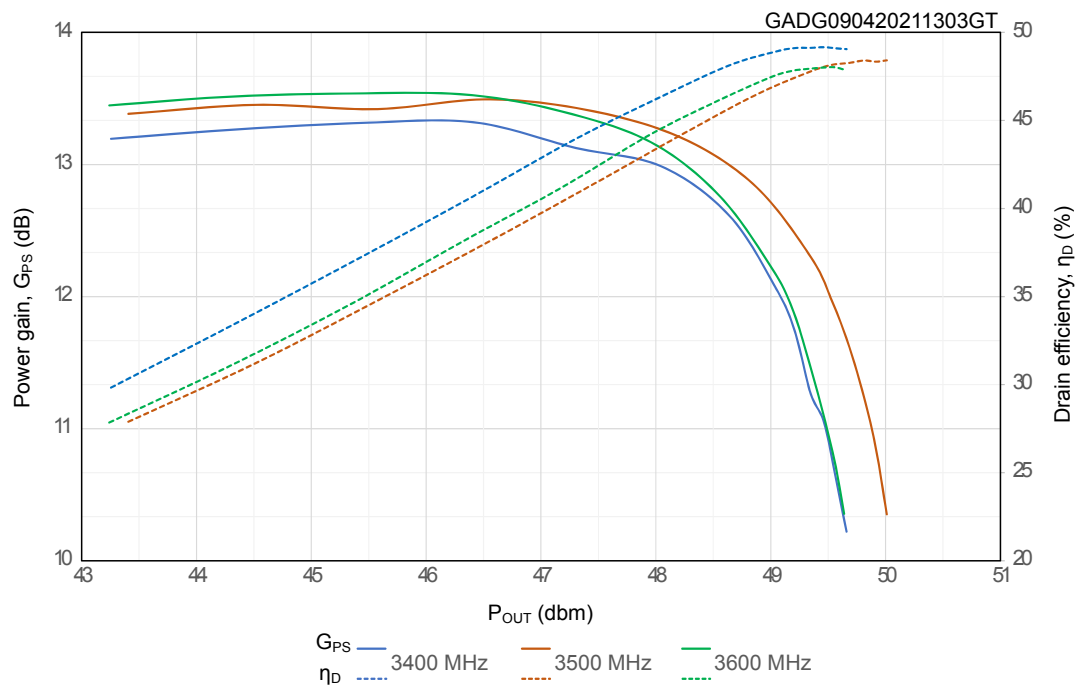
3 Typical performance

3.1 Pulsed CW performance

Table 6. Typical performance vs frequency

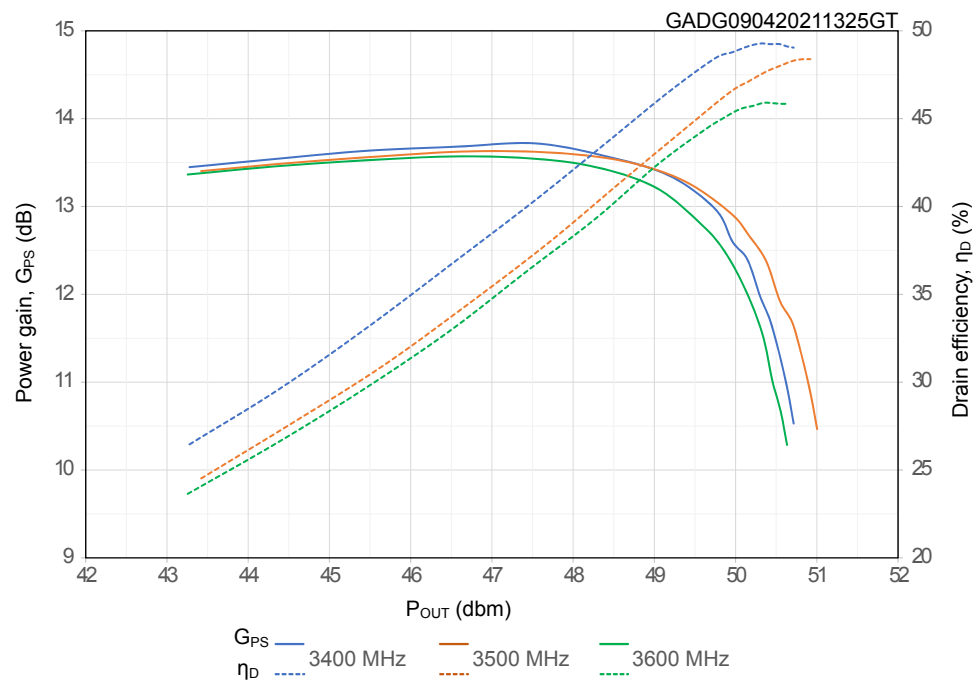
f (MHz)	$G_{PS}@P_{1dB}$ (dB)	P_{1dB} (dBm)	$\eta_D @P_{1dB}$ (%)	P_{3dB} (dBm)	$\eta_D @P_{3dB}$ (%)
3400	12.3	48.3	46.3	50	49
3500	12.5	48.8	44.7	49.6	47
3600	12.5	48.2	42.8	49.3	48

Figure 1. Power gain and drain efficiency vs output power over 3400-3600 MHz band ($V_{DD} = 28$ V)



Note: $I_{DQ} = 600$ mA, pulse width = 10 μ s, duty cycle = 10%.

Figure 2. Power gain and drain efficiency vs output power over 3400-3600 MHz band ($V_{DD} = 32$ V)



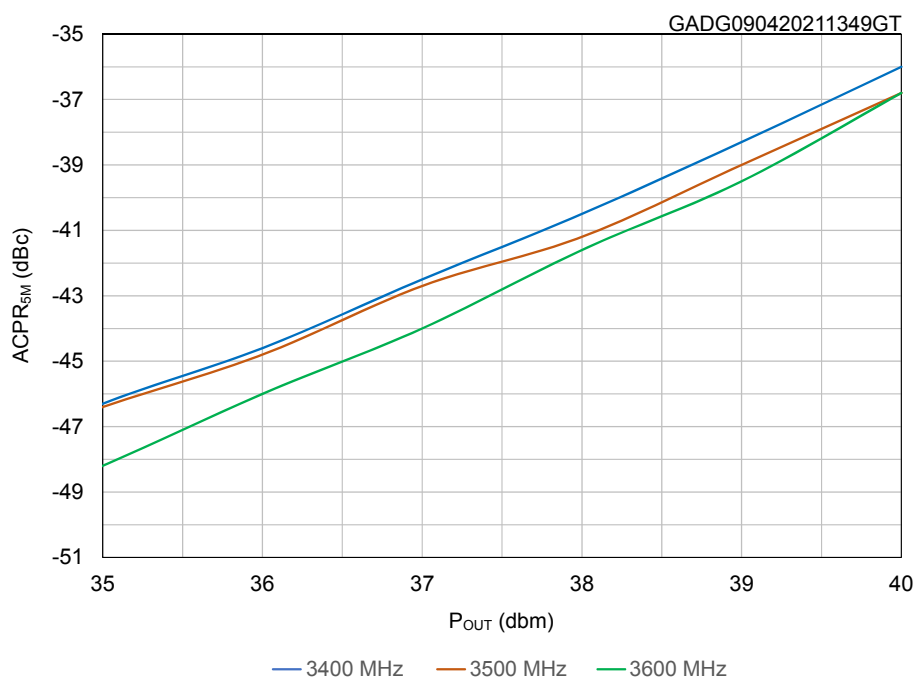
Note: $I_{DQ} = 600$ mA, pulse width = 10 μ s, duty cycle = 10%.

3.2 WCDMA performance

Table 7. Typical Single-Carrier W-CDMA performance

$P_{OUT, avg}(dBm)$	$ACPR_{5M} (dBc)$		
	3400 MHz	3500 MHz	3600 MHz
33	-50.4	-50.2	-52.0
34	-48.4	-48.1	-50.2
35	-46.3	-46.4	-48.2
36	-44.6	-44.8	-46.0
37	-42.5	-42.7	-44.0
38	-40.5	-41.2	-41.6
39	-38.3	-39.0	-39.5
40	-36.0	-36.8	-36.8

Figure 3. $ACPR_{5M}$ vs output power over 3400-3600 MHz band



Note: $V_{DD} = 28\text{ V}$, $I_{DQ} = 600\text{ mA}$, WCDMA signal: 3GPP test model 1; 1 to 64 DPCH; channel bandwidth = 3.84 MHz, PAR = 10.5 dB at 0.01% probability on CCDF.

4 Test circuits

Figure 4. Test circuit layout (over 3400 – 3600 MHz band)

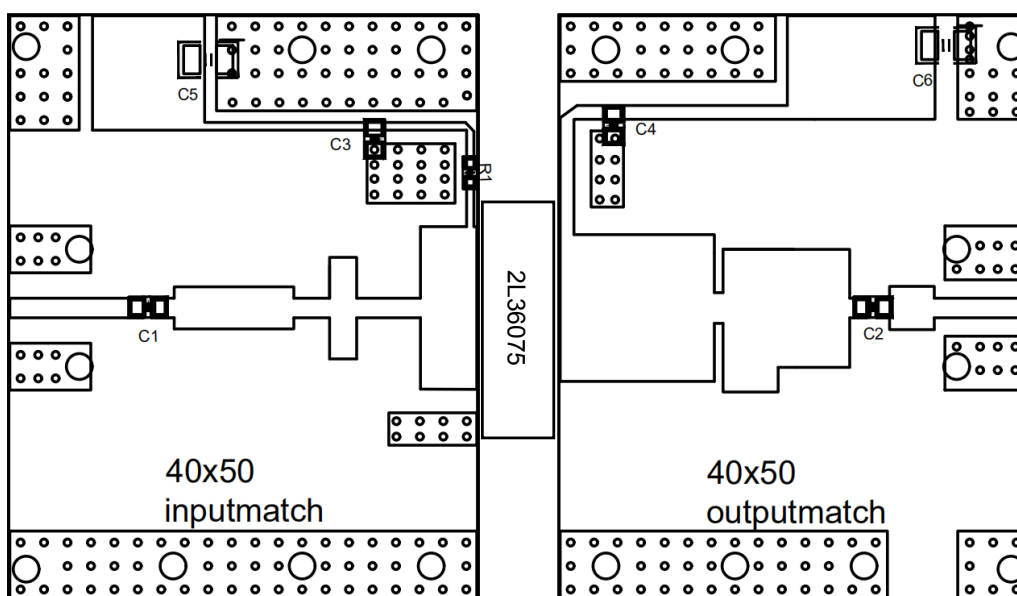


Figure 5. Test circuit photo (over 3400 - 3600 MHz band)

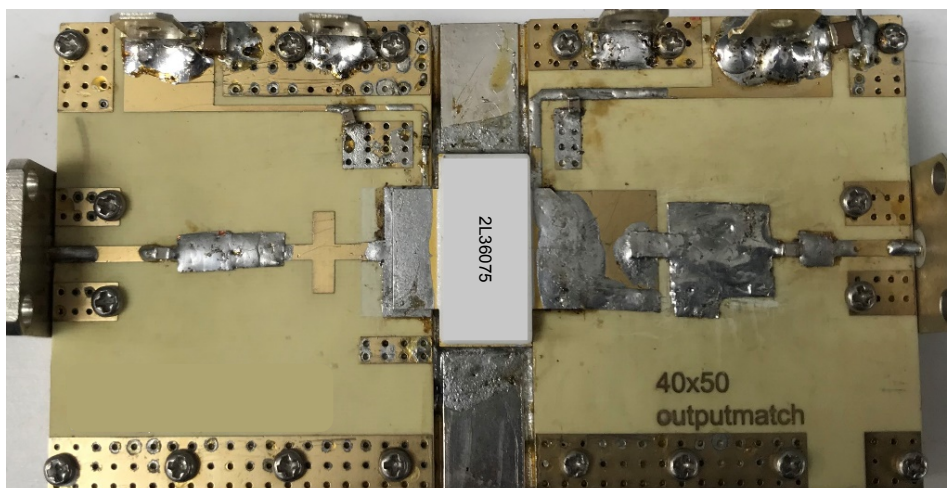


Table 8. Components list

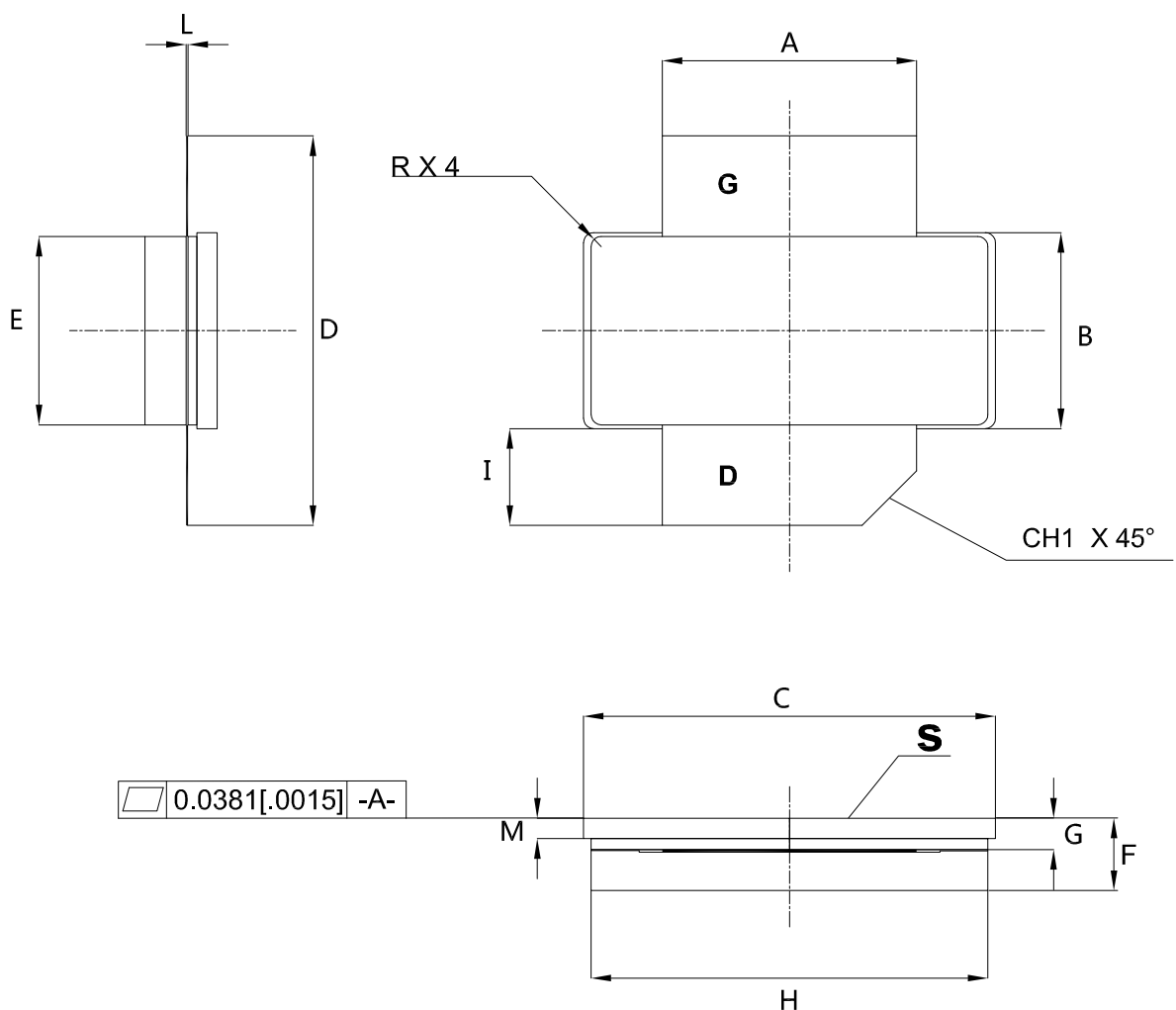
Component	Value	Size	Reference
C1, C2, C3, C4	6.8 pF	0805	ATC600F
C5, C6	10 μ F	1210	ceramic multilayer capacitor
R1	10 Ω	0603	chip resistor
PCB	0.508 mm (0.020") thick, $\epsilon_r = 3.48$, Rogers RO4350B, 1 oz. copper		

5 Package information

In order to meet environmental requirements, ST offers these devices in different grades of **ECOPACK** packages, depending on their level of environmental compliance. ECOPACK specifications, grade definitions and product status are available at: www.st.com. ECOPACK is an ST trademark.

5.1 B2 package information

Figure 6. B2 package outline



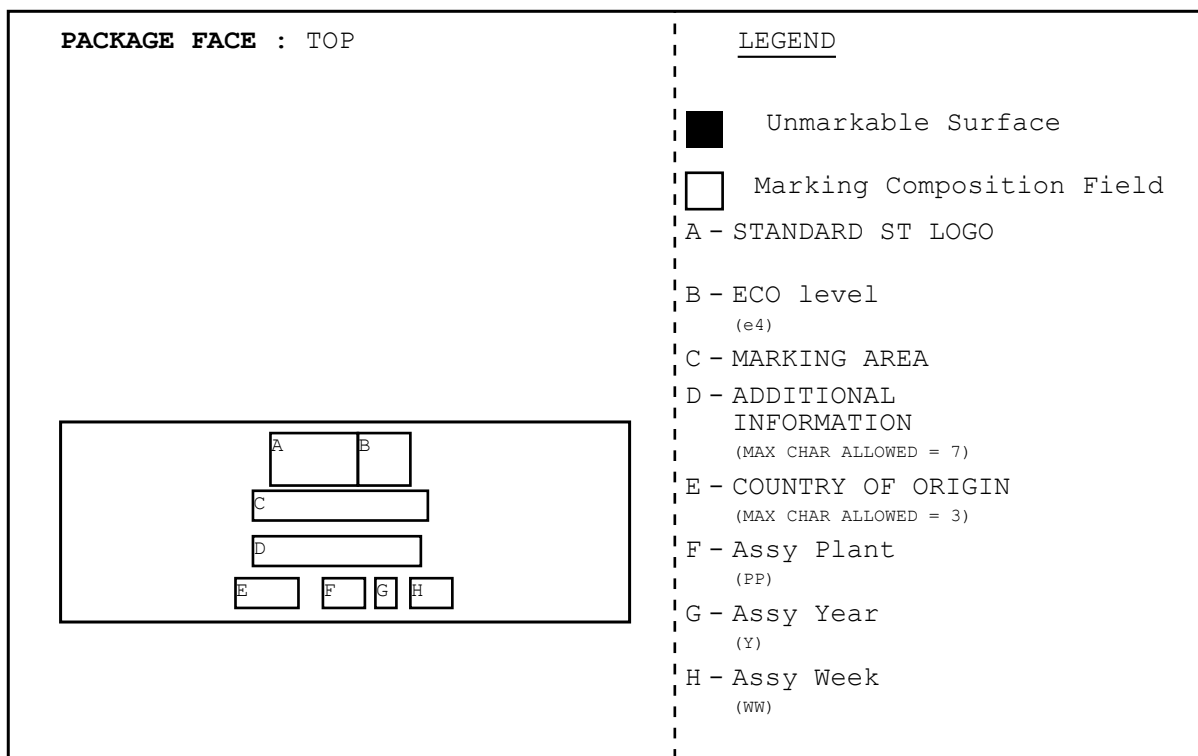
00418521_2

Table 9. B2 mechanical data

Symbol	Millimetres		
	Min	Typ	Max
A	12.57	12.7	12.83
B	9.65	9.78	9.91
C	20.44	20.57	20.70
D	19.31	19.44	19.57
E	9.27	9.40	9.53
F	3.23	3.61	3.99
G	1.44	1.57	1.70
H	19.68	19.81	19.94
I	4.70	4.83	4.96
L	0.07	0.10	0.15
M	0.89	1.02	1.15
CH1		2.72	
R		0.51	

5.2 Marking information

Figure 7. Marking composition



GADG040220211644GT

Revision history

Table 10. Document revision history

Date	Version	Changes
09-Jun-2020	1	Initial release
14-Apr-2021	2	Updated Features and Device summary in cover page. Updated Section 1 Electrical ratings. Updated Section 2 Electrical characteristics. Updated Figure 1. Power gain and drain efficiency vs output power over 3400-3600 MHz band ($V_{DD} = 28\text{ V}$). Added Figure 2. Power gain and drain efficiency vs output power over 3400-3600 MHz band ($V_{DD} = 32\text{ V}$). Updated Figure 3. $ACPR_{5M}$ vs output power over 3400-3600 MHz band. Updated Section 4 Test circuits. Added Section 5.2 Marking information. Minor text changes.

Contents

1	Electrical ratings	2
2	Electrical characteristics.....	3
3	Typical performance	4
3.1	Pulsed CW performance	4
3.2	WCDMA performance.....	6
4	Test circuits	7
5	Package information.....	8
5.1	B2 package information	8
5.2	Marking information	10
	Revision history	11

IMPORTANT NOTICE – PLEASE READ CAREFULLY

STMicroelectronics NV and its subsidiaries ("ST") reserve the right to make changes, corrections, enhancements, modifications, and improvements to ST products and/or to this document at any time without notice. Purchasers should obtain the latest relevant information on ST products before placing orders. ST products are sold pursuant to ST's terms and conditions of sale in place at the time of order acknowledgement.

Purchasers are solely responsible for the choice, selection, and use of ST products and ST assumes no liability for application assistance or the design of Purchasers' products.

No license, express or implied, to any intellectual property right is granted by ST herein.

Resale of ST products with provisions different from the information set forth herein shall void any warranty granted by ST for such product.

ST and the ST logo are trademarks of ST. For additional information about ST trademarks, please refer to www.st.com/trademarks. All other product or service names are the property of their respective owners.

Information in this document supersedes and replaces information previously supplied in any prior versions of this document.

© 2021 STMicroelectronics – All rights reserved

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

[STMicroelectronics:](#)

[RF2L36075CF2](#)