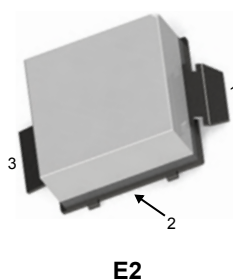


25 W, 28 V, 0.7 to 2.7 GHz RF power LDMOS transistor



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

Features

Order code	Frequency	V _{DD}	P _{OUT}	Gain	Efficiency
RF2L27025CG2	2700 MHz	28 V	25 W	18 dB	50%

- High efficiency and linear gain operations
- Integrated ESD protection
- Internally input matched 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 and wideband communications
- ISM – 915 MHz and 2.45 GHz
- 915 MHz / 1.3 and 1.5 GHz particle accelerator

Description

The **RF2L27025CG2** is a 25 W, 28 V, internally matched LDMOS transistor, designed for Telecom, wideband communications and ISM applications in the frequency range from 0.7 to 2.7 GHz. It can be used in class AB, B or C for all typical modulation formats.



Product status link
RF2L27025CG2

Product summary	
Order code	RF2L27025CG2
Marking	2L27025
Package	E2
Packing	Tape and reel 13"
Base/bulk quantity	300/300

1 Electrical ratings

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

Symbol	Parameter	Value	Unit
$V_{(BR)DSS}$	Drain-source voltage	65	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	1.8	°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)	1A
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	$V_{GS} = 0\text{ V}$, $I_{DS} = 100\text{ }\mu\text{A}$	65			V
I_{DSS}	Zero-gate voltage drain current	$V_{GS} = 0\text{ V}$, $V_{DS} = 28\text{ V}$			1	μA
		$V_{GS} = 0\text{ V}$, $V_{DS} = 60\text{ V}$				
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	$V_{DS} = 28\text{ V}$, $I_{DS} = 600\text{ }\mu\text{A}$	1.75		2.50	V
$V_{GS(Q)}$	Gate quiescent voltage	$V_{DS} = 28\text{ V}$, $I_{DS} = 200\text{ mA}$	2		4	V
$V_{DS(on)}$	Static drain-source on-voltage	$V_{GS} = 1\text{ V}$, $I_{DS} = 800\text{ mA}$			0.5	V
$I_{DS(on)}$	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				1	Ω

Table 5. Dynamic

Symbol	Parameter	Test conditions	Min.	Typ.	Max.	Unit
f	Frequency		700		2700	MHz
P_{OUT}	Output power	f = 2700 MHz, @ 1dB compression point, pulsed CW		25		W
G_{PS}	Power gain			18		dB
η_D	Drain efficiency			50		%
VSWR	Load mismatch	at 25 W pulsed CW output power, all phases			10:1	

Note: $V_{DD} = 28\text{ V}$, $I_{DQ} = 300\text{ mA}$, pulse width = 10 μs , duty cycle = 10%.

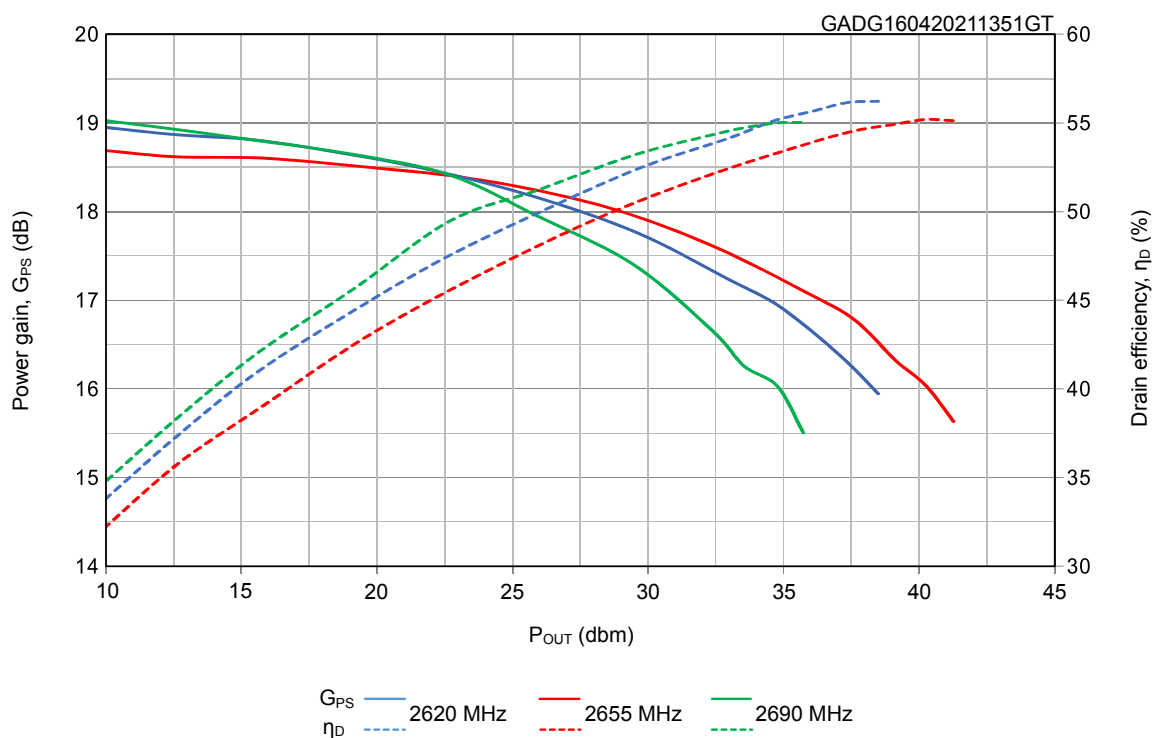
3 Typical performances

Table 6. Output power, power gain and drain efficiency vs input power (f = 2620 MHz)

P _{IN} (dBm)	P _{OUT} (dBm)	P _{OUT} (W)	I _{DS} (A)	G _{PS} (dB)	η _D (%)
21.3	40.0	9.9	1.03	19.0	34.8
22.4	41.0	12.7	1.18	18.9	38.4
23.4	42.0	15.8	1.33	18.8	42.1
24.4	42.9	19.7	1.50	18.6	45.7
25.4	43.8	23.9	1.64	18.4	49.5
26.5	44.5	28.3	1.81	17.9	51.2
27.5	45.1	32.3	1.98	17.4	53.2
28.5	45.6	35.9	2.13	16.7	54.3
29.0	45.8	37.6	2.19	16.3	54.7
29.6	45.9	39.1	2.26	16.0	55.0
30.0	46.0	40.2	2.32	15.5	55.0

Table 7. Output power, power gain and drain efficiency vs input power (f = 2690 MHz)

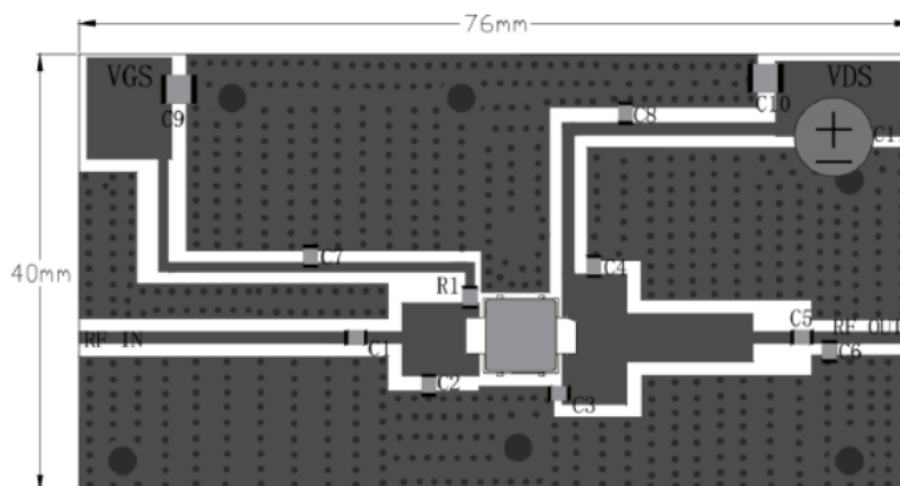
P _{IN} (dBm)	P _{OUT} (dBm)	P _{OUT} (W)	I _{DS} (A)	G _{PS} (dB)	η _D (%)
21.0	40.0	10.0	1.03	19.0	34.8
22.1	41.0	12.7	1.18	18.9	38.4
23.2	41.9	15.7	1.33	18.8	42.1
24.2	42.8	19.2	1.50	18.6	45.7
25.2	43.6	22.7	1.64	18.4	49.5
26.2	44.1	25.9	1.81	17.9	51.2
27.3	44.7	29.5	1.98	17.4	53.2
28.5	45.1	32.4	2.13	16.7	54.3
29.0	45.3	33.5	2.19	16.3	54.7
29.4	45.4	34.8	2.26	16.0	55.0
30.0	45.5	35.7	2.32	15.5	55.0

Figure 1. Power gain and drain efficiency vs output power (2620 - 2690 MHz)


Note: $V_{DD} = 28\text{ V}$, $I_{DQ} = 100\text{ mA}$, pulsed CW, pulse width = 10 μs , duty cycle = 10%

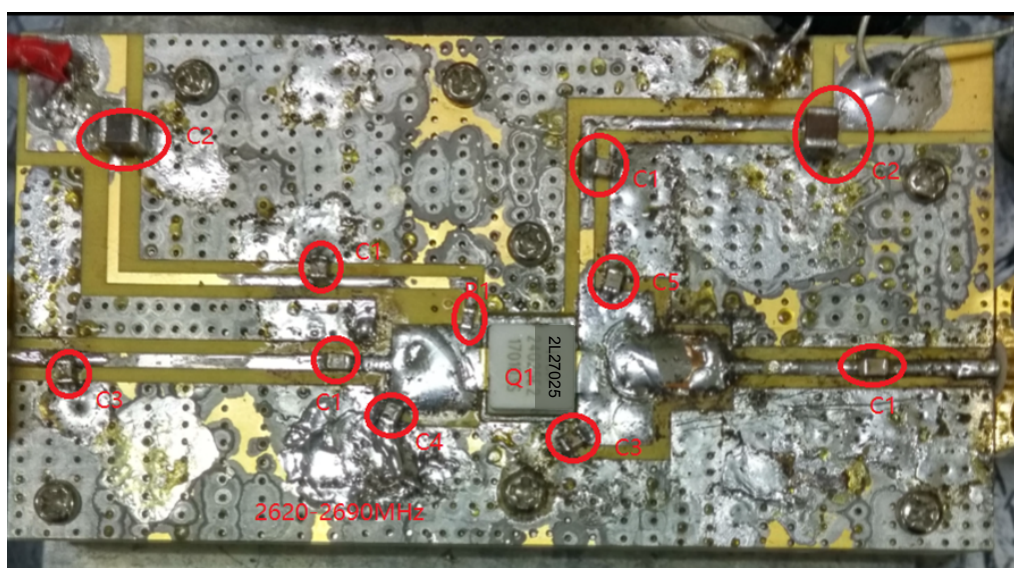
4 Test circuits

Figure 2. Test circuit layout (same PCB with different BOM for each frequency band)



GADG100420200946SA

Figure 3. Test circuit photo (2620 - 2690 MHz)



GADG190520200834SA

Table 8. Components list (2620 - 2690 MHz)

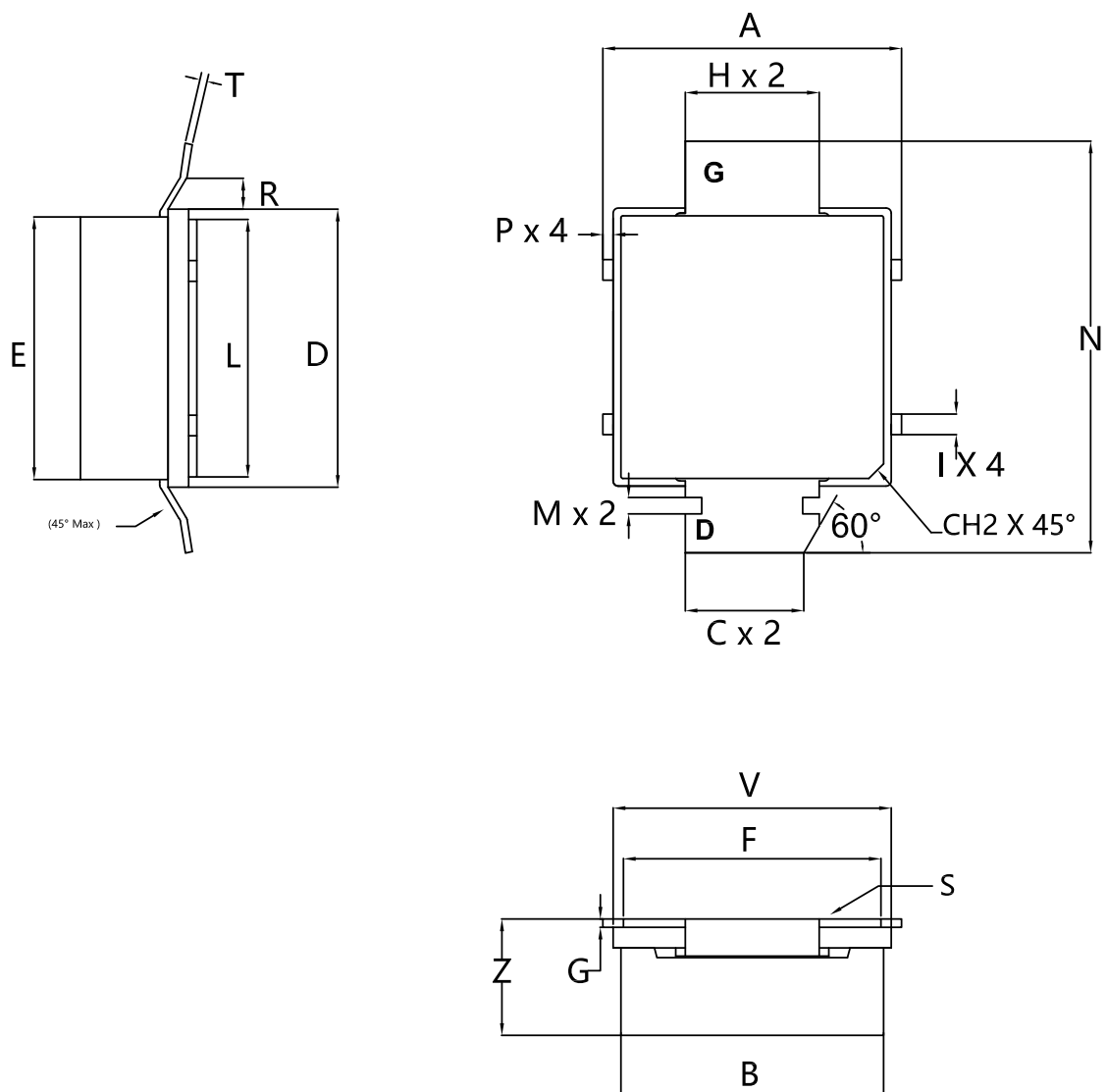
Component	Value	Size	Reference
Q1	RF2L27025CG2		
C1	8.2 pF	0805	ATC600F
C3	0.4 pF	0805	ATC600F
C4	0.8 pF	0805	ATC600F
R1	10 Ω	0603	chip resistor
C2	10 μ F	1210	ceramic multilayer capacitor
C5	1.0 pF	0805	ATC600F
PCB	0.508 mm (0.020") thick, $\epsilon_r = 3.48$, Rogers RO4350B, 1 oz. copper		

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 E2 package information

Figure 4. E2 package outline



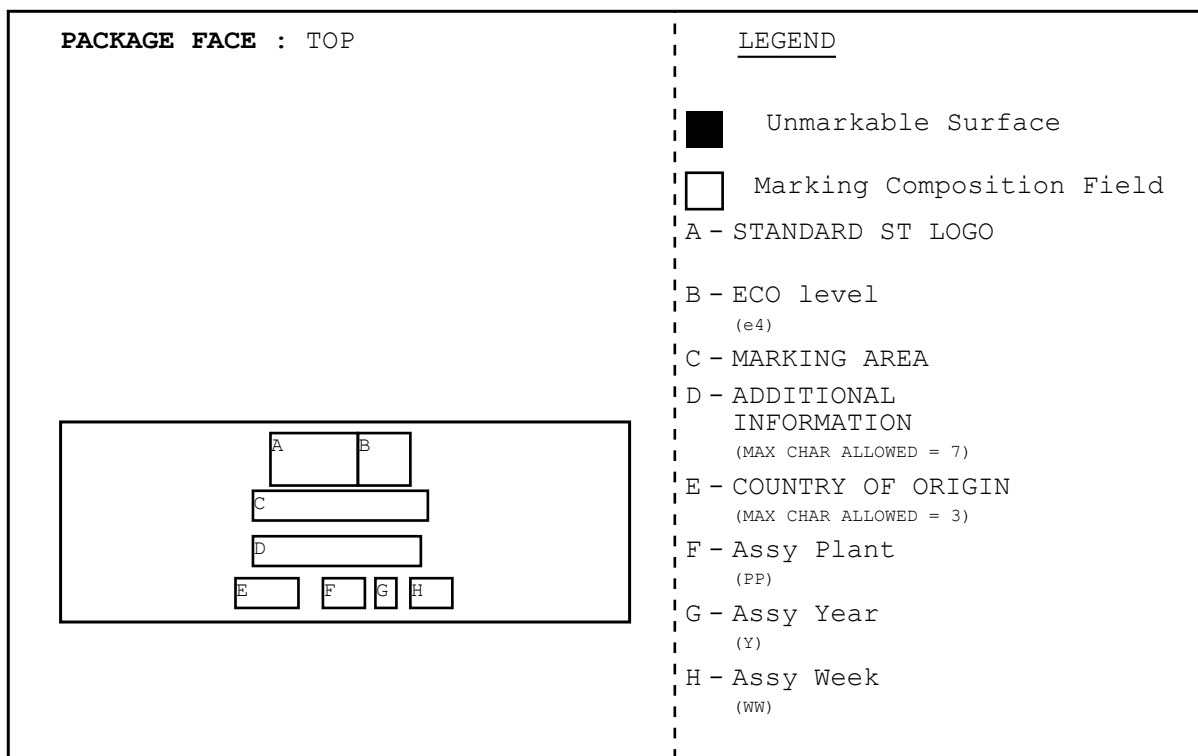
00418523_4

Table 9. E2 mechanical data

Symbol	Millimetres		
	Min.	Typ.	Max.
A			7.37
B	6.35	6.48	6.60
C	2.84	2.92	3.0
D	6.78	6.86	6.94
E	6.35	6.48	6.61
F	6.10	6.35	6.60
G	0.18	0.20	0.23
H	3.23	3.30	3.38
I	0.43	0.51	0.59
L	6.27	6.35	6.43
M	0.33	0.41	0.49
N	10.03	10.16	10.29
P			0.25
R	0.76		1.02
T	0.13	0.18	0.23
V	6.78	6.86	6.94
Z	2.49	2.87	3.25
CH2		0.51	

5.2 Marking information

Figure 5. Marking composition



GADG040220211644GT

Revision history

Table 10. Document revision history

Date	Version	Changes
18-Jun-2020	1	First release.
19-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 (2620 - 2690 MHz). Updated Table 8 . Components list (2620 - 2690 MHz). Added Section 5.2 Marking information. Minor text changes.

Contents

1	Electrical ratings	2
2	Electrical characteristics.....	3
3	Typical performances.....	4
4	Test circuits	6
5	Package information.....	8
5.1	E2 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:](#)

[RF2L27025CG2](#)