



20W, 50V High Power RF LDMOS FETs

Description

The ITGV20020T2C is a 20-watt, LDMOS FET, designed for ISM applications up to 2GHz, including RF Energy at 915MHz/1300MHz etc. It can be used in Class AB/B and Class C configuration, supporting both CW and pulsed signal

It is the CW enhancement version of ITGV10020P3

ITGV20020T2C



- Typical narrow band Performance at 915MHz (On Innegration fixture with device soldered):

$V_{DS}=50V, I_{DQ}=15mA, V_{GS}=3.25V, CW$

Freq (MHz)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)	P3dB Gain(dB)	P5dB (dBm)	P5dB (W)	P5dB Eff(%)
915	42.5	18	63	24	43.31	21	66

- Typical broadband Performance at 100-1000MHz (On Innegration fixture with device soldered):

$V_{DS}=50V, I_{DQ}=15mA, V_{GS}=3.25V, Pulsed CW$

Freq (MHz)	P3dB (dBm)	P3dB (W)	P3dB Eff(%)	P3dB Gain(dB)	P5dB (dBm)	P5dB (W)	P5dB Eff(%)
100	42.81	19.08	54.18	20.31	43.62	23.00	57.11
200	43.15	20.67	60.12	21.21	44.10	25.70	63.21
300	42.92	19.61	47.45	20.01	43.80	23.97	50.52
400	42.44	17.54	42.89	19.25	43.58	22.78	47.17
500	42.61	18.23	44.45	18.24	43.28	21.26	45.27
600	42.33	17.10	43.31	17.17	43.28	21.28	46.25
700	42.46	17.63	43.72	16.39	43.43	22.04	46.60
800	42.46	17.61	44.34	16.84	43.42	21.97	47.17
900	42.62	18.27	45.15	17.38	43.51	22.43	48.00
1000	43.03	20.10	50.69	15.81	43.83	24.15	53.22

Features

- High Efficiency and Linear Gain Operations
- Integrated ESD Protection
- Internally Matched for Ease of Use
- Excellent thermal stability, low HCI drift
- Large Positive and Negative Gate/Source Voltage Range for Improved Class C Operation
- Pb-free, RoHS-compliant

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	110	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+50	Vdc
Storage Temperature Range	T_{stg}	-65 to +150	°C
Case Operating Temperature	T_c	+150	°C
Operating Junction Temperature	T_j	+225	°C

Table 2. Thermal Characteristics

Characteristic	Symbol	Value	Unit
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Thermal Resistance, Junction to Case $T_C = 85^{\circ}\text{C}$, $P_{out} = 20\text{W}$ 915MHz	$R_{\theta JC}$	3.0	$^{\circ}\text{C/W}$
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Table 3. ESD Protection Characteristics

Test Methodology	Class
Human Body Model (per JESD22--A114)	Class 2

Table 4. Electrical Characteristics ($T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage ($V_{GS} = 0\text{V}$; $I_D = 100\mu\text{A}$)	V_{DSS}	106	—	—	V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 50\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	10	μA
Gate--Source Leakage Current ($V_{GS} = 6\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 50\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	—	3	—	V
Gate Quiescent Voltage ($V_{DD} = 50\text{V}$, $I_{DQ} = 50\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	3.2	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 50\text{Vdc}$, $I_{DQ} = 50\text{mA}$, $f = 915\text{MHz}$

VSWR 10:1 at 20W Output Power at all Phase Angles, pulsed CW, 100us, 10%	No Device Degradation
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100-1000MHz

Reference Circuit of Test Fixture Assembly Diagram

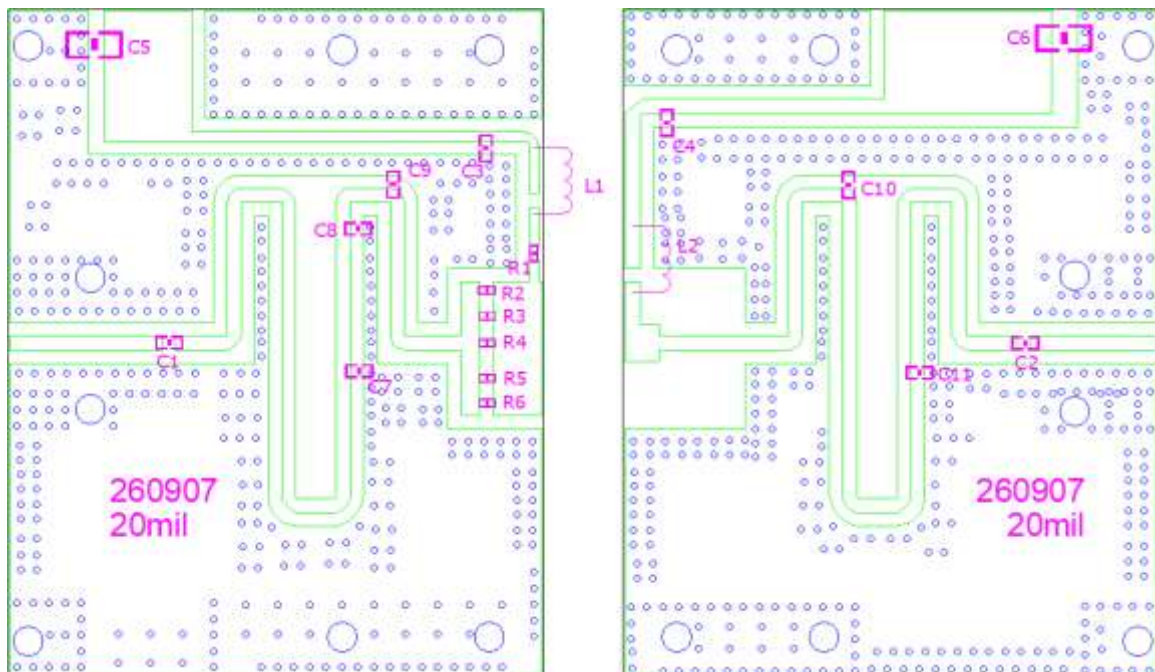


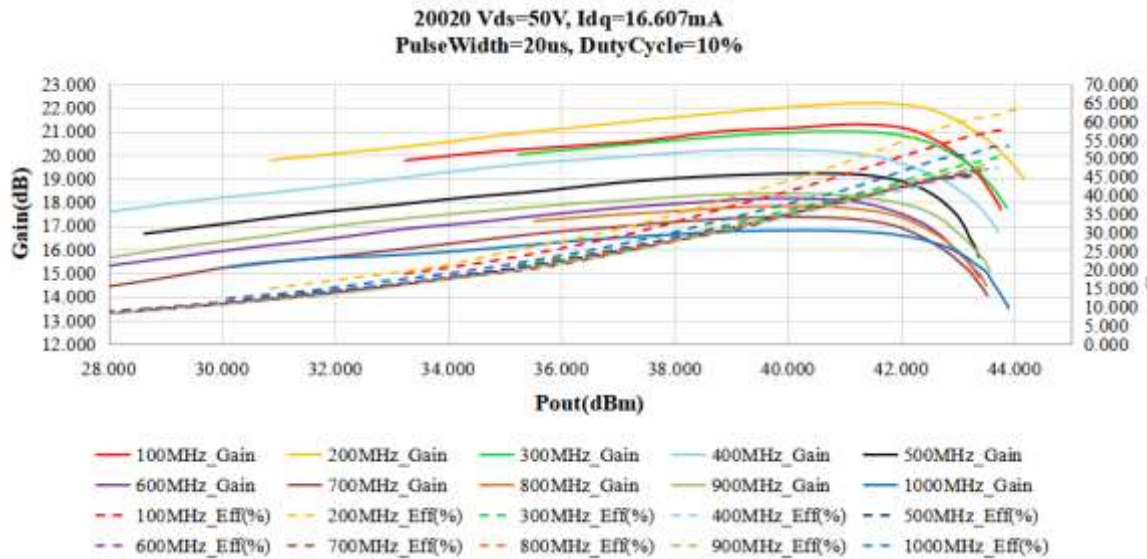
Figure 1. Test Circuit Component Layout



Table 1. Test Circuit Component Designations and Values

Component	Description	Quantity	Suggested Manufacturer
C1	20pF/0603	1	TEMEX
C2	220pF/0805	1	TEMEX
C3	1uF/0805	1	TEMEX
C4	1nF/0805	1	TEMEX
C7	0.5pF/0603	1	TEMEX
C8	3.9pF/0603	1	TEMEX
C9,C11	2pF/0805	2	TEMEX
C10	4.7pF/0603	1	TEMEX
L1	1mm wire , 2.5mm inner diameter, 5Turns	1	DIY
L2	1mm wire , 2.5mm inner diameter, 9Turns	1	DIY
R1,R2,R3,R4,R5,R6	10 Ω /0603	6	ROHM
C5,C6	10uF MLCC	2	Murata

Figure 2: Efficiency and power gain as function of Pout



915MHz

Reference Circuit of Test Fixture Assembly Diagram

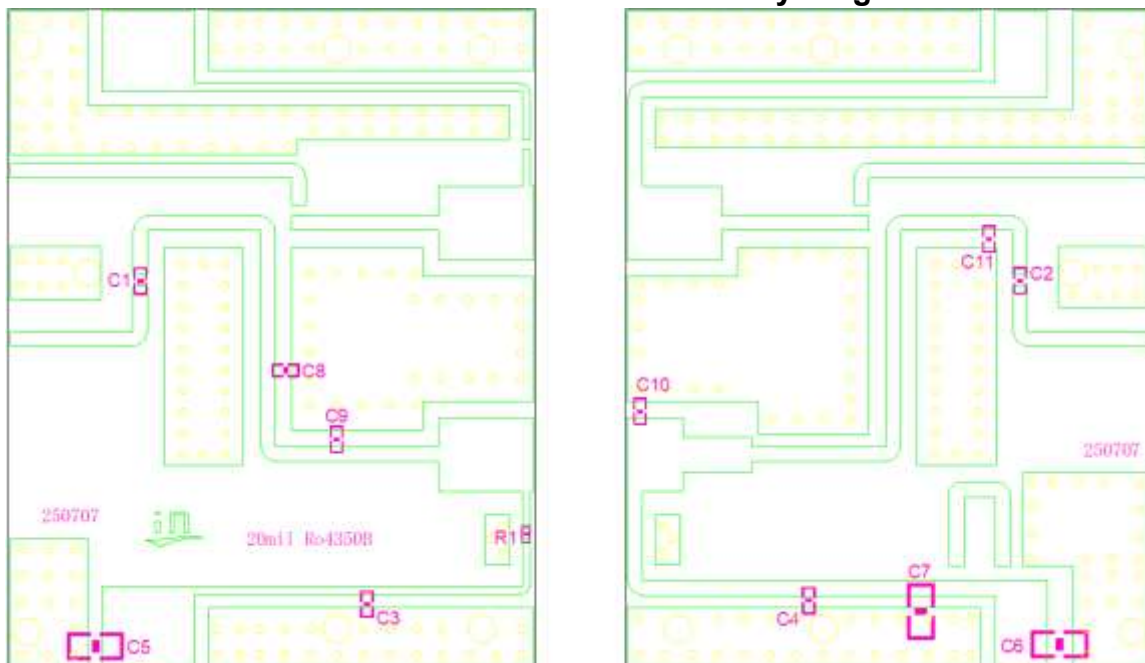


Figure 3. Test Circuit Component Layout

Table 6. Test Circuit Component Designations and Values

Component	Description	Quantity	Suggested Manufacturer
C1,C2,C3,C4	33pF/0805	4	TEMEX
C8	4.7pF/0603	1	TEMEX
C9	15pF/0805	1	TEMEX
C10	0.6pF/0805	1	TEMEX
C11	0.9pF/0603	1	TEMEX
R1	10 Ω /0603	1	ROHM
C5,C6,C7	10uF MLCC	3	Murata

Figure 4: Efficiency and power gain as function of Pout

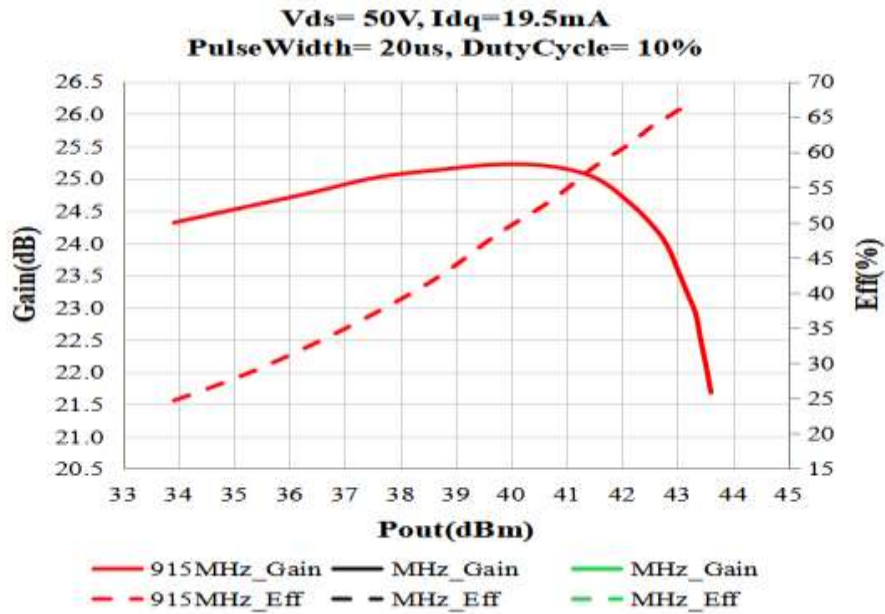
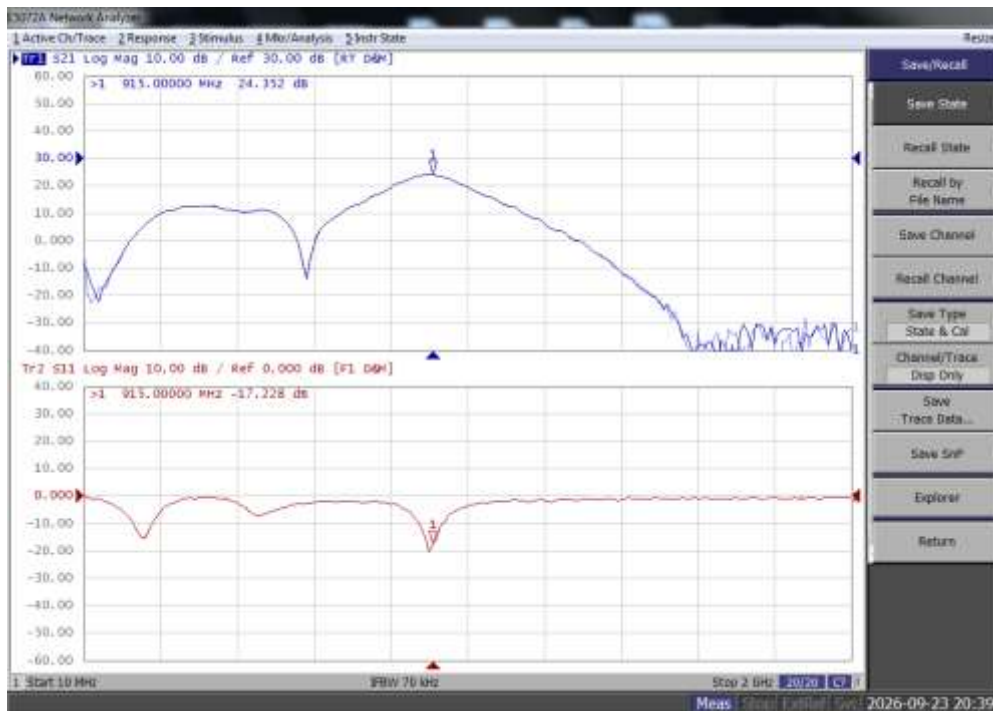


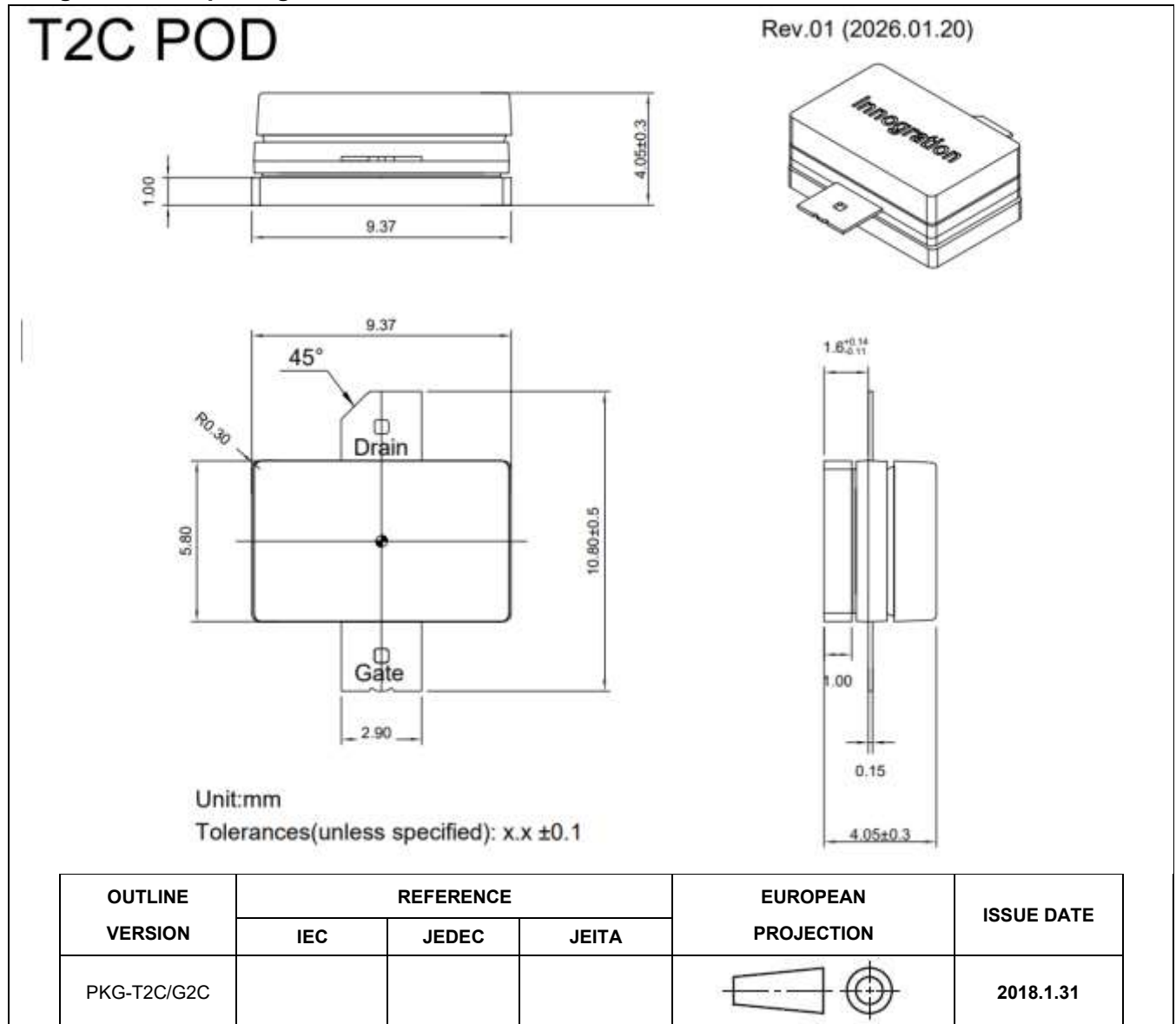
Figure 5: Network analyser's output S11/S21





Package Outline

Flanged ceramic package; 2 leads





Revision history

Table 6. Document revision history

Date	Revision	Datasheet Status
2026/9/24	Rev 1.0	Preliminary Datasheet

Application data based on HZH-26-30/31

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