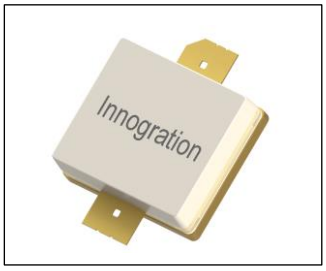
ITGV10080A2C LDMOS TRANSISTOR

Document Number: ITGV10080A2C
Preliminary Datasheet V1.1

40W,HF to UHF ,28V RF LDMOS Transistor



Description

The ITGV10080A2C is 40-watt, high performance, highly rugged, unmatched LDMOS transistor, designed for any general applications at frequencies from HF to UHF, in new generation highly cost effective open cavity package.

- Typical narrow band CW RF performance with device soldered at different bands
  Vds=28V, Idq=100mA, no coaxial line transformer

Freq	P3dB	P3dB	P3dB Eff	P1dB Gain	P3.5dB	P3.5dB	P3.5dB Eff
(MHz)	(dBm)	(W)	%	dB	(dBm)	(W)	%
600	47.24	53.0	62.7	17.21	47.35	54.3	62.5
650	46.74	47.2	60.8	17.81	46.89	48.9	61.1
700	47.02	50.4	62.0	16.23	47.25	53.0	63.3

Freq	P3dB	P3dB	P3dB Eff	P1dB Gain	P3.5dB	P3.5dB	P3.5dB Eff
(MHz)	(dBm)	(W)	%	dB	(dBm)	(W)	%
100	46.94	49.4	59.5	16.28	47.04	50.6	60.5
150	47.27	53.3	62.6	16.12	47.48	56.0	63.8
200	46.84	48.3	77.0	15.08	46.99	50.0	78.0

Features

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

Suitable Applications

- 30-88MHz (Ground communication)
- 54-88MHz (TV VHF I)
- 88-108MHz (FM)
- 136-174MHz (Commercial ground communication)
- Laser Exciter
- Synchrotron
- MRI
- Plasma generator
- Weather Radar

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+110	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+50	Vdc
Storage Temperature Range	Tstg	-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
Thermal Resistance, Junction to Case T_C= 85°C, T_J=200°C, DC test	$R_{\theta JC}$	1.35	°C/W

Table 3. ESD Protection Characteristics

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

Table 4. Electrical Characteristics (T_A = 25 ℃ unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V_{GS}=0, I_{DS}=1.0mA	$V_{(BR)DSS}$		110		V
Zero Gate Voltage Drain Leakage Current (V_{DS} = 75V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Zero Gate Voltage Drain Leakage Current (V_{DS} = 28V, V_{GS} = 0 V)	I_{DSS}	——	——	1	μA
Gate--Source Leakage Current (V_{GS} = 10 V, V_{DS} = 0 V)	I_{GSS}	——	——	1	μA
Gate Threshold Voltage (V_{DS} = 28V, I_D = 600 μA)	$V_{GS}(th)$	——	2.65	——	V
Gate Quiescent Voltage (V_{DD} = 28 V, I_D = 250 mA, Measured in Functional Test)	$V_{GS(Q)}$	——	3.55	——	V

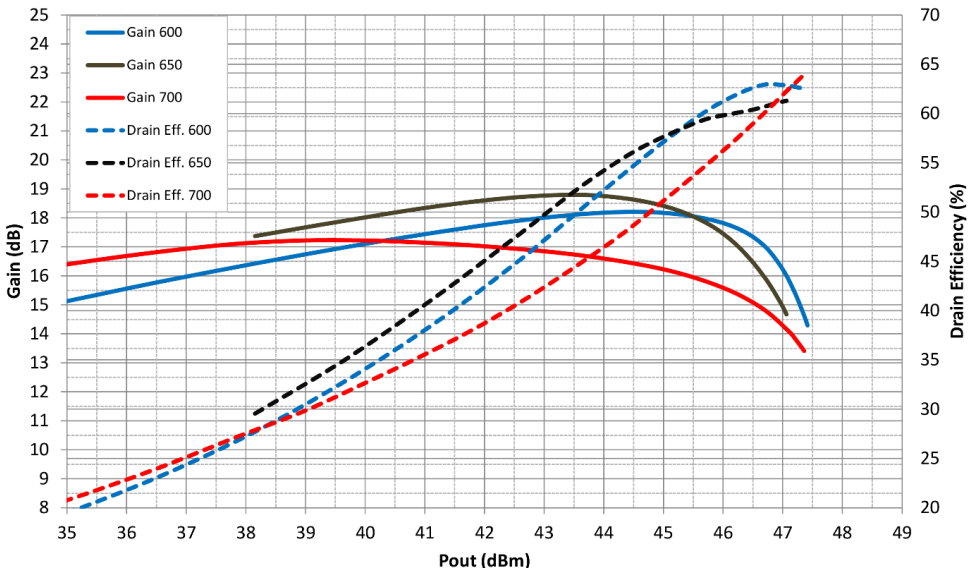
Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28 Vdc, I_{DQ} = 100 mA, f =700MHz, pulse width:100us, duty cycle:10%

Load 10:1 All phase angles, at 80W Pulsed CW Output Power	No Device Degradation

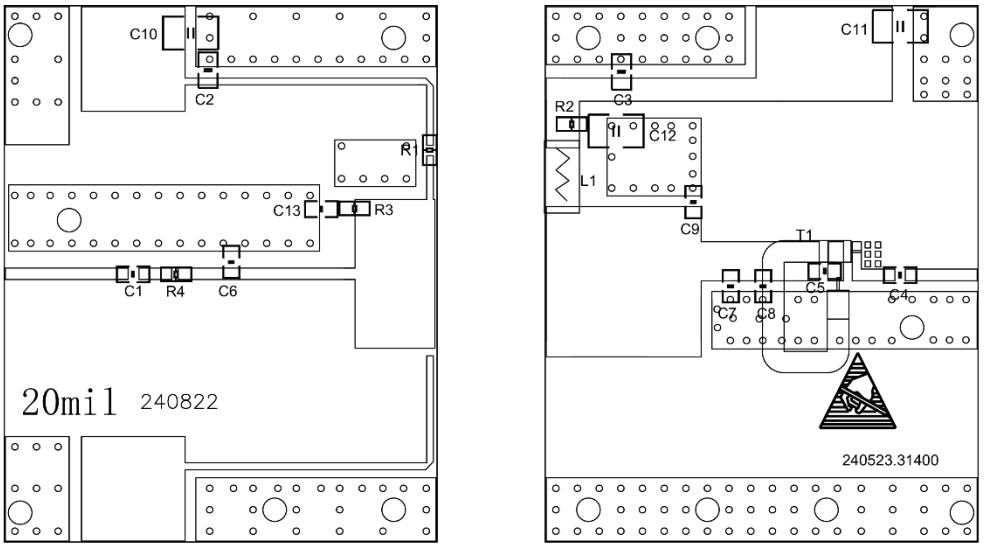
600-700MHz

TYPICAL CHARACTERISTICS

Figure 1: CW Gain and Power Efficiency as a Function of Pout



Reference Circuit of Test Fixture Assembly Diagram



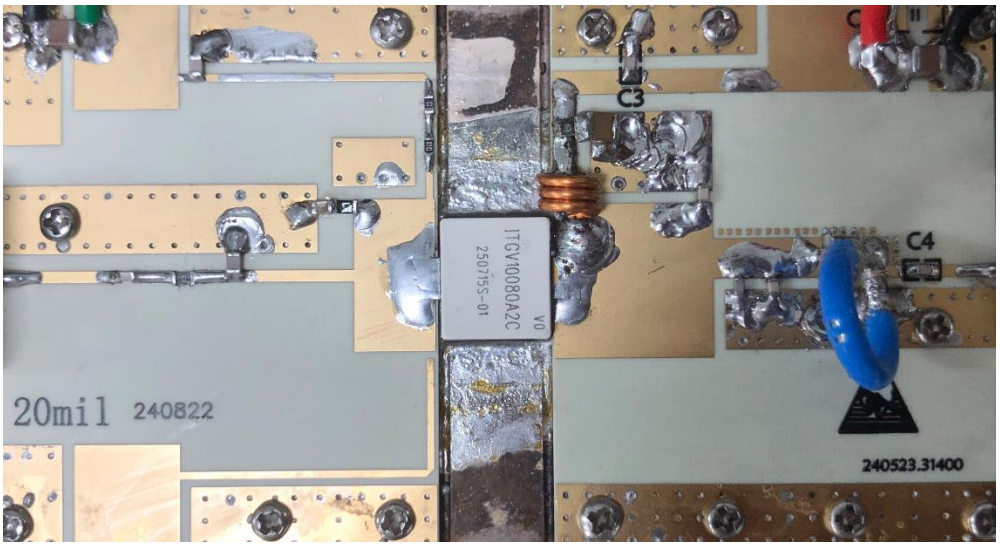


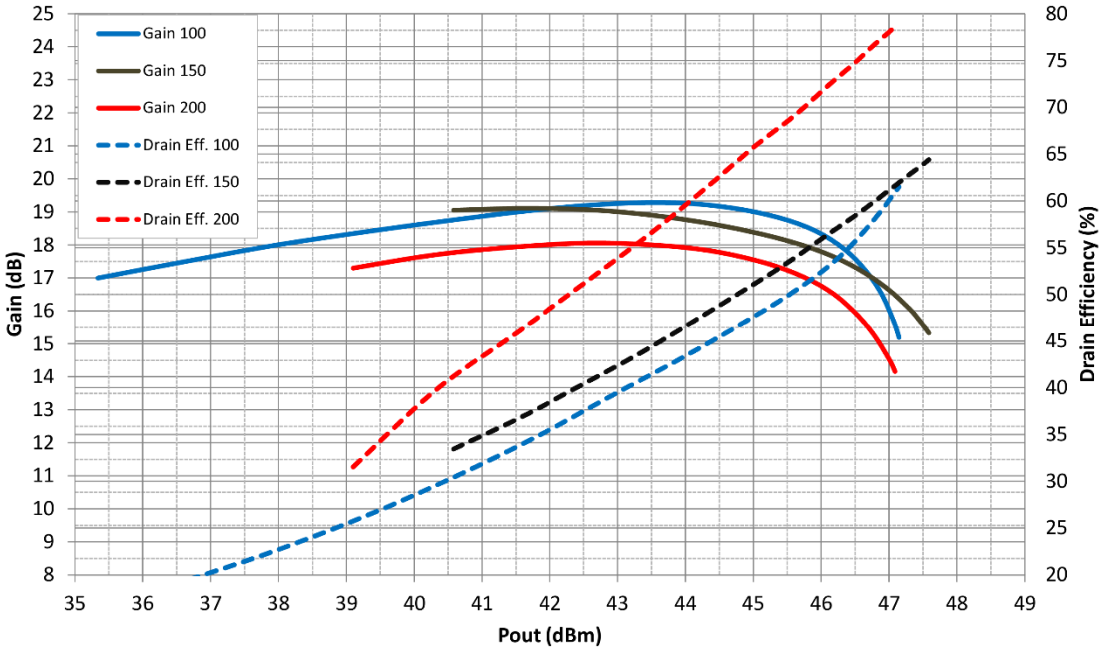
Table 5. Test Circuit Component Designations and Values

C1, C2, C3, C4, C5	0603	100pF/250V	5
C8, C9	0603	2.0pF/250V	2
C7	0603	3.9pF/250V	1
C6	0603	12pF/250V	1
T1		25ohm Coaxial line, length=35mm	1
C10, C11, C12	1210	10uF/100V	3
C13	0805	10uF/16V	1
L1		1.1mm wire,4.1mm inner diameter, 3 turns	1
R1, R2, R3	0603	10R	3
R4	0603	0R	1
		ITGV10080A2C	1

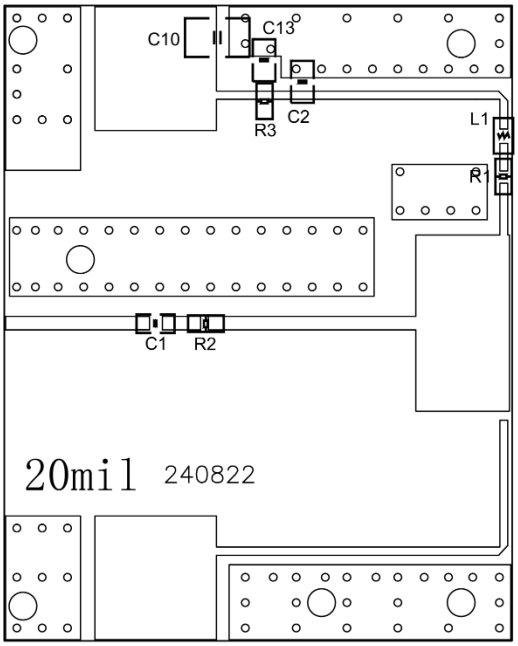
100-200MHz

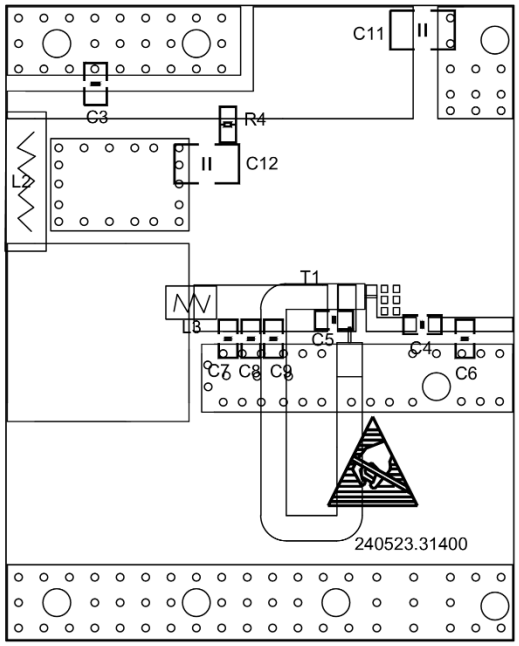
TYPICAL CHARACTERISTICS

Figure 2: CW Gain and Power Efficiency as a Function of Pout



Reference Circuit of Test Fixture Assembly Diagram





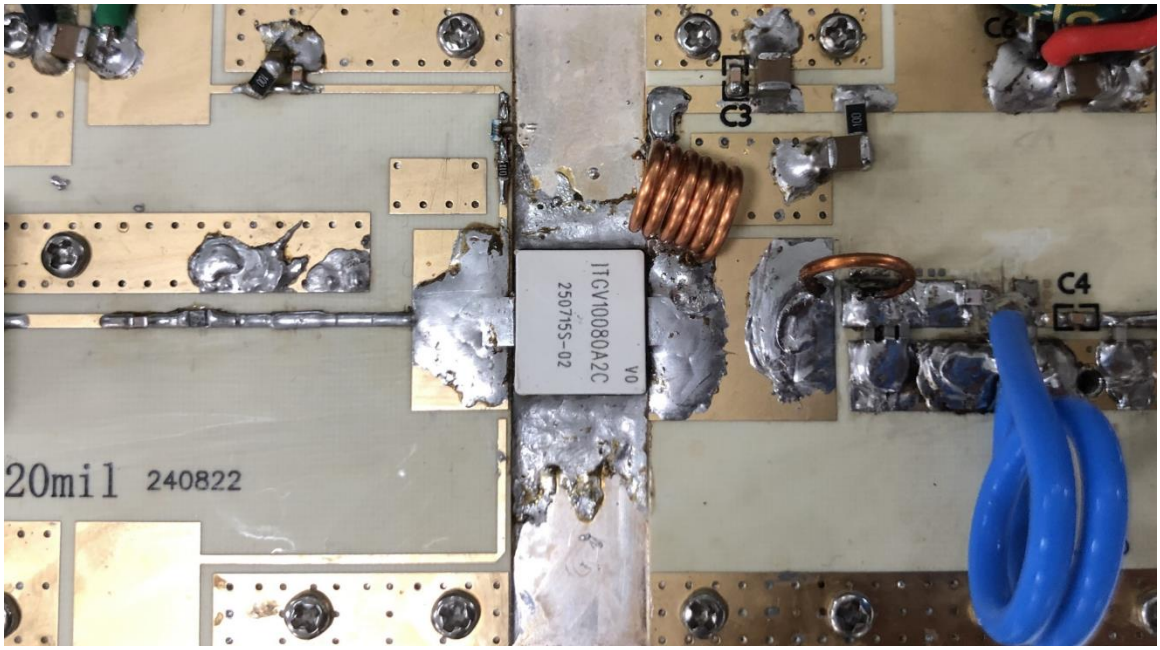
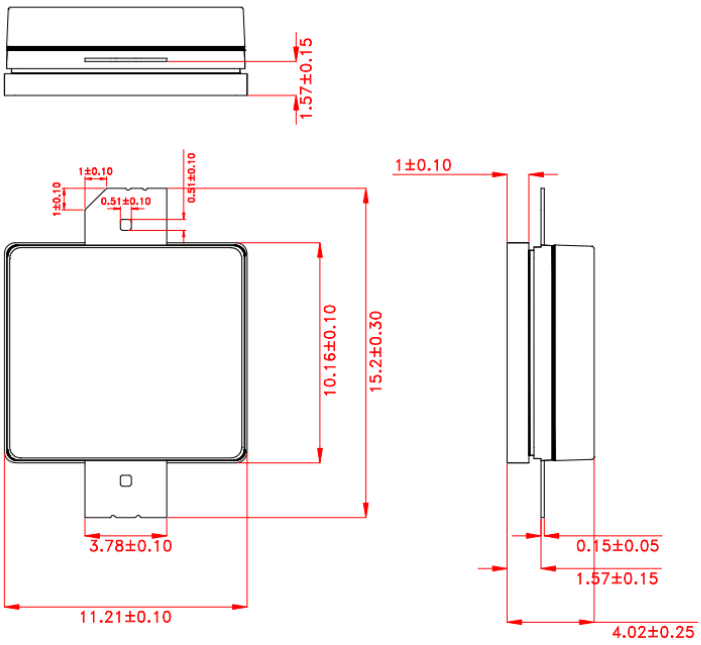
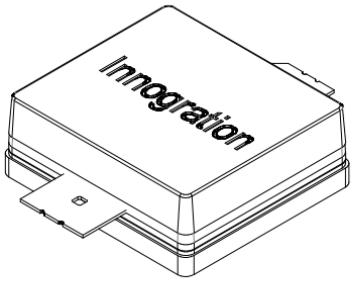


Table 6. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C1, C2, C3, C4, C5	0603	100pF/250V	5
C7, C8, C9	0603	10pF/250V	3
C6	0603	3.0pF/250V	1
T1		25ohm Coaxial line, length=110mm	1
C10, C11, C12	1210	10uF/100V	3
C13	0805	10uF/16V	1
L1	0603	18nH	1
L2		1.1mm wire, 4.1mm inner diameter, 6 turns	1
L3		1.1mm wire, 6.35mm inner diameter, 1 turn	
R1, R2, R3, R4	0603	10R	4
		ITGV10080A2C	1

Package Dimensions





Unit:mm

Tolerance ±0.10mm,Except as Noted.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2025/2/28	Rev 1.0	Preliminary Datasheet

Application data based on ZBB-25-07/08

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