

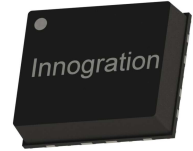


80W,28V Plastic RF LDMOS Transistor

Description

The ITEH22080C9 is an 80-watt, high performance, LDMOS transistor, designed for any general applications at frequencies from 2.0 to 2.2GHz, in 12*10mm QFN plastic package, It can be soldered on PCB through high density grounding vias for pulse or back off linear application or soldered directly on heatsink.for CW application

ITEH22080C9



- Typical 2.1-2.2GHz Class AB RF Performance (On Innegration fixture with device soldered).

$V_{DS}=28V$, $V_{GS}=2.65V(I_{DQ}=500mA)$,				
$P_{out}=39.0dBm$, WCDMA 1 Carrier				
Freq (MHz)	P3dB(W)	ACPR (dBc)	Gain(dB)	EFF (%)
2100	99.9	-41.4	17.4	16.8
2150	90.3	-42.4	17.5	17.1
2200	81.9	-42.4	17.3	17.6

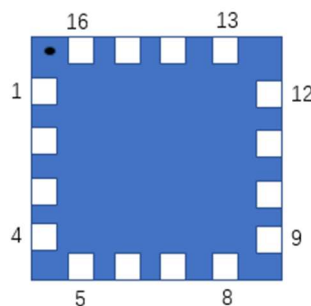
Features

- 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

- S band power amplifier
- All 4G/5G cellular application within 2.0 to 2.2GHz

Pin Configuration and Description (Top view)



Pin No.	Symbol	Description
5-8	RF IN/Vgs	RF Input/Gate bias
13-16	RF OUT/Vds	RF Output/Drain bias
Others	NC	Can be left as either no use or grounding
Package Base	GND	DC/RF Ground. Proposed to be soldered to heatsink plane directly for the best CW thermal and RF performance. Soldered through vias or copper coin allowed for pulsed CW applications, but will result in excessive junction temperatures and different RF performance



Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+28	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
Thermal Resistance, Junction to Case $T_c = 85^\circ\text{C}$, DC test, device soldered on heatsink directly	$R_{\theta JC}$	0.9	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
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DC Characteristics

Drain-Source Voltage $V_{GS}=0$, $I_{DS}=100\mu\text{A}$	$V_{(BR)DS}$		65	70	V
Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28\text{V}$, $V_{GS} = 0\text{V}$)	I_{DSS}	—	—	1	μA
Gate--Source Leakage Current ($V_{GS} = 11\text{V}$, $V_{DS} = 0\text{V}$)	I_{GSS}	—	—	1	μA
Gate Threshold Voltage ($V_{DS} = 28\text{V}$, $I_D = 600\mu\text{A}$)	$V_{GS(th)}$	—	2	—	V
Gate Quiescent Voltage ($V_{DD} = 28\text{V}$, $I_D = 600\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.6	—	V

Load Mismatch (In Innogrator Test Fixture, 50 ohm system): $V_{DD} = 28\text{Vdc}$, $I_{DQ} = 600\text{mA}$, $f = 2100\text{MHz}$

VSWR 10:1 at 80W pulse CW Output Power	No Device Degradation
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2100-2200MHz application board

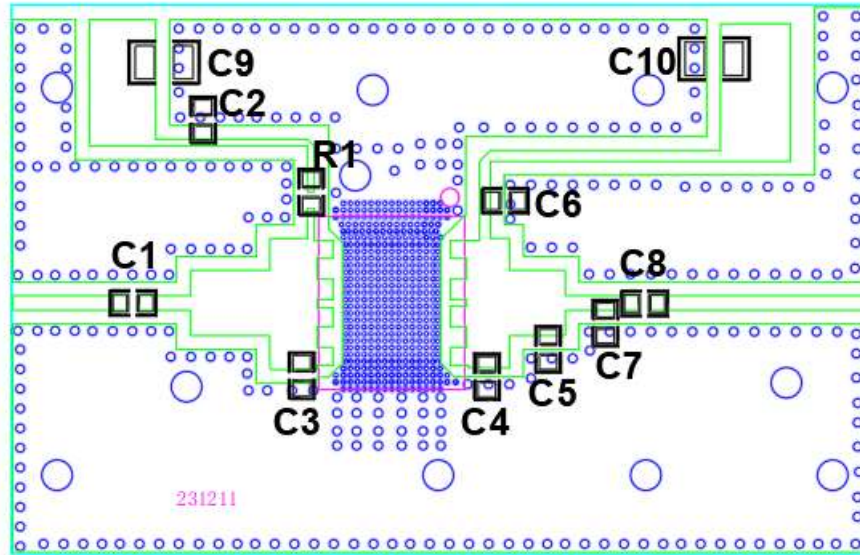


Figure 2. Test Circuit Component Layout, 20mils RO4350B

Table 5. Test Circuit Component Designations and Values

Component	Value	Description
PCB	Thickness, 20mil	Rogers 4350
U1	ITEH22080C9	PA
C9、C10	10uF	TDK1206
C1、C8	10pF	ATC600S
C3	2.7pF	ATC600S
C4	0.4pF	ATC600S
C5	2.4pF	ATC600S
C7	1.1pF	ATC600S
R1	10 Ω	TDK0805



TYPICAL CHARACTERISTICS

Figure 3. Power Gain and Drain Efficiency as function of Power Output

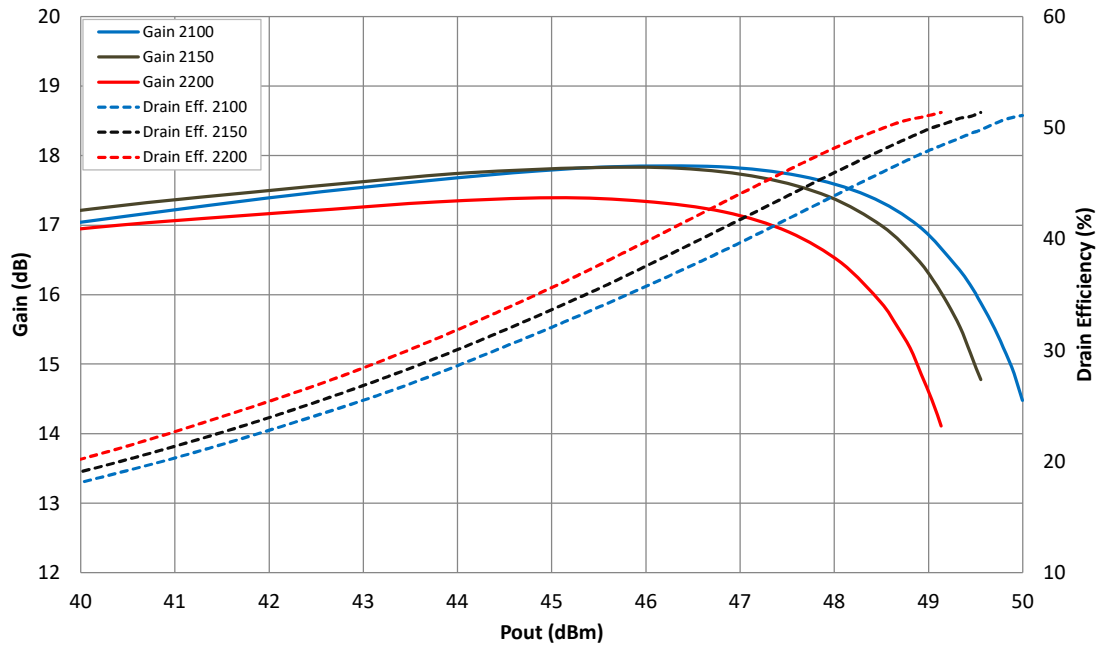
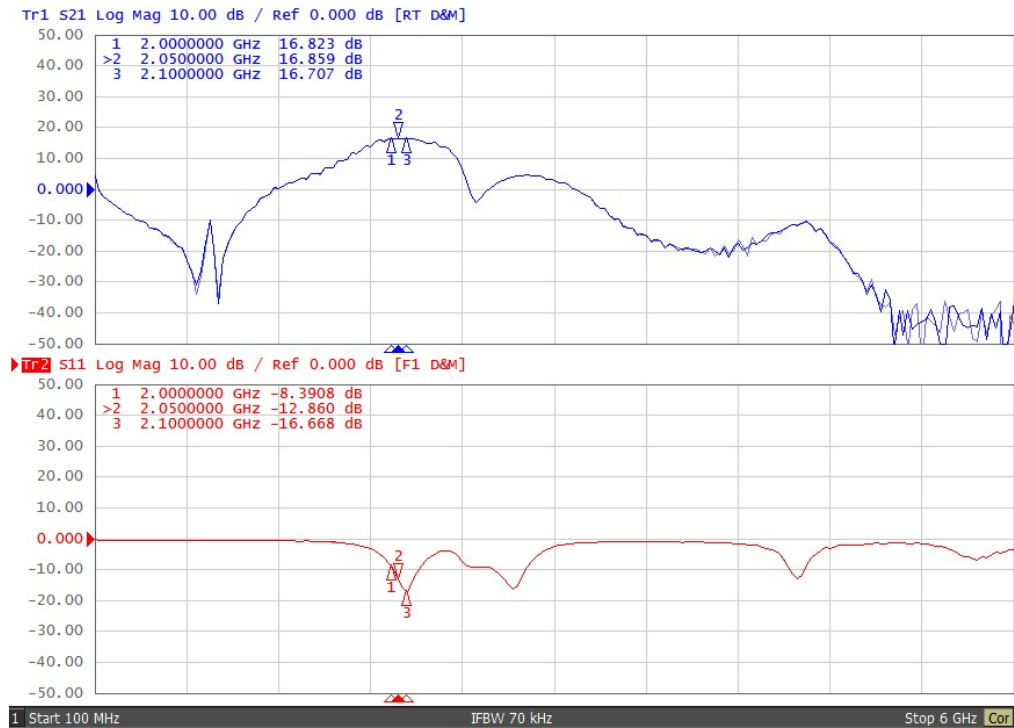
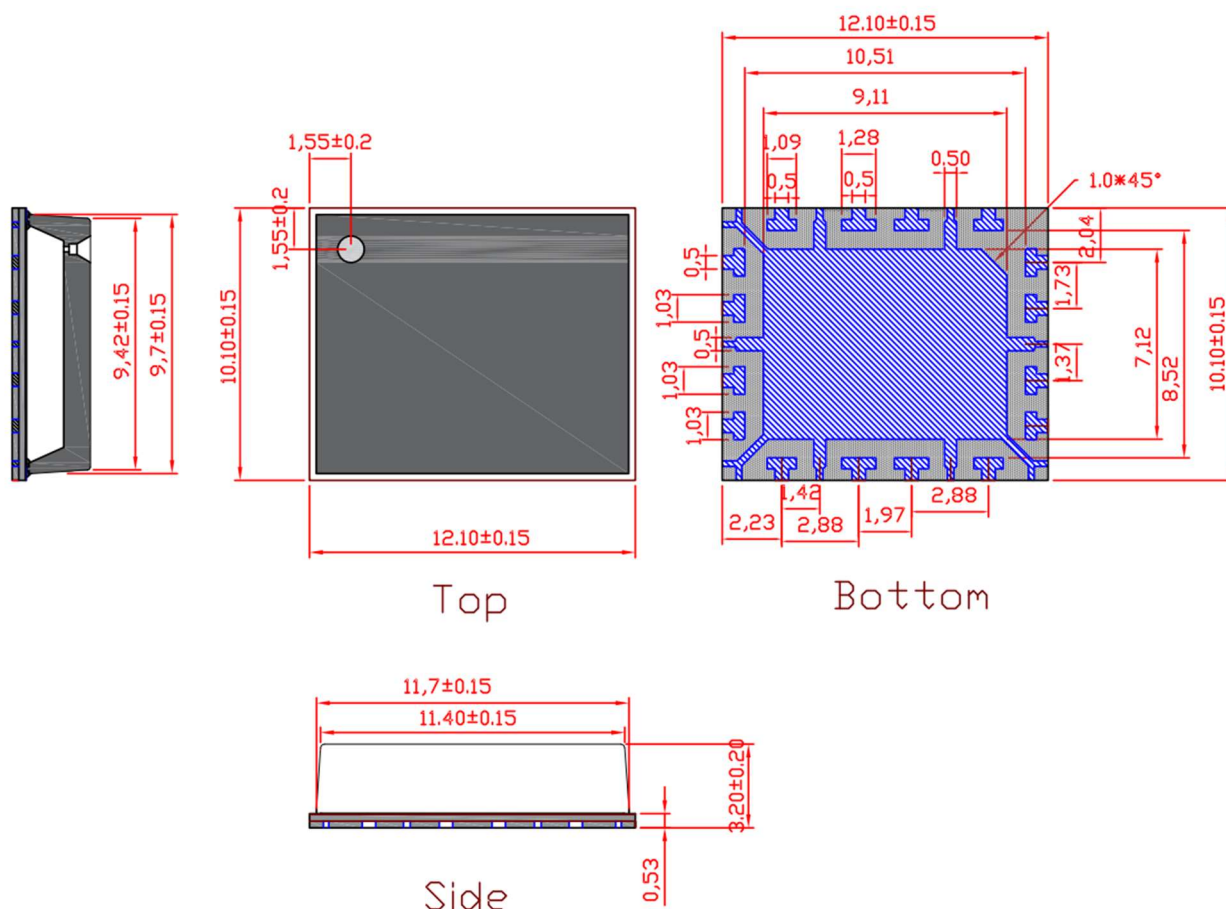


Figure 4. Network analyzer output S11/S21





Package Dimensions



Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2023/12/11	Rev 1.0	Preliminary Datasheet
2024/1/29	Rev 1.1	Update based on new application result

Application data based on HJ-23-23

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