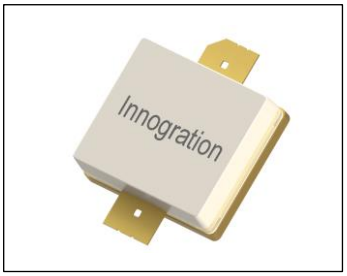
80W,28V Sub-1GHz RF LDMOS Transistor



Description

The ITEH09080A2C is a 80-watt, high performance, LDMOS transistor, designed for any general applications at frequencies up to 1GHz.

It can be tuned to meet up to 39dBm WCDMA or LTE ACLR without DPD needed purely by back off operation.

- Typical 758-803MHz Class AB RF Performance (On Innogration fixture with device soldered).

Vds=28V,Idq=590mA

Freq (MHz)	Pout (dBm)	CCDF (dB)	Ppeak (dBm)	Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
758	39.02	9.70	48.72	74.5	-47.8	20.3	20.2
781	39.01	9.66	48.67	73.7	-47.9	20.5	21.5
803	39.02	9.49	48.50	70.8	-47.8	21.3	22.8

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

- P band power amplifier
- All 4G/5G cellular application within 0.7 to 1GHz

Table 1. Maximum Ratings

Rating	Symbol	Value	Unit
Drain--Source Voltage	V_{DSS}	+65	Vdc
Gate--Source Voltage	V_{GS}	-10 to +10	Vdc
Operating Voltage	V_{DD}	+28	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, DC test, **device soldered on heatsink directly**	RθJC	0.9	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit

DC Characteristics

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

Load Mismatch (In Innogration Test Fixture, 50 ohm system): V_{DD} = 28Vdc, I_{DQ} = 600 mA, f = 800 MHz

VSWR 10:1 at 80W pulse CW Output Power	No Device Degradation

758-803MHz application board

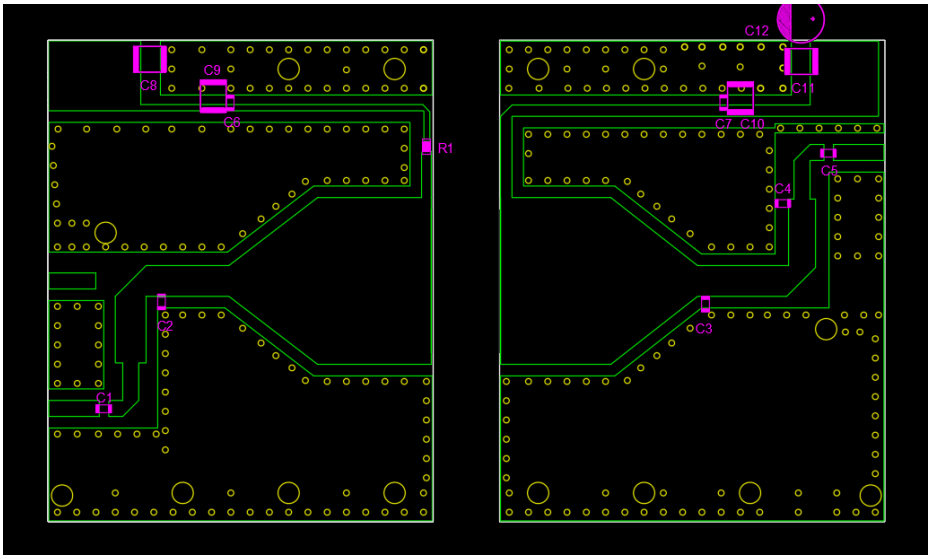


Figure 2. Test Circuit Component Layout, 20mils RO4350B

Note:

Table 5. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C5, C6, C7	0603	100pF	3
C1	0603	10pF	1
C2	0603	5.6pF	1
C3	0603	8.2pF	1
C4	0603	3.3pF	1
R1	0603	10R	1
C8, C9, C10, C11	1210	10uF/63V	4
C12		470uF/63V	1
U1	C6	ITEH09080A2C	1

TYPICAL CHARACTERISTICS

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

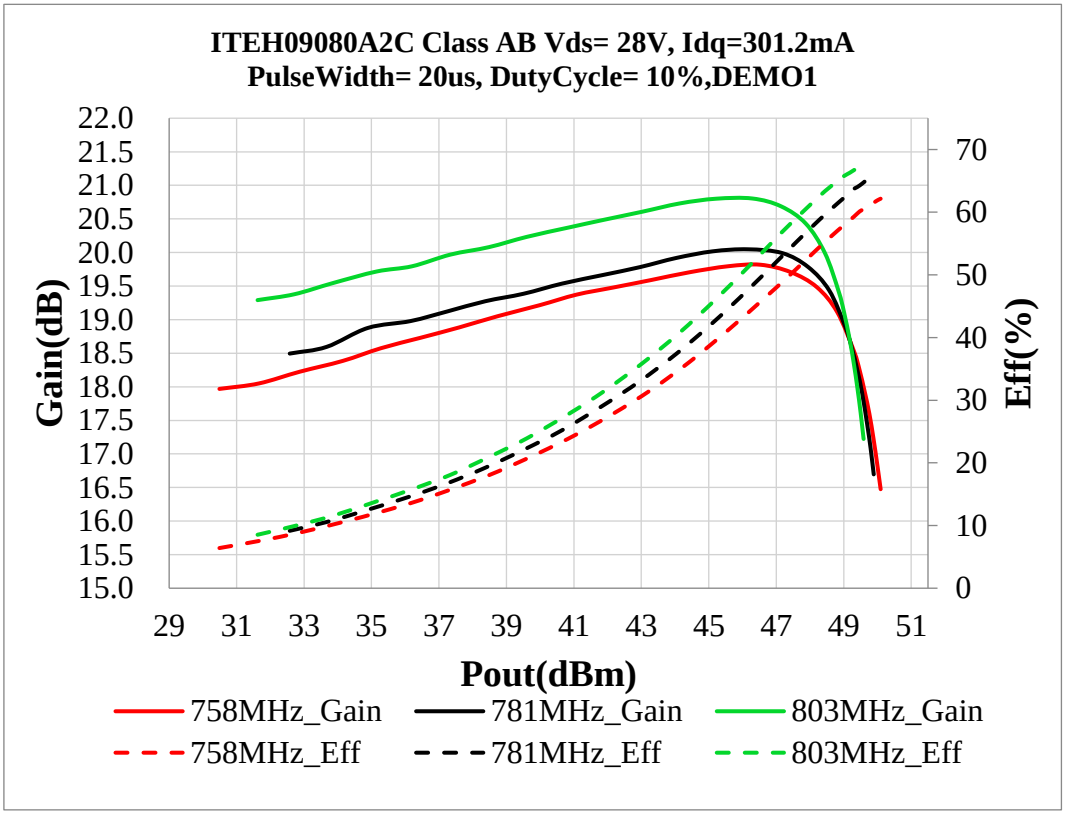
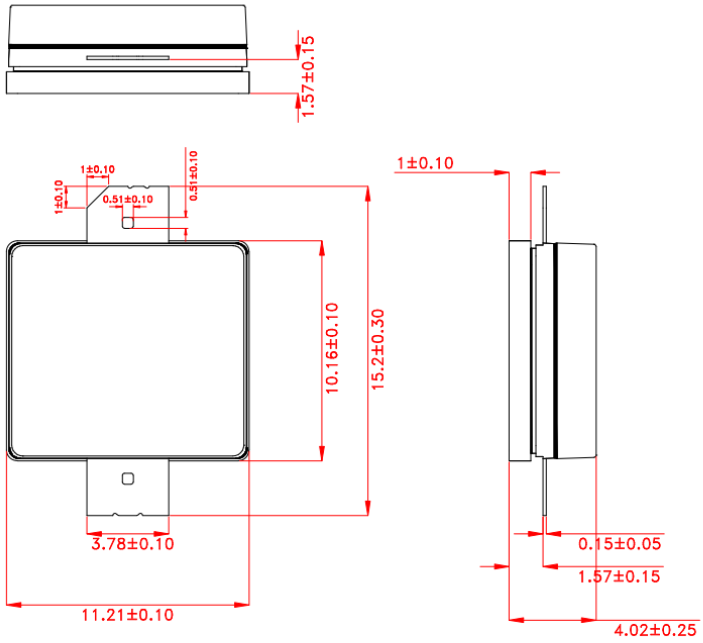
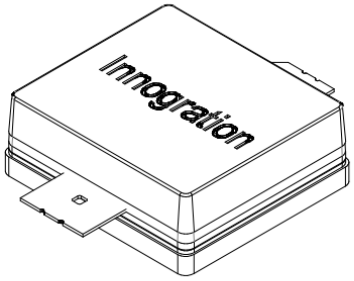


Figure 4. Network analyzer output S11/S21

Package Dimensions





Unit:mm

Tolerance ±0.10mm,Except as Noted.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2024/9/13	Rev 1.0	Preliminary Datasheet

Application data based on ZYX-24-60

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