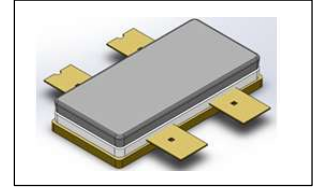




700MHz-1000MHz, 320W, 28V High Power RF LDMOS FETs

Description

The ITGH09320B4C is a 320-watt, internally matched LDMOS FET, designed for multicarrier WCDMA/PCS/DCS/LTE base station with frequencies from 700 to 1000MHz. It can be used as Doherty paired device for all typical cellular base station modulation formats.



- Typical Performance of Doherty Demo (On Innegration fixture with device soldered):

$$V_{DS} = 28V, I_{DQ} = 300mA (V_m = 2.57V, V_p = 1.5V)$$

Freq (MHz)	Pout (dBm)	Psat (dBm)	Psat (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
758	47.0	55.00	316.5	-32.3	20.1	51.8
780	47.0	55.16	327.8	-33.5	19.3	53.1
803	47.0	55.26	335.4	-31.5	18.2	52.6

Features

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

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}	+32	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 $T_c = 25^\circ C, P_{out} = 50W$	$R_{\theta JC}$	0.3	°C/W

Table 3. ESD Protection Characteristics

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

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

Characteristic	Symbol	Min	Typ	Max	Unit
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DC Characteristics (Main path Section)

Drain-Source Breakdown Voltage ($V_{GS} = 0V; I_D = 1mA$)	V_{DSS}	65	70		V
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Zero Gate Voltage Drain Leakage Current ($V_{DS} = 28\text{ V}$, $V_{GS} = 0\text{ V}$)	I_{loss}			10	μA
Gate--Source Leakage Current ($V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$)	I_{loss}			1	μA
Gate Threshold Voltage ($V_{DS} = 28\text{ V}$, $I_D = 600\text{ uA}$)	$V_{GS(th)}$		1.8		V
Gate Quiescent Voltage ($V_{DD} = 28\text{ V}$, $I_{DQ} = 450\text{ mA}$, Measured in Functional Test)	$V_{GS(Q)}$	2.2	2.6	3.2	V

Load Mismatch (On Innogrations Test Fixture, 50 ohm system): $V_{DD} = 28\text{ Vdc}$, $I_{DQ} = 330\text{ mA}$, $f = 920\text{ MHz}$

VSWR 10:1 at 50W WCDMA 1 Carrier Output Power	No Device Degradation
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Reference Circuit of Test Fixture Assembly Diagram

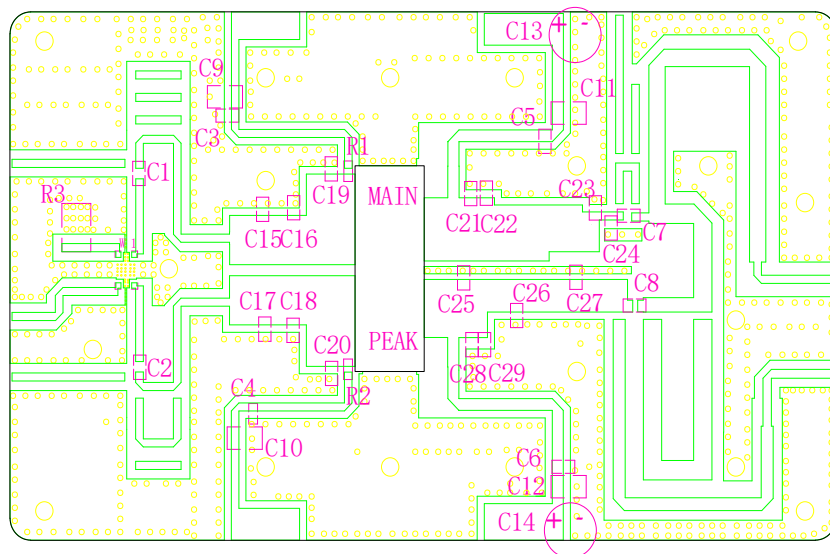


Figure 1. ITGH09320B4C Doherty Test Circuit Component Layout(758-803MHz)

Table 5. Test Circuit Component Designations and Values

Designator	Footprint	Comment	Quantity
C1, C2	0603/0805	4.7 pF	2
C3, C4, C5, C6, C8	0603/0805	100 pF	5
C9, C10	0603/0805	4700pF/50V	2
C11, C12	1210	10uF/100V	2
C13, C14		470uF/63V	2
C7, C15, C16, C17, C18, C22, C24, C25, C26, C27, C29	0603/0805	6.8 pF	11
C23	0603/0805	6.2 pF	1
C19, C20, C21, C28	0603/0805	15 pF	4
R1, R2	0603/0805	10Ω	2
R3	2512	51Ω	1
W1		DC07F02	1

TYPICAL CHARACTERISTICS

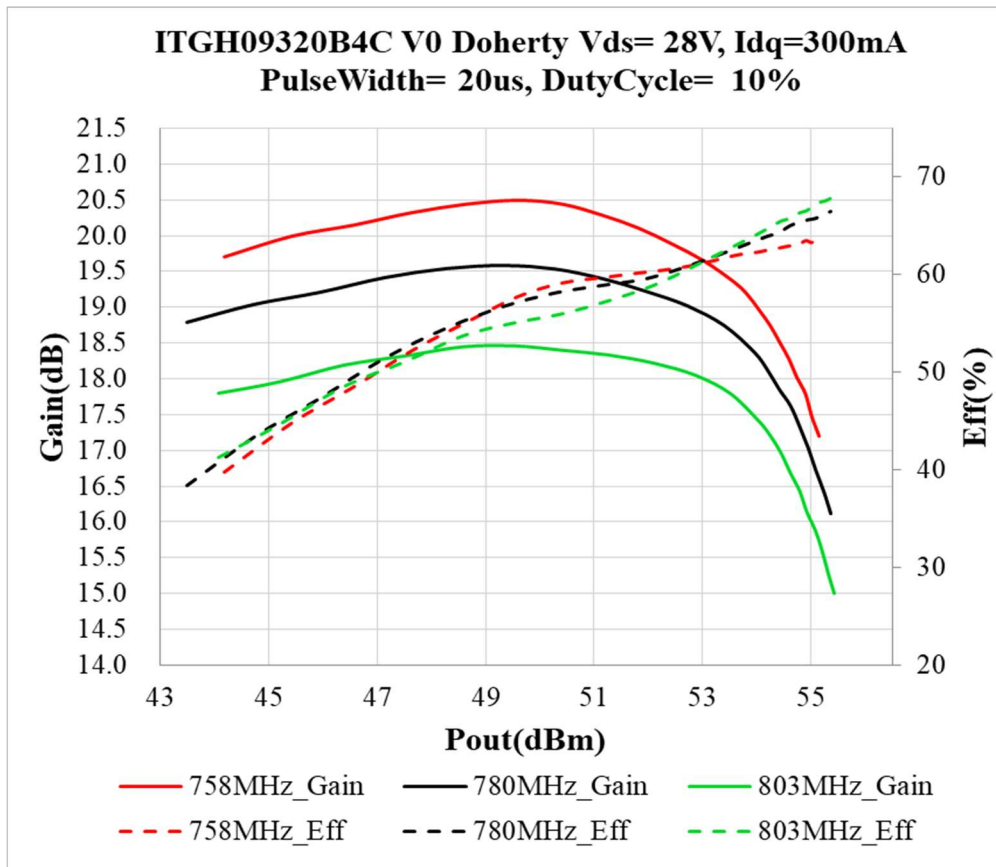


Figure 2. Power gain and drain efficiency as function of pulsed CW Pout

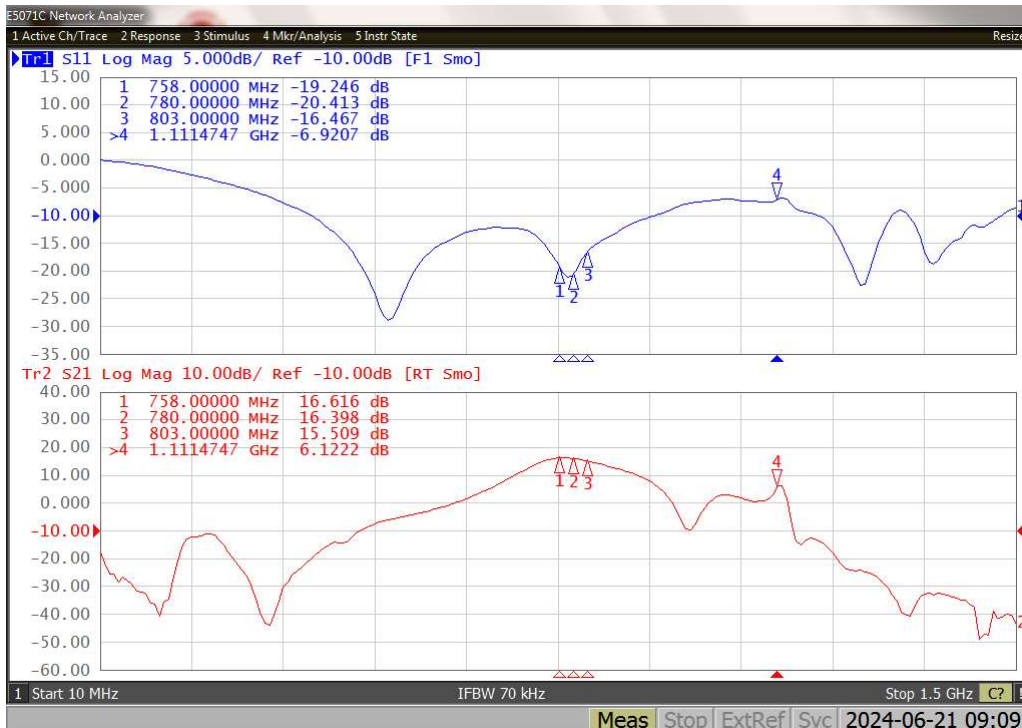
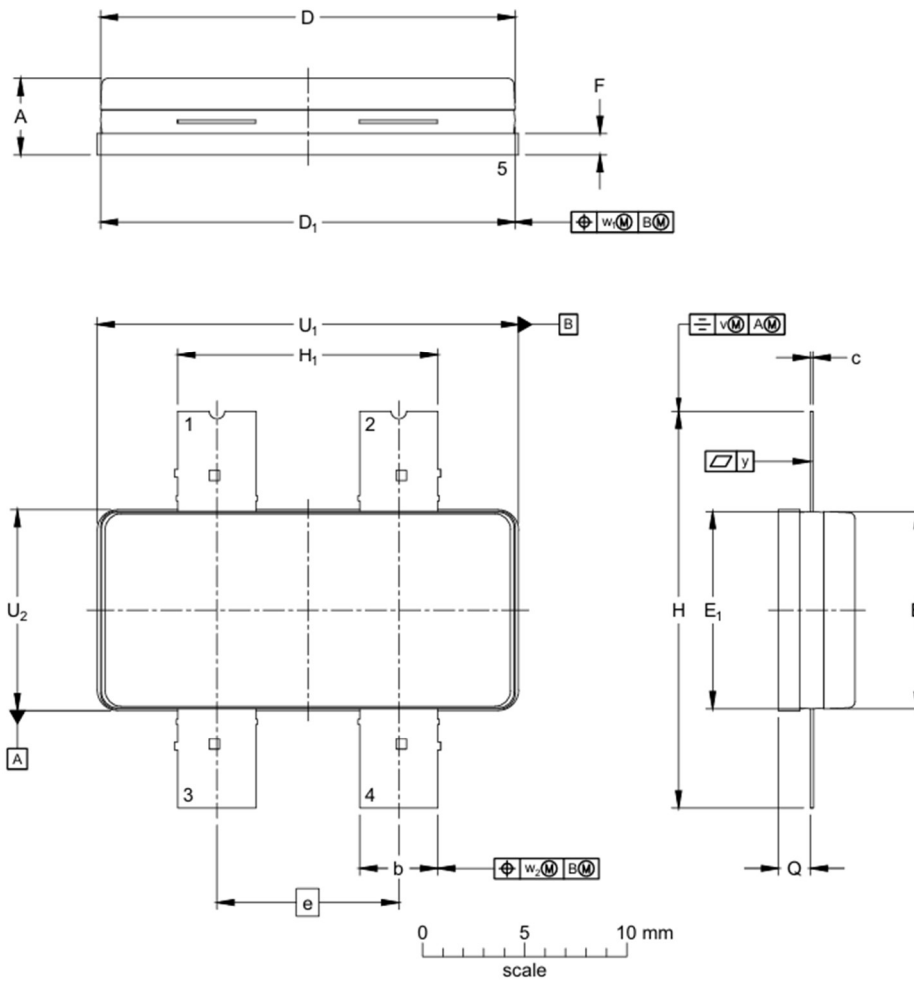


Figure 3. Broadband Frequency Response



Earless Flanged Plastic Air Cavity Package; 4 leads



Dimensions																		
Unit	A	b	c	D	D ₁	E	E ₁	e	F	H	H ₁	Q ⁽¹⁾	U ₁	U ₂	v	w ₁	w ₂	y
max	4.01	3.91	0.18	20.42	20.37	9.80	9.75		1.14	19.53	12.83	1.68	20.70	9.91	0.50	0.50	0.50	0.10
nom								8.89										
min	3.40	3.71	0.13	20.12	20.17	9.50	9.55		0.94	19.33	12.57	1.45	20.50	9.70				

Revision history

Table 5. Document revision history

Date	Revision	Datasheet Status
2024/6/21	Rev 1.0	Product Datasheet

Application data based on LSM-24-22

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