



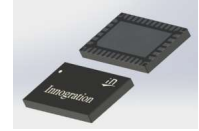
60W,28V Plastic RF LDMOS Transistor

ITEH18060C6

Description

The ITEH18060C6 is a dual path 60-watt, highly rugged, LDMOS transistor, designed for driver applications at frequencies from 1.8 to 2.0GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

It can be configured as highly compact Doherty ,ideal for high efficiency and low cost, DPD friendly driver stage of macro RRU or final stage of small cell for 4G/5G application within 1.8-2.0GHz.



- Typical 1.8GHz Doherty RF Performance (On Innegration fixture with device soldered).
V_{ds}=28V Id_{q_main}=180mA, V_{gs_peak}=2.15V

Freq (MHz)	Pulse CW Signal			P _{avg} =40dBm WCDMA Signal		
	P1dB Gain (dB)	P3dB (W)	Eff@P3dB (%)	Gp (dB)	Eff(%)	ACPR _{5M} (dBc)
1800	15.36	70.17	60.90	16.12	44.34	-30.20
1850	15.36	74.33	60.88	16.12	44.77	-34.41
1900	15.27	72.02	59.81	15.75	44.12	-35.85

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

- L band power amplifier
- All 4G/5G cellular application within 1.8 to 2.0GHz
- Small cell

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	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°C, T _j =200°C, DC test	R _{θJC}	0.4	°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)

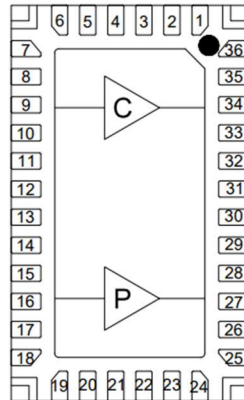
Characteristic	Symbol	Min	Typ	Max	Unit
DC Characteristics					
Drain-Source Voltage V _{GS} =0, I _{DS} =100uA	V _{(BR)DSS}		65		V
Zero Gate Voltage Drain Leakage Current (V _{DS} = 28V, V _{GS} = 0 V)	I _{DSS}	---	---	1	μA
Gate--Source Leakage Current (V _{GS} = 11 V, V _{DS} = 0 V)	I _{GSS}	---	---	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 = 100mA, Measured in Functional Test)	V _{GS(Q)}	---	2.7	---	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): V_{DD} = 28Vdc, I_{DQ} = 100 mA, f = 1900 MHz

VSWR 10:1 at 60W pulse CW Output Power	No Device Degradation
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Figure 1: Pin Connection definition

Transparent top view (Backside grounding for source)



Pin No.	Symbol	Description
8,9,10,11	RF IN/Vgs1	RF Input, Vgs bias for main path
14,15,16,17	RF IN/Vgs2	RF Input, Vgs bias for peak path
32,33,34,35	RF OUT/VDD1	RF Output, VDD bias for Main path
26,27,28,29	RF OUT/VDD2	RF Output, VDD bias for Peak path
Rest pins	NC	No connection
2,5,7,12,13,18,20,23,25,30,31,36, Package Base	GND	DC/RF Ground. Must be soldered directly to heatsink or copper coin for CW application.

1805-1880MHz application board

Reference Circuit of Test Fixture Assembly Diagram

20mils RO4350B

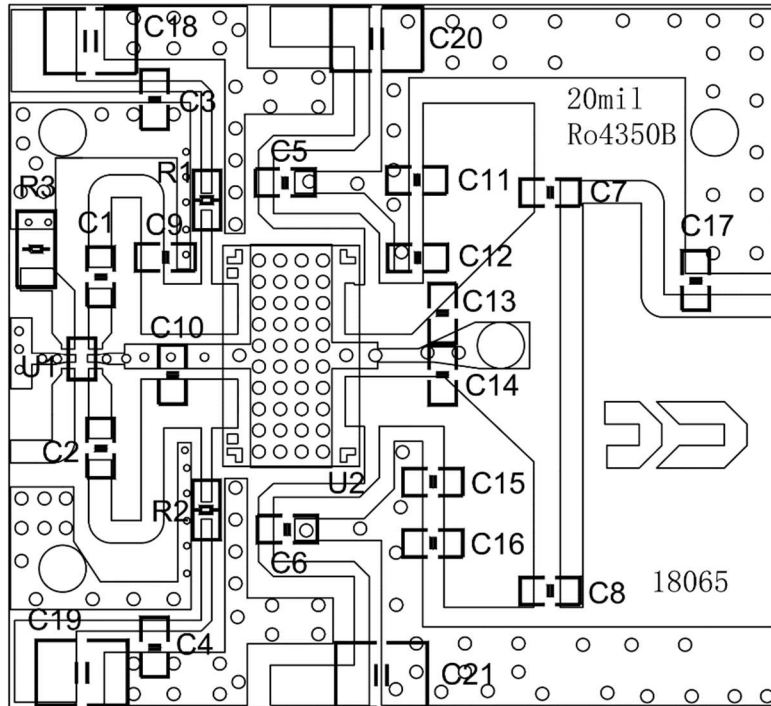


Figure 2. Test Circuit Component Layout

Table 5. Test Circuit Component Designations and Values

Reference	Footprint	Value	Quantity
C1, C3, C4, C5, C6, C7, C8	0603	20pF/250V	7
C2	0603	2.0pF/250V	1
C9	0603	3.9pF/250V	1
C10	0603	5.6pF/250V	1
C11	0603	0.8pF/250V	1
C12, C15, C16	0603	1.0pF/250V	3
C13, C14	0603	0.5pF/250V	2
C17	0603	1.3pF/250V	1
C18, C19, C20, C21	1210	10uF/100V	4
R1, R2	0603	10R	2
R3	0805	51R	1
U1	0805	C2327J5003AHF	1
U2	C6	ITEH18060C6	1



TYPICAL CHARACTERISTICS

Figure 5. Power Gain and Drain Efficiency as function of Power Output at Idq=100mA

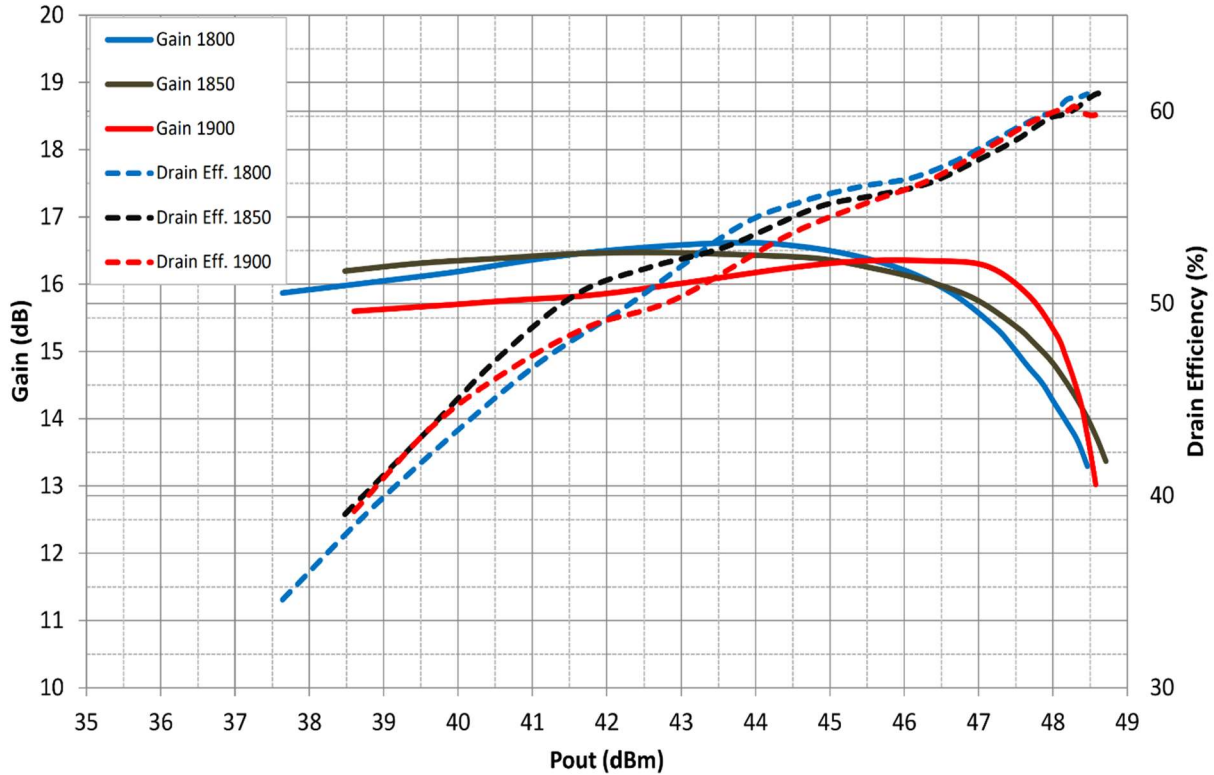
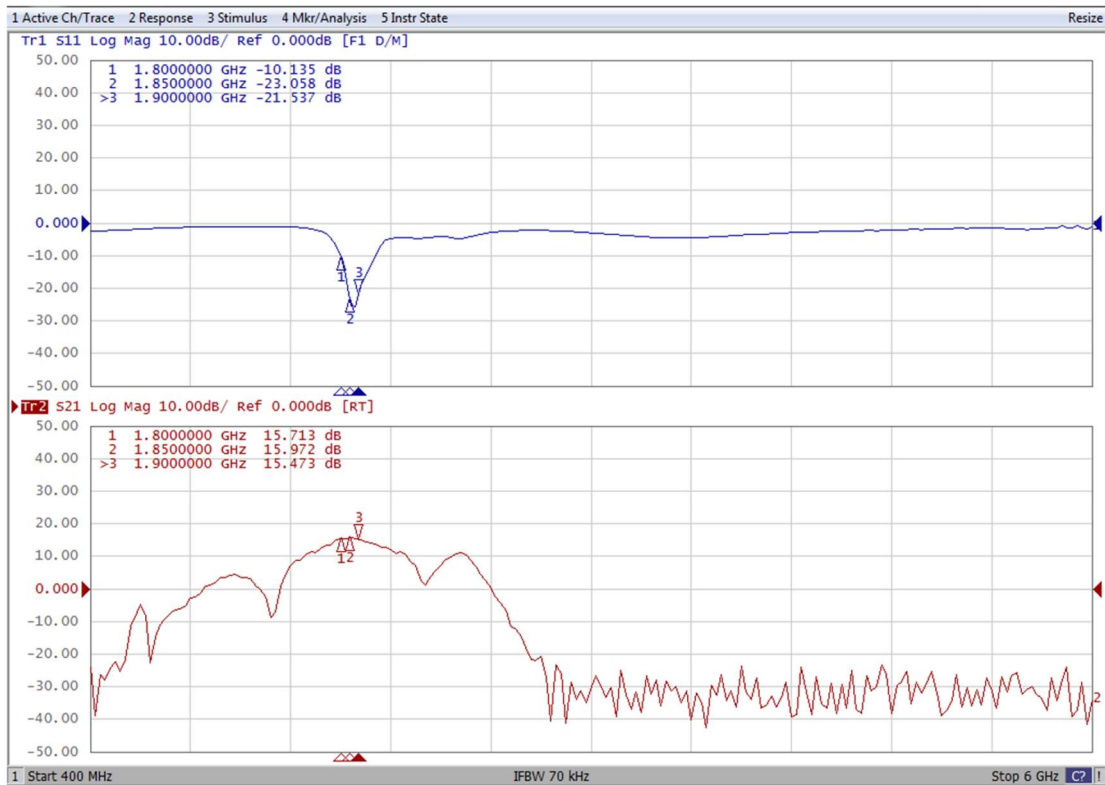


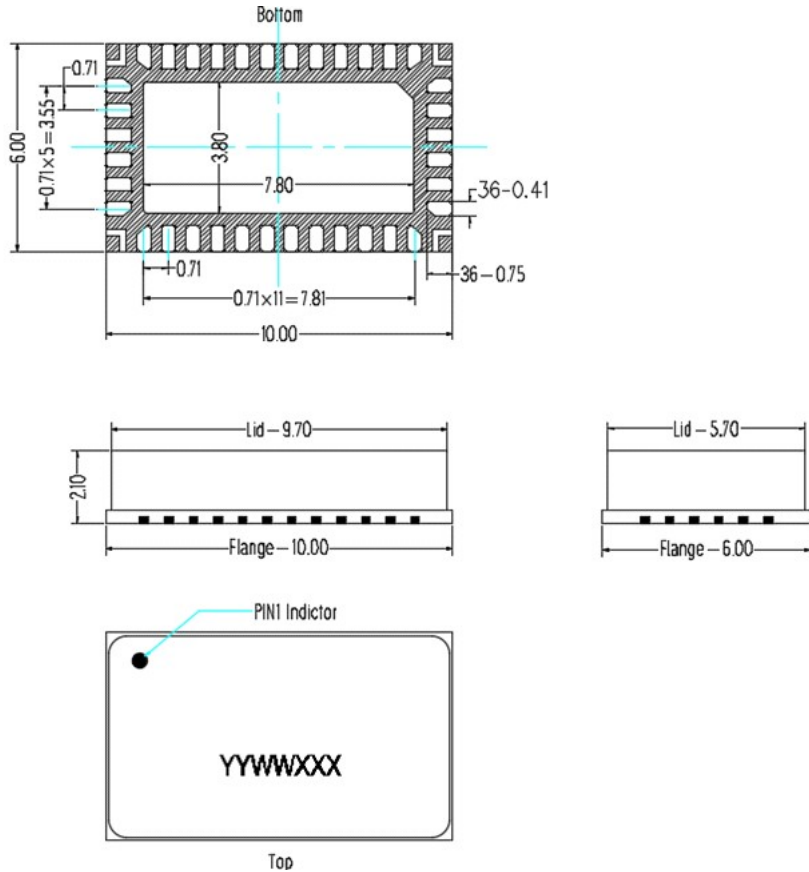
Figure 5. Network analyzer output S11/S21





Package Dimensions

10*6 Plastic Package



Notes:

- 1. All dimensions are in mm;
- 2. The tolerances unless specified are ±0.2mm.

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2023/12/22	Rev 1.0	Preliminary Datasheet

Application data based on ZBB-23-40

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