



20W*2,28V Plastic RF LDMOS Transistor

ITEH38042C6

Description

The ITEH38042C6 is a dual path 20watt*2 , highly rugged, LDMOS transistor, designed for any general applications at frequencies 3.6 to 4.0GHz, in 10*6mm QFN plastic package, supporting surface mounted on PCB through high density grounding vias.

• **Typical 3.6-4.0GHz Class AB RF Performance** (On Innegration fixture with device soldered).

 **$V_{ds}=28V$, $I_{dq}=50mA$, $V_{gs}=2.52V$ (Demo2)**

FREQ (MHZ)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
3600	45.47	35.2	39.4	12.3	46.84	48.3	44.0
3700	45.41	34.8	38.9	11.76	46.79	47.7	43.4
3800	45.35	34.3	38.6	11.26	46.72	47.0	43.0
3900	45.29	33.8	38.9	10.77	46.64	46.1	43.2
4000	45.02	31.8	38.8	10.39	46.4	43.6	43.0

 $V_{ds}=28V$, $I_{dq}=280mA$, $V_{gs}=2.72V$ (Demo2) WCDMA-1C-PAR10.8

Freq (MHz)	Pout (dBm)	CCDF (dB)	Ppeak (dBm)	Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
3600	35	9.53	44.54	28.4	-47.9	14.0	13.0
3700		9.47	44.46	27.9	-48.1	13.5	12.9
3800		9.49	44.49	28.2	-47.8	13.0	12.9
3900		9.39	44.41	27.6	-47.9	12.5	13.1
4000		9.33	44.33	27.1	-46.3	12.1	13.4
3600	34	9.79	43.80	24.0	-50.5	14.0	11.4
3700		9.71	43.71	23.5	-50.6	13.5	11.4
3800		9.76	43.76	23.8	-50.8	13.0	11.3
3900		9.81	43.82	24.1	-51.1	12.5	11.5
4000		9.60	43.60	22.9	-49.4	12.1	11.7

Suitable Applications

- S band power amplifier
- All 4G/5G cellular application within 3.3 to 4.0GHz

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 $T_C = 85^{\circ}\text{C}$, $T_J = 200^{\circ}\text{C}$, DC test	$R_{\theta JC}$	0.44	°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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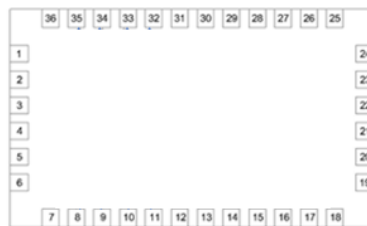
DC Characteristics

Drain-Source Voltage $V_{GS} = 0$, $I_{DS} = 100\mu\text{A}$	$V_{(BR)DSS}$		65		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 ($V_{DD} = 28\text{V}$, $I_D = 160\text{mA}$, Measured in Functional Test)	$V_{GS(Q)}$	—	2.7	—	V

Load Mismatch (In Innegration Test Fixture, 50 ohm system): $V_{DD} = 28\text{Vdc}$, $I_{DQ} = 100\text{mA}$, $f = 3600\text{MHz}$

VSWR 10:1 at 20W pulse CW Output Power	No Device Degradation
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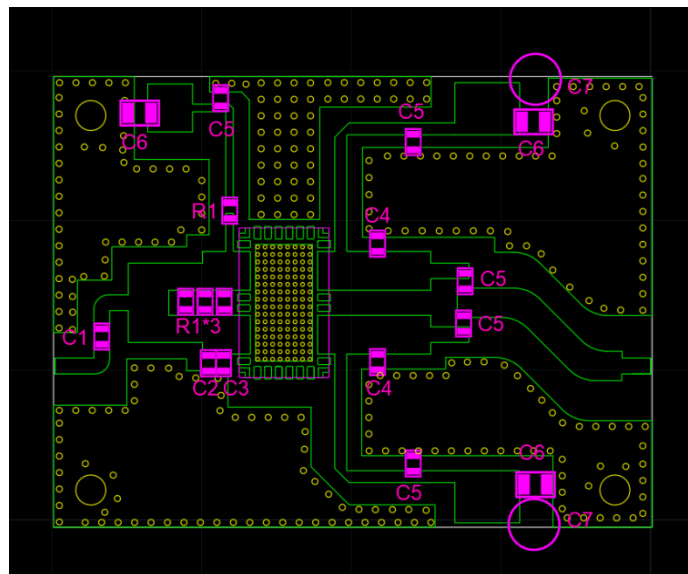
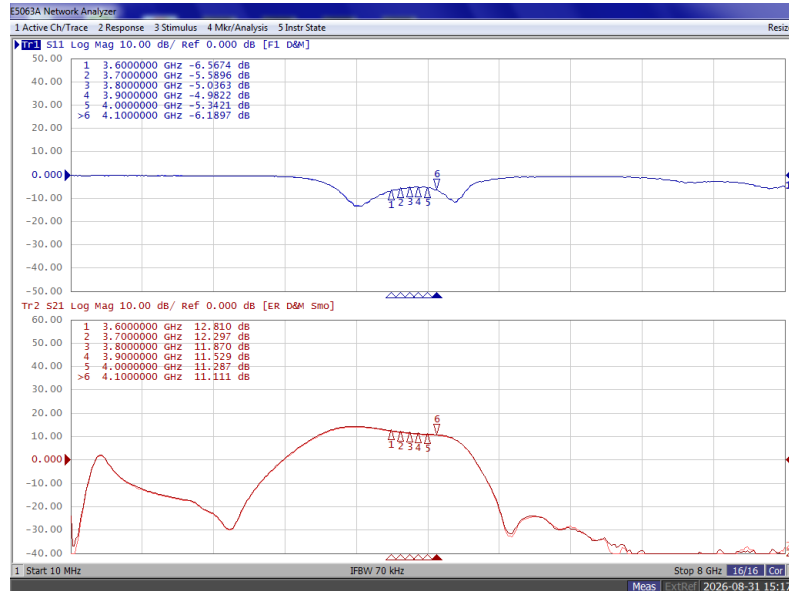
Figure 1: Pin Definition (Top View)



Pin No.	Symbol	Description
8,9,10,11	Vgs1/RF In1	Vgs and RF input of path 1
32,33,34,35	Vds1/RF out1	Vds and RF output of path 1
14,15,16,17	Vgs2/RF In2	Vgs and RF input of path 2
26,27,28,29	Vds2/RF out2	Vds and RF output of path 2
2,5,7,12,13,18,20,23,25,30,31,36	GND	DC/RF Ground
Others	NC	No connection
Package Base	GND	DC/RF Ground.

Typical performance

Figure 2: Network analyzer Output S11/S21

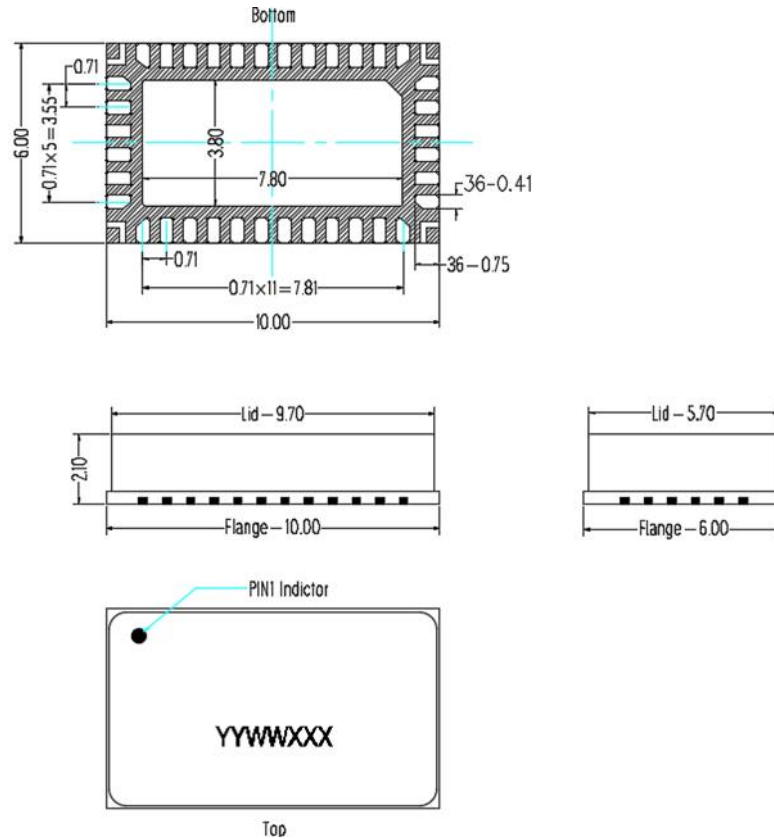


Component	Value	Suggestion	Quantity
C1	1.8pF	GQM2195C2E1R8BB12D	1
C2	0.3pF	GQM2195C2E0R3BB12D	1
C3	1.2pF	GQM2195C2E1R2BB12D	1
C4	0.8pF	GQM2195C2E0R8BB12D	2
C5	6.8pF	GQM2195C2E6R8BB12D	5
C6	10uF/63V	GRM32EC72A106KE05	3
C7	470uF/63V	EEVFK1J471M	2
R1	10 Ω	ERJPA3F10R0V	4



Package Dimensions

10*6 Plastic Package



Notes:

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

Revision history

Table 7. Document revision history

Date	Revision	Datasheet Status
2026/9/2	Rev 1.0	Product Datasheet with highlight particular in 3.6-4GHz

Application data based on ZYX-26-29

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