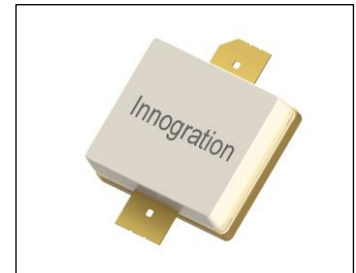




120W,28V Sub-1GHz RF LDMOS Transistor

Description

The ITGH09120A2C is 120-watt, high performance, input matched LDMOS transistor, designed for any general applications within UHF up to 1GHz, in new generation highly cost effective open cavity package.



- Typical 915MHz Class AB RF Performance (On Innegration fixture with device soldered).

V_{ds}=28V, I_{dq}=10mA

Freq (MHz)	P1dB (dBm)	P1dB (W)	P1dB Eff (%)	P1dB Gain (dB)	P3dB (dBm)	P3dB (W)	P3dB Eff (%)
915	50.4	109.6	65.2	20.85	51.36	136.9	70

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

V_{ds}=28V, I_{dq}=970mA

Freq (MHz)	Pout (dBm)	CCDF (dB)	Ppeak (dBm)	Ppeak (W)	ACPR (dBc)	Gain (dB)	Efficiency (%)
758	43.00	8.54	51.54	142.7	-39.1	23.6	25.6
780	43.00	8.40	51.40	138.0	-39.7	24.3	27.7
803	42.99	8.13	51.12	129.3	-39.1	23.6	30.1

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	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, DC test,	R _{θJC}	0.65	°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

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(O)}	---	2.6	---	V

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

VSWR 10:1 at 120W pulse CW Output Power	No Device Degradation
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915MHz application board

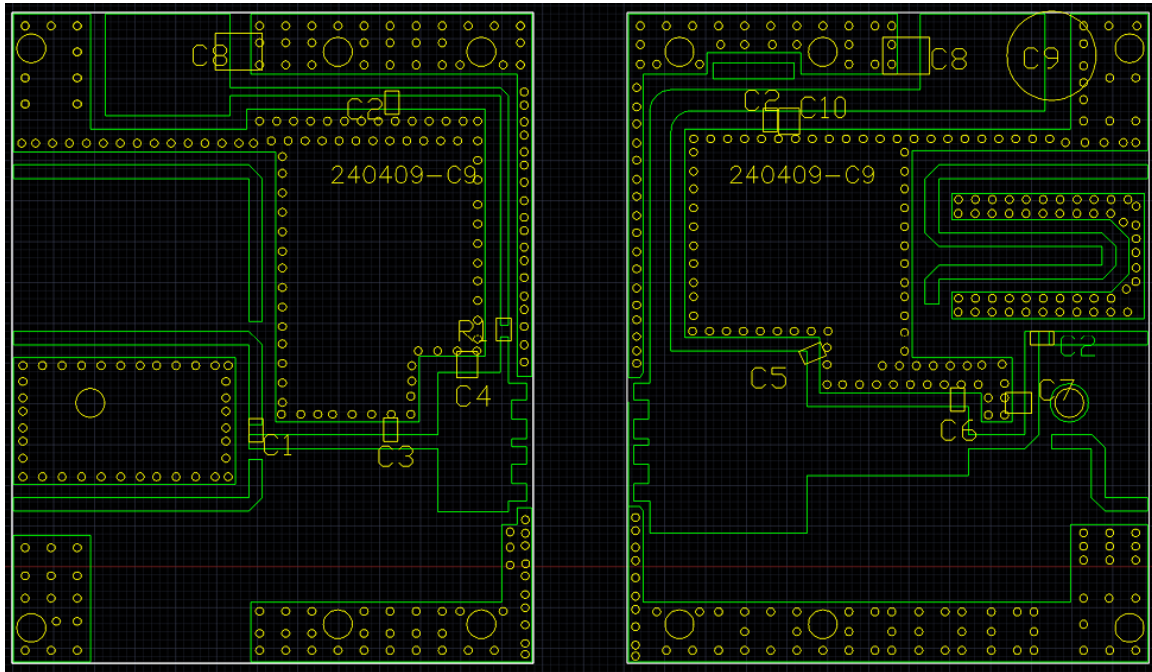


Figure 2. Test Circuit Component Layout, 30mils RO4350B

Note:

Table 5. Test Circuit Component Designations and Values

Component	Value	Quantity
C1	3pF	1
C2	30pF	3
R1	10 ohm	1
C3	4.7pF	1
C4	5.6pF	1
C5	10pF	1
C6	2.7pF	1
C7	3.9pF	1
C8	10uF	2
C10	1uF	1
C9	470uF	1

TYPICAL CHARACTERISTICS

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

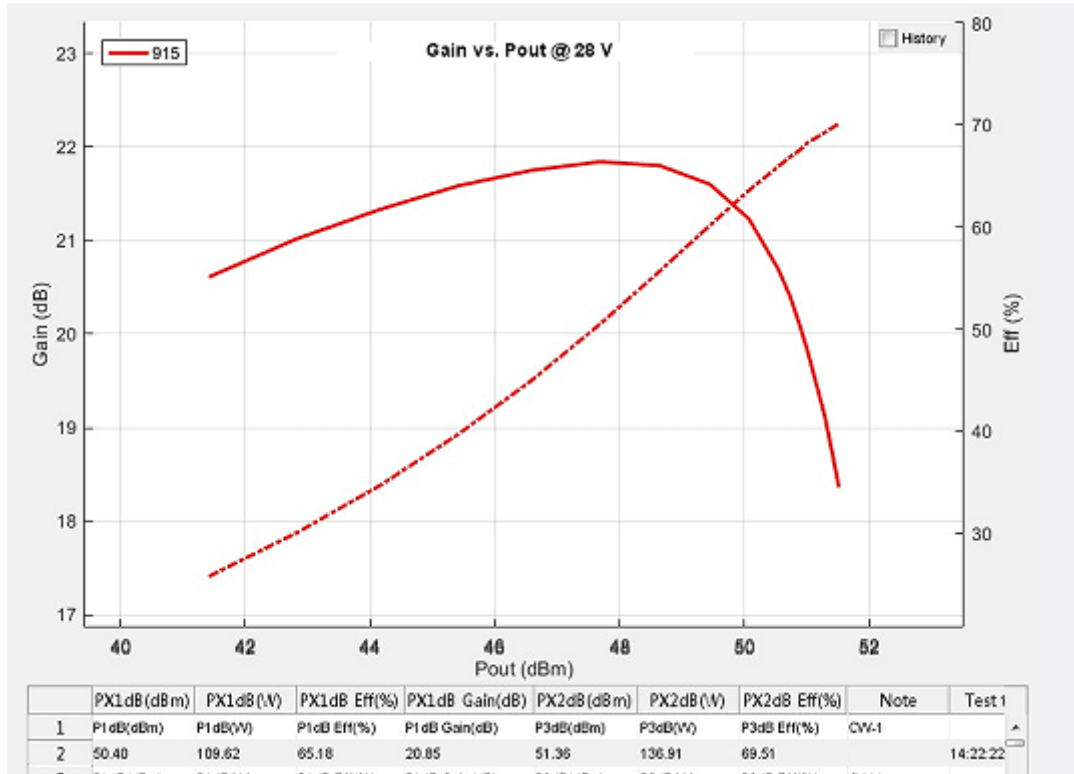
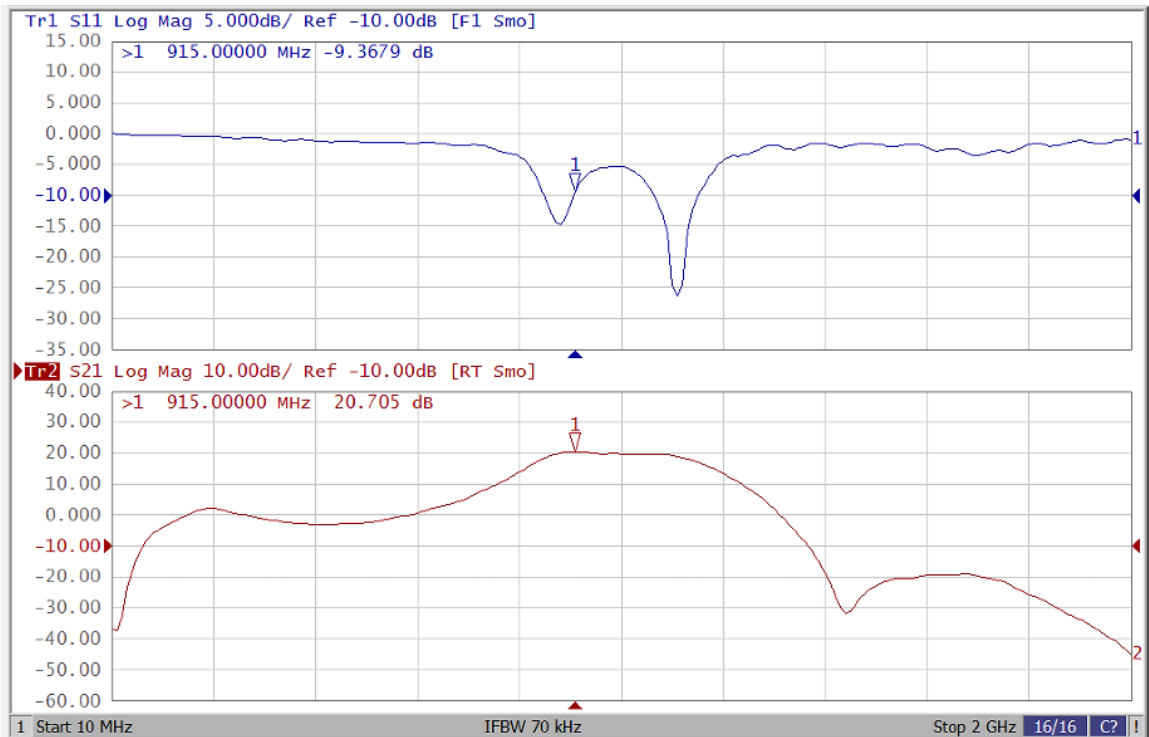


Figure 4. Network analyzer output S11/S21



758-803MHz application board

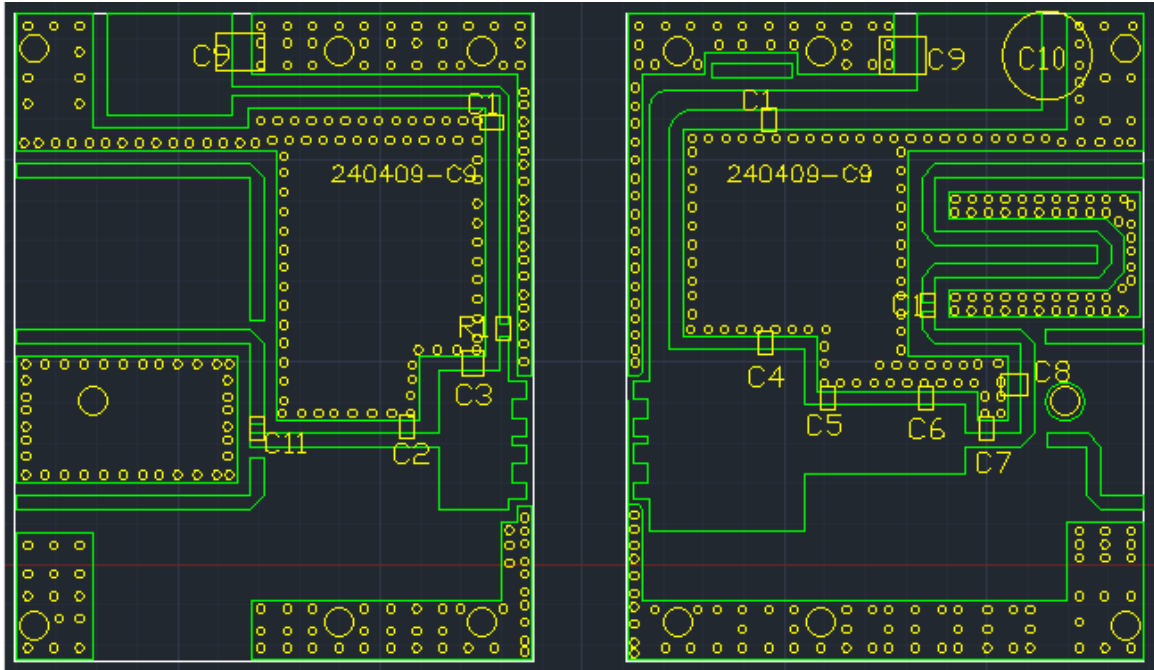


Figure 5. Test Circuit Component Layout, 20mils RO4350B

Note:

Table 6. Test Circuit Component Designations and Values

Component	Value	Quantity
C1	30pF	3
C2	8.2pF	1
R1	10 ohm	1
C3	12pF	1
C4	5.6pF	1
C9	10uF	2
C10	470uF	1
C5	10pF	1
C6	4.7pF	1
C7	0.8pF	1
C8	5.1pF	1
C11	3pF	1

TYPICAL CHARACTERISTICS

Figure 6. Power Gain and Drain Efficiency as function of Power Output

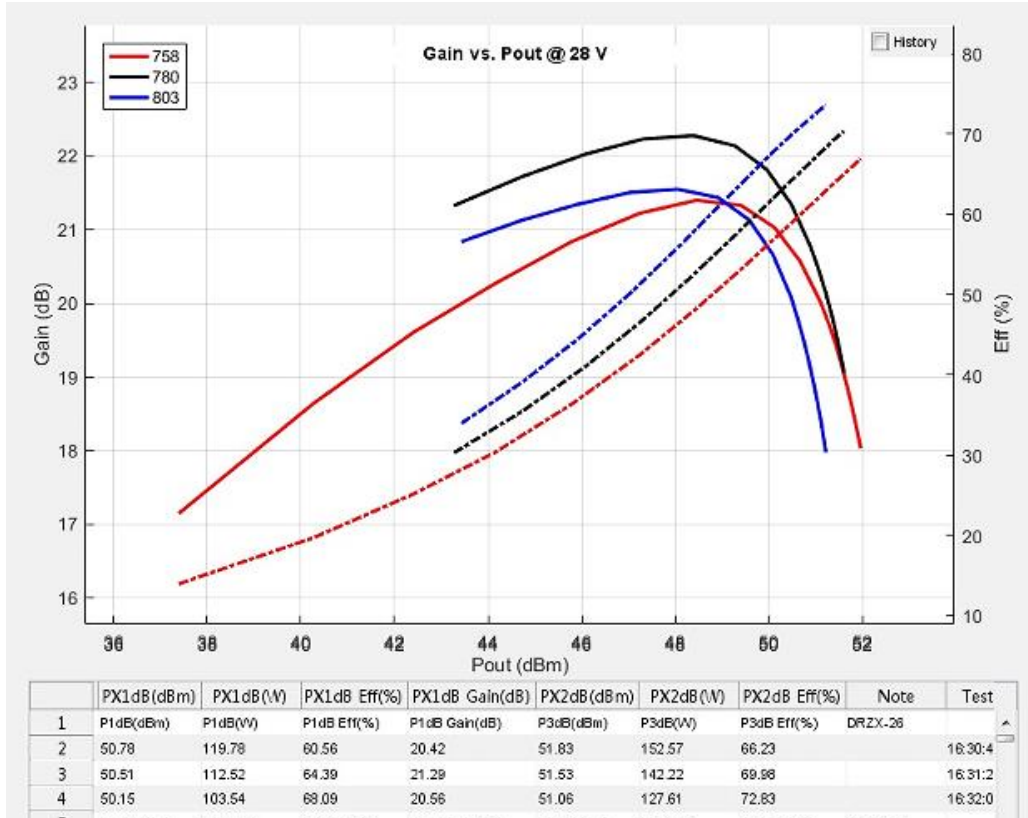
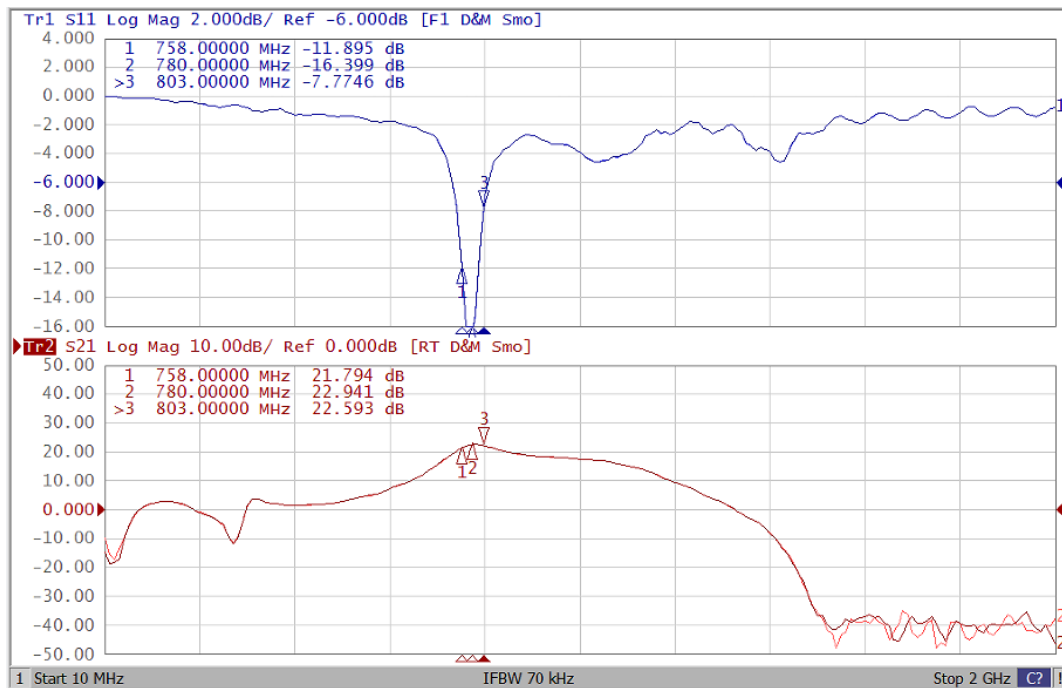


Figure 7: Network analyzer Output S11/S21





Package Dimensions

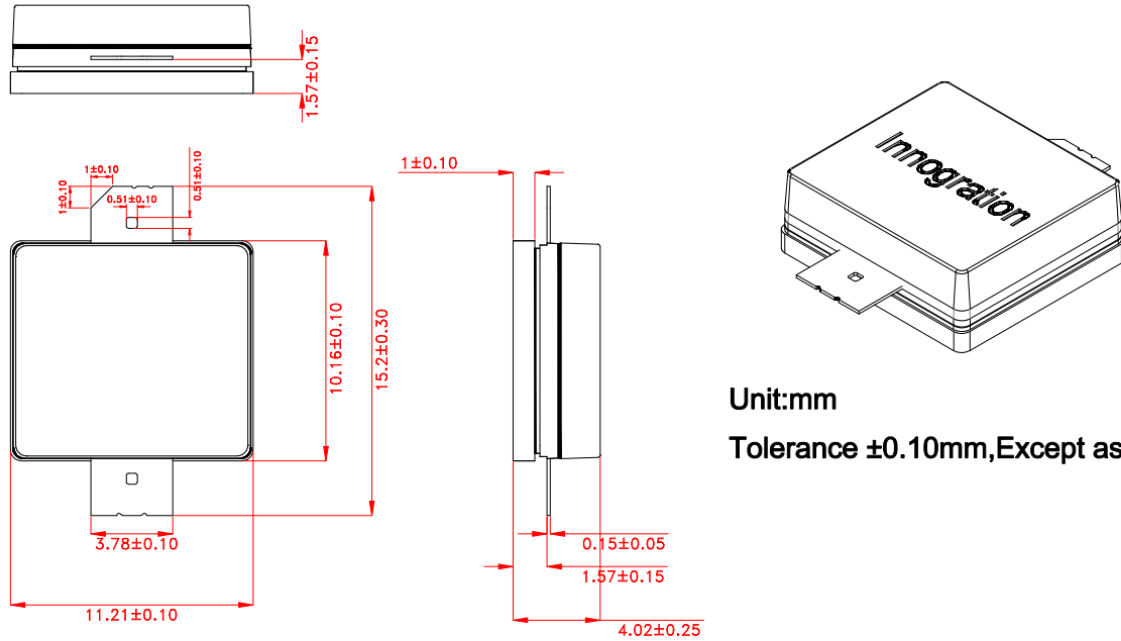


Table 7. Document revision history

Date	Revision	Datasheet Status
2024/5/31	Rev 1.0	Preliminary Datasheet

Application data based on ZXY-24-29/30

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