

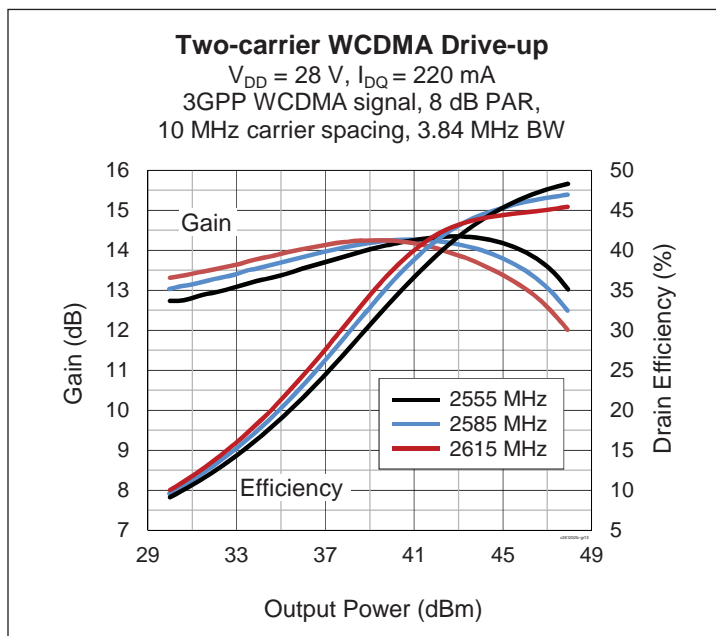
## Thermally-Enhanced High Power RF LDMOS FET 120 W, 28 V, 2496 – 2690 MHz

### Description

The PXAC261202FC is a 120-watt LDMOS FET with an asymmetric design for use in multi-standard cellular power amplifier applications in the 2496 to 2690 MHz frequency band. It features dual-path design, input and output matching, and a thermally-enhanced package with earless flange. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PXAC261202FC  
Package H-37248-4



### Features

- Broadband internal matching
- CW performance in a Doherty configuration, 2555 MHz, 28 V
  - Output power at  $P_{1dB} = 80\text{ W}$
  - Gain = 13.6 dB
  - Efficiency = 48%
- Single-carrier WCDMA performance in a Doherty configuration, 2555 MHz, 28 V, 8 dB PAR
  - Output power 28 W
  - Gain = 14.3 dB
  - Efficiency = 44.5%
  - ACPR  $-30\text{ dBc}$  @ 5 MHz
- Integrated ESD protection: Human Body Model, Class 1C (per JESD22-A114)
- Low thermal resistance
- Pb-free and RoHS compliant

### RF Characteristics

#### Two-carrier WCDMA Specifications (tested in Infineon Doherty test fixture)

$V_{DD} = 28\text{ V}$ ,  $V_{GS(peak)} = 0.9\text{ V}$ ,  $I_{DQ} = 230\text{ mA}$ ,  $P_{OUT} = 28\text{ W}$  average,  $f_1 = 2610\text{ MHz}$ ,  $f_2 = 2620\text{ MHz}$ . 3GPP WCDMA signal: 3.84 MHz bandwidth, 8 dB PAR @0.01% CCDF.

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	$G_{ps}$	12.5	13.5	—	dB
Drain Efficiency	$\eta_D$	41.0	45	—	%
Intermodulation Distortion	IMD	—	-29.5	-26.0	dBc

All published data at  $T_{CASE} = 25^\circ\text{C}$  unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

## DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-source Breakdown Voltage	$V_{GS} = 0\text{ V}, I_{DS} = 10\text{ mA}$	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current	$V_{DS} = 28\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	1.0	$\mu\text{A}$
	$V_{DS} = 63\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10.0	$\mu\text{A}$
Gate Leakage Current	$V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V}$	$I_{GSS}$	—	—	1.0	$\mu\text{A}$
On-state Resistance	(main) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.19	—	$\Omega$
	(peak) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.16	—	$\Omega$
Operating Gate Voltage	(main) $V_{DS} = 28\text{ V}, I_{DQ} = 0.23\text{ A}$	$V_{GS}$	2.1	2.6	3.1	V
	(peak) $V_{DS} = 28\text{ V}, I_{DQ} = 0\text{ A}$	$V_{GS}$	0.4	0.9	1.4	V

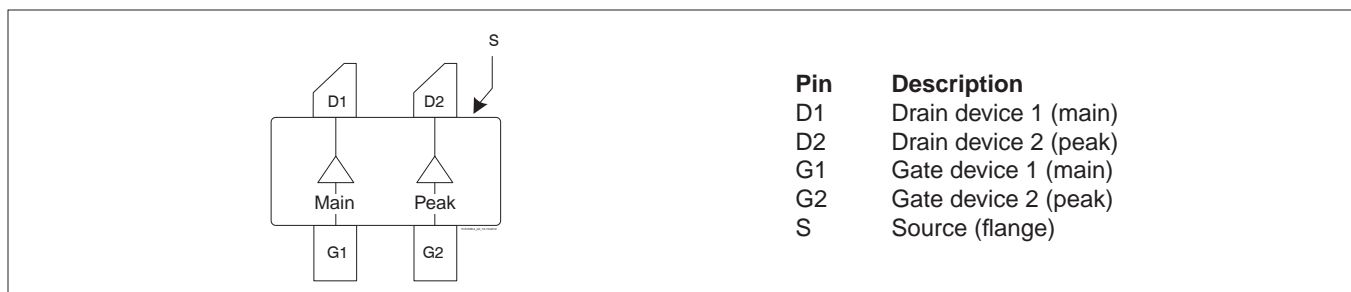
## Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-source Voltage	$V_{DSS}$	65	V
Gate-source Voltage	$V_{GS}$	-6 to +10	V
Operating Voltage	$V_{DD}$	0 to +32	V
Junction Temperature	$T_J$	225	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +150	$^{\circ}\text{C}$
Thermal Resistance ( $T_{CASE} = 70^{\circ}\text{C}, 100\text{ W CW}$ )	$R_{\theta JC}$	0.48	$^{\circ}\text{C/W}$

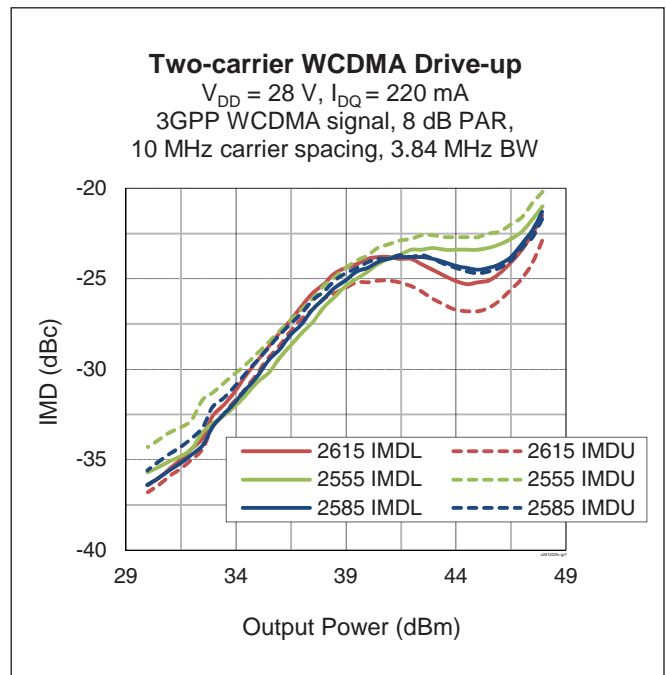
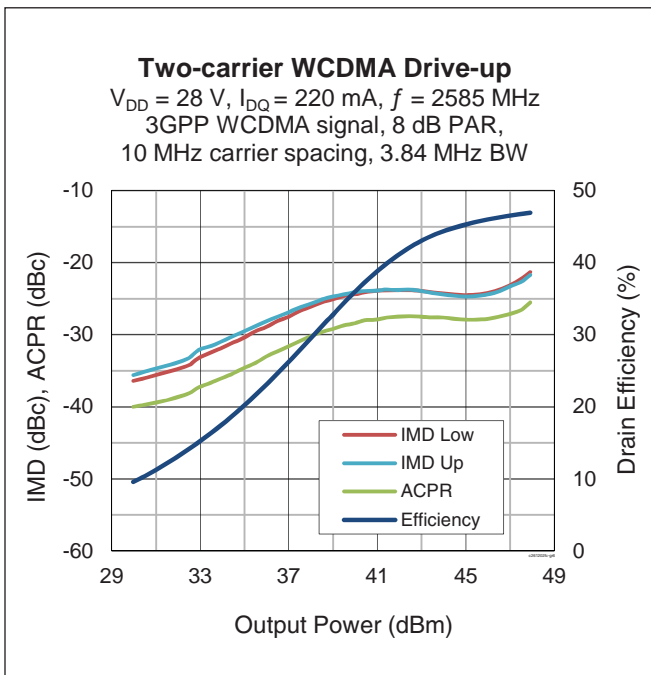
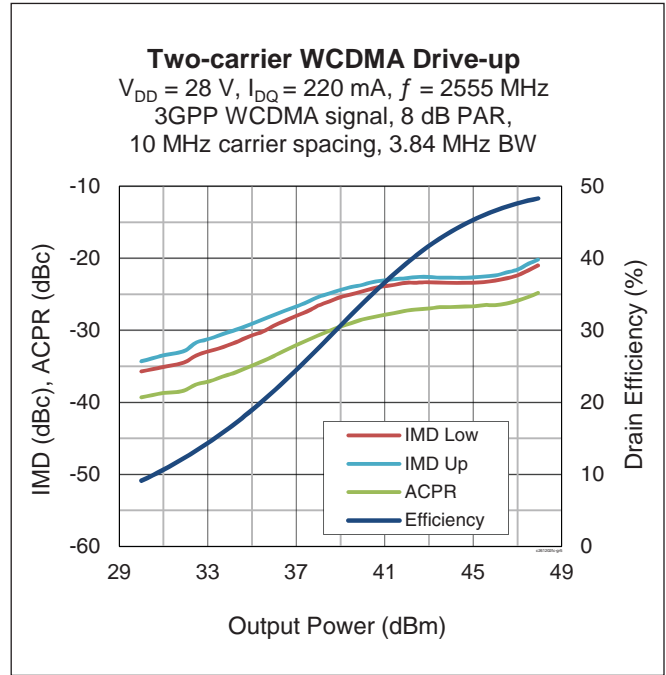
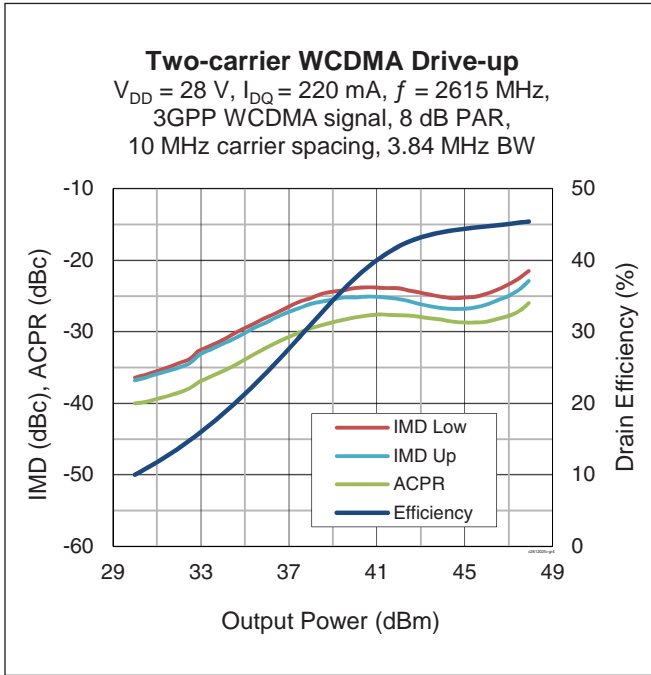
## Ordering Information

Type and Version	Order Code	Package and Description	Shipping
PXAC 261202FC V1	PXAC261202FCV1XWSA1	H-37248-4, ceramic open-cavity, earless	Tray
PXAC 261202FC V1 R250	PXAC261202FCV1R250XTMA1	H-37248-4, ceramic open-cavity, earless	Tape & Reel, 250 pcs

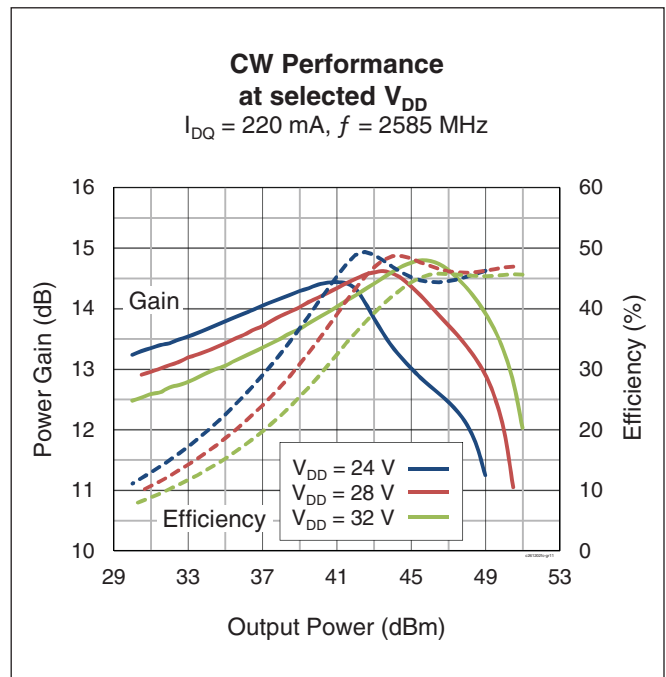
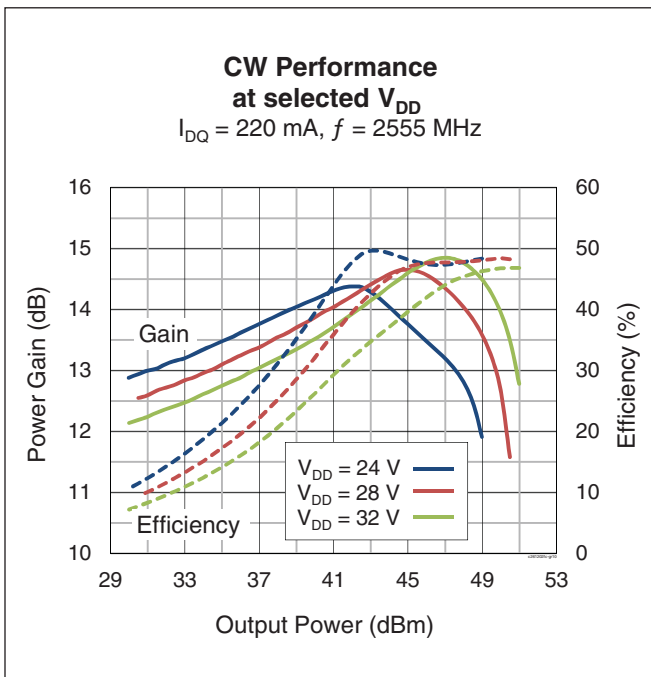
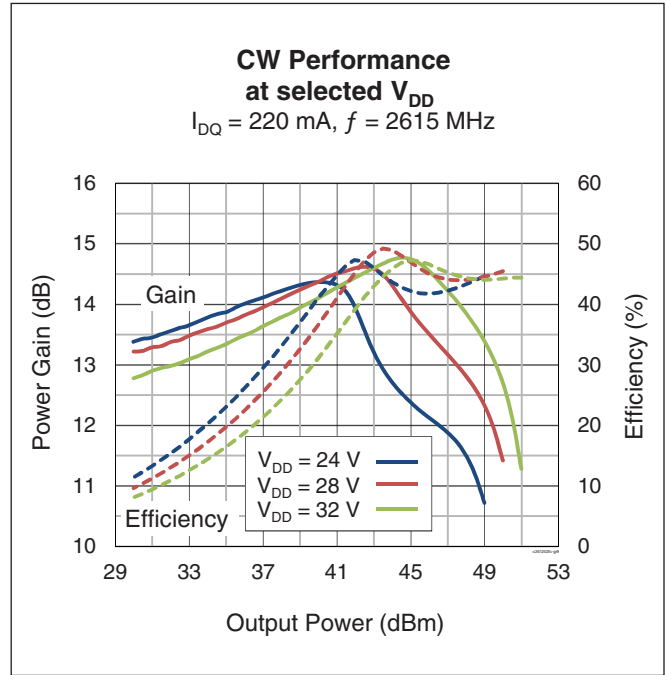
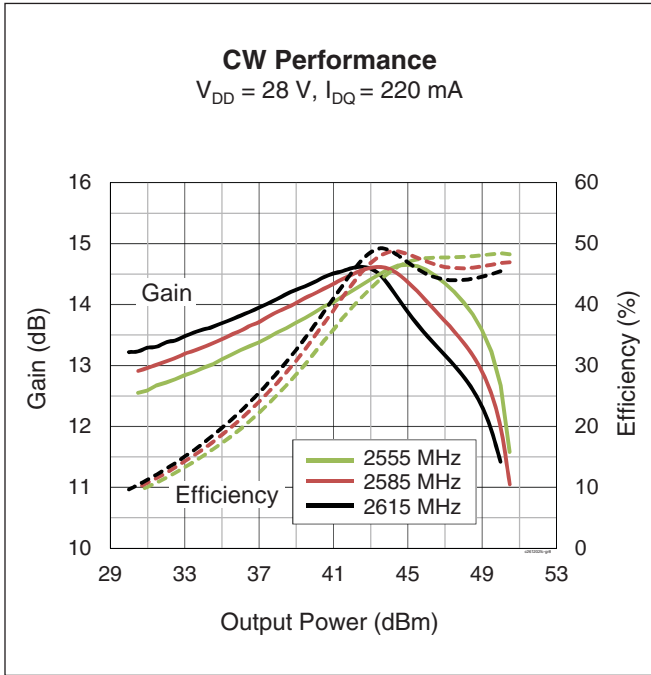
## Pinout Diagram (top view)



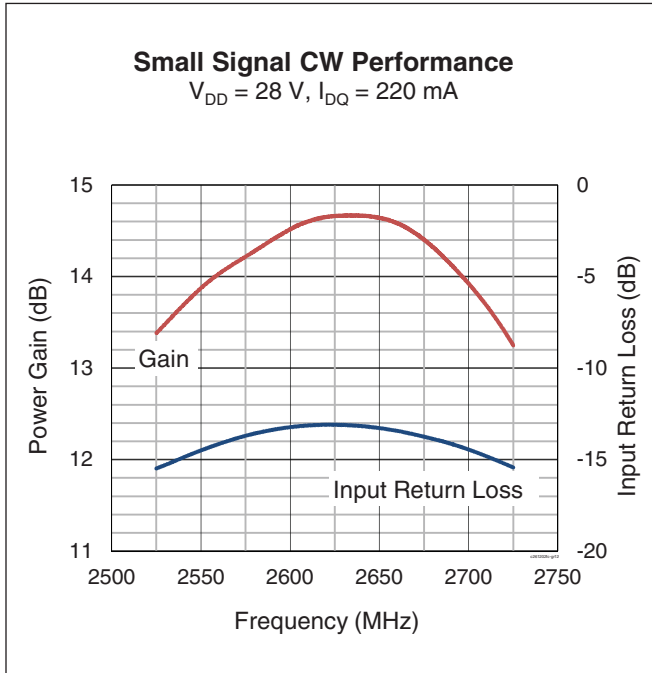
**Typical Performance** (data taken in Infineon Doherty reference test fixture)



Typical Performance (cont.)

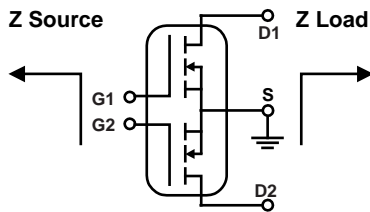


**Typical Performance** (cont.)



**See next page for load pull information**

## Load Pull Performance



Main side pulsed CW signal: 160  $\mu$ sec, 10% duty cycle; 28 V,  $I_{DQ} = 250$  mA

Class AB		P <sub>1dB</sub>									
		Max Output Power					Max PAE				
Freq [MHz]	Z <sub>s</sub> [ $\Omega$ ]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]
2490	7.15 – j17.1	3.49 – j6.98	16.5	48.38	68.9	52	6.98 – j4.51	18.7	46.76	47.4	61.3
2590	9 – j17.7	3.56 – j6.97	16.7	48.29	67.5	51.8	5.66 – j3.59	19	46.5	47.7	61.1
2690	12.8 – j18.2	3.62 – j7.38	16.6	48.23	66.5	51.3	4.89 – j4.12	18.8	46.75	47.3	60.1

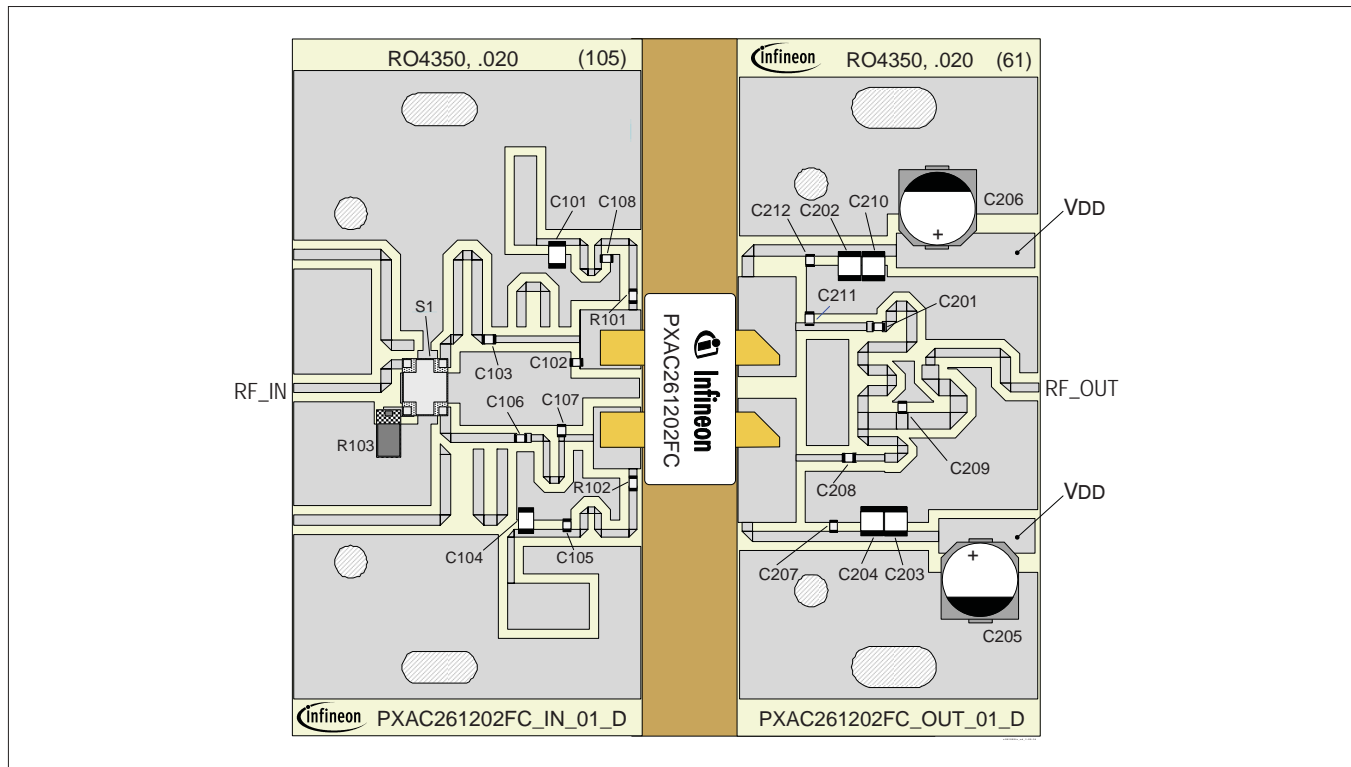
Peak side pulsed CW signal: 160  $\mu$ sec, 10% duty cycle;  $V_{GS} = 1.3$  V,  $I_{DQ} = 0$  mA

Class C		P <sub>1dB</sub>									
		Max Output Power					Max PAE				
Freq [MHz]	Z <sub>s</sub> [ $\Omega$ ]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]
2490	14.7 – j15.8	1.58 – j6.3	12.80	50.13	103.04	51.60	2.63 – j5.85	13.80	49.45	88.10	59.80
2590	9.9 – j9.9	1.67 – j6.51	13.10	49.89	97.50	51.40	3.28 – j5.65	14.20	48.50	70.79	59.70
2690	5.5 – j8.3	2.04 – j7.0	13.10	49.50	89.13	52.50	2.97 – j6.11	13.80	48.50	70.79	57.80

Reference Circuit, tuned for 2620 – 2690 MHz

DUT	PXAC261202FC
Reference Fixture Part No.	LTA/PXAC261202FC V1
PCB	Rogers 4350, 0.508 mm [.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$

Find Gerber files for this reference fixture on the Infineon Web site at ([www.infineon.com/rfpower](http://www.infineon.com/rfpower))

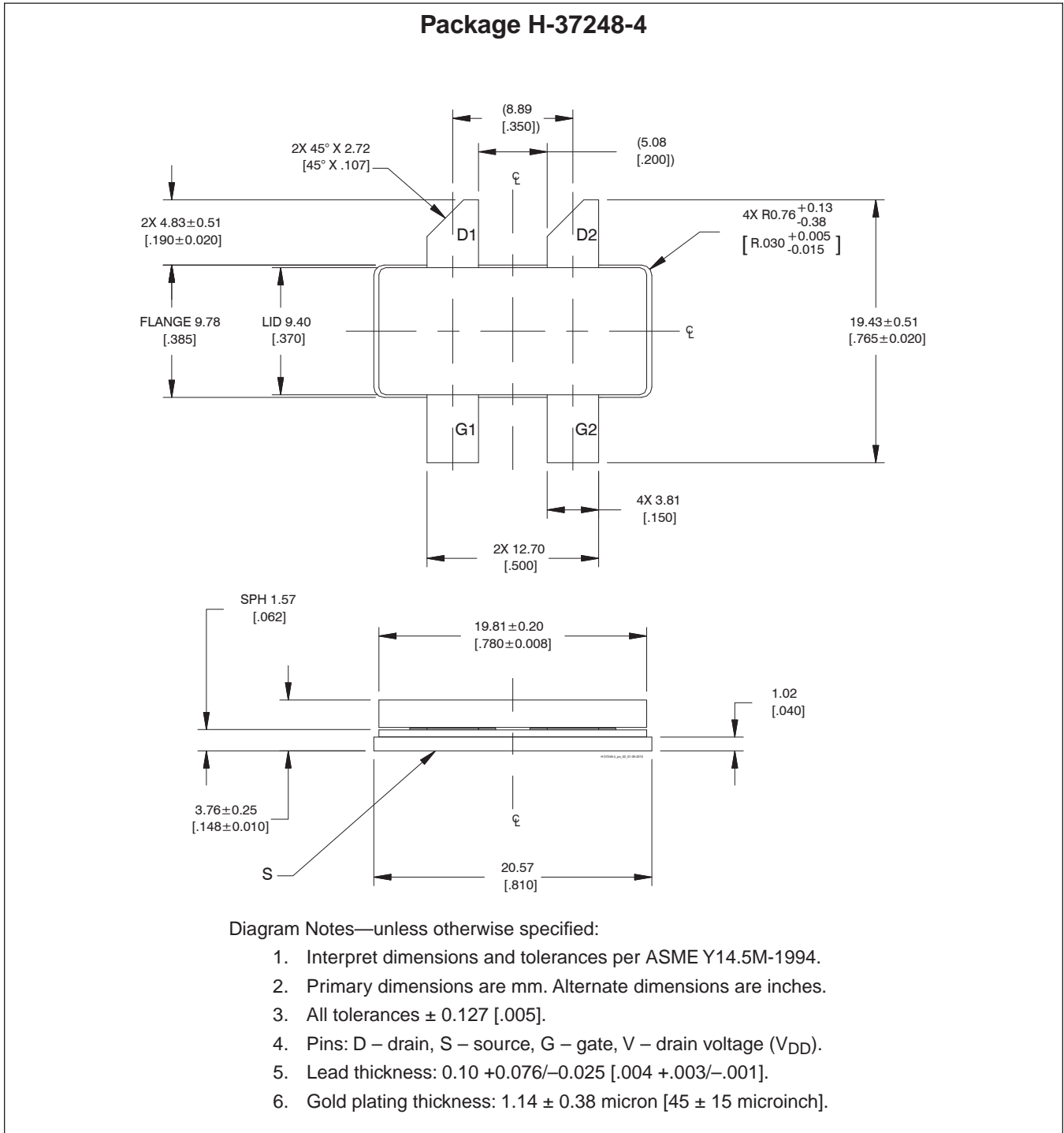


Reference circuit assembly diagram (not to scale)

Component Information

Component	Description	Suggested Manufacturer	P/N
<b>Input</b>			
C101, C104	Chip capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C102	Chip capacitor, 1 pF	ATC	ATC800A0R8CT250T
C103, C105, C106, C108	Chip capacitor, 10 pF	ATC	ATC800A100JT250T
C107	Chip capacitor, 1 pF	ATC	ATC800A1R0CT250T
R101, R102	Resistor, 10 ohms	Panasonic – ECG	ERJ-3GEYJ100V
R103	Resistor, 50 $\Omega$	Anaren	C16A50Z4
S1	Directional coupler	Anaren	X3C25P1-05S
<b>Output</b>			
C201, C207, C208, C212	Chip capacitor,	ATC	ATC800A100JT250T
C202, C203, C204, C210	Capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C205, C206	Capacitor, 220 $\mu$ F, 35 V	Panasonic – ECG	EEE-FP1V221AP
C209, C211	Chip capacitor, 1 pF	ATC	ATC800A0R8CT250T

Package Outline Specifications



Find the latest and most complete information about products and packaging at the Infineon Internet page ([www.infineon.com/rfpower](http://www.infineon.com/rfpower))



### Revision History

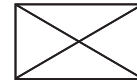
Revision	Date	Data Sheet	Page	Subjects (major changes since last revision)
01	2013-09-26	Advance	All	Proposed specification for new product development.
02	2014-02-26	Production	All 3 – 5, 6, 7	Data Sheet reflects released product data and specifications. Typical Performance graphs, load pull and reference circuit information added.

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