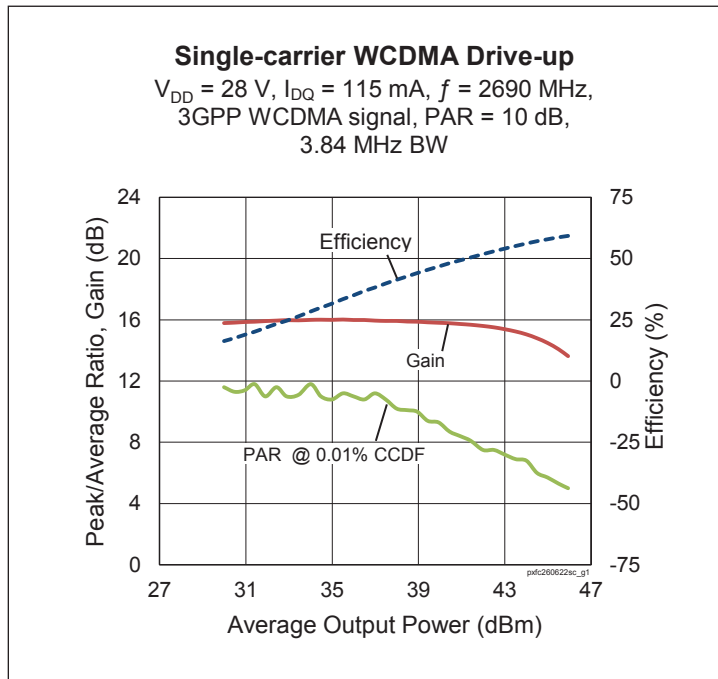
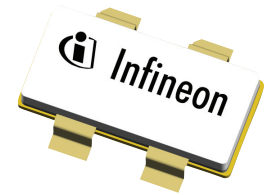


## Thermally-Enhanced High Power RF LDMOS FET 75 W, 28 V, 2496 – 2690 MHz

### Description

The PXAC260622SC is a 75-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, surface-mount package with earless flange. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXAC260622SC  
Package H-37248H-4  
with formed leads



### Features

- Broadband internal input and output matching
- Asymmetrical Doherty design
  - Main: 25 W Typ ( $P_{1dB}$ )
  - Peak: 50 W Typ ( $P_{1dB}$ )
- Typical pulsed performance in a Doherty configuration, at 39.5 dB  $P_{OUT}$ , 2690 MHz, 28 V, with pulse 10  $\mu$ s, 10% DC
  - Gain = 16dB
  - Efficiency = 45%
- Integrated ESD protection
- Pb-free and RoHS compliant
- Capable of handling 10:1 VSWR @ 28 V, 50 W (CW) output power

### RF Characteristics

#### Single-carrier WCDMA Specifications (device tested in Infineon Doherty test fixture with straight leads)

$V_{DD} = 28\text{ V}$ ,  $I_{DQ} = 115\text{ mA}$ ,  $P_{OUT} = 8.9\text{ W avg}$ ,  $f_1 = 2690\text{ MHz}$ , 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	$G_{ps}$	14.5	15.8	—	dB
Drain Efficiency	$\eta_D$	40	42	—	%
Adjacent Channel Power Ratio	ACPR	—	-30	-27	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	$\mu\text{A}$
	$V_{DS} = 63\text{ V}$ , $V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10	$\mu\text{A}$
Gate Leakage Current	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0\text{ V}$	$I_{GSS}$	—	—	1.0	$\mu\text{A}$
On-state Resistance	(main) $V_{GS} = 10\text{ V}$ , $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.50	—	$\Omega$
	(peak) $V_{GS} = 10\text{ V}$ , $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.25	—	$\Omega$
Operating Gate Voltage	(main) $V_{DS} = 28\text{ V}$ , $I_{DQ} = 115\text{ mA}$	$V_{GS}$	2.0	2.6	3.0	V
	(peak) $V_{DS} = 28\text{ V}$ , $I_{DQ} = 0\text{ A}$	$V_{GS}$	—	1.4	—	V

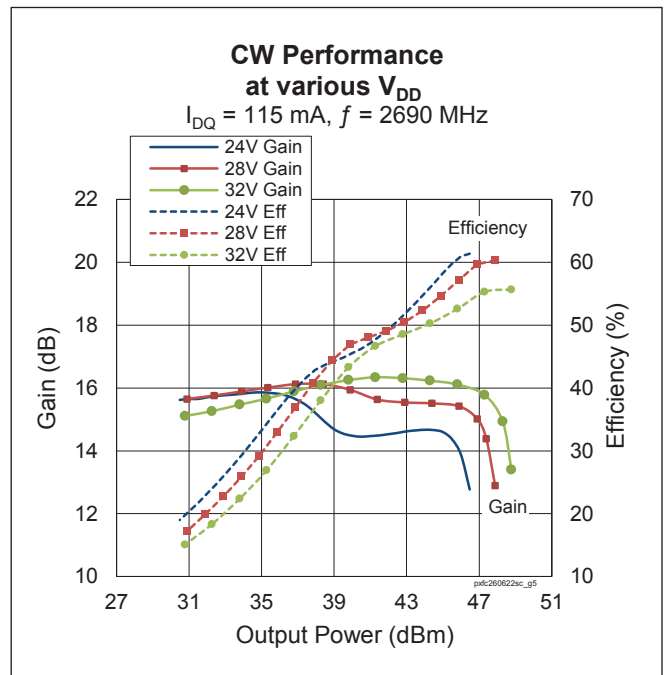
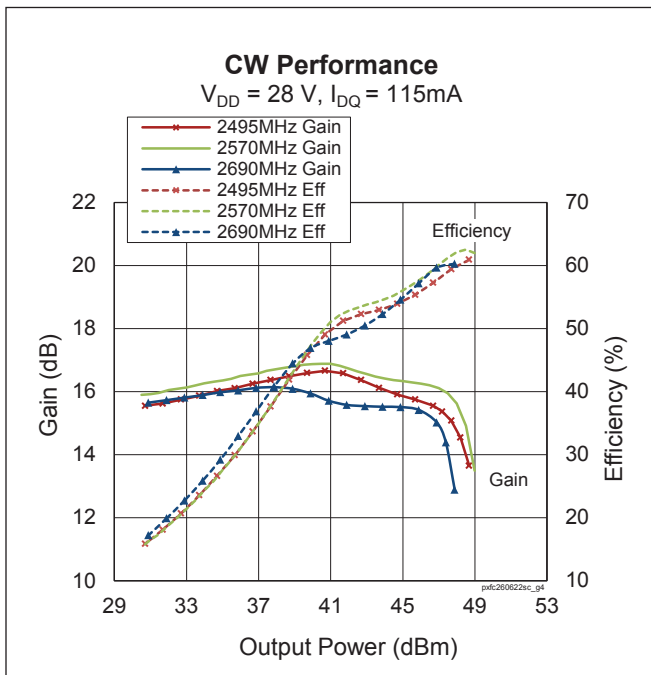
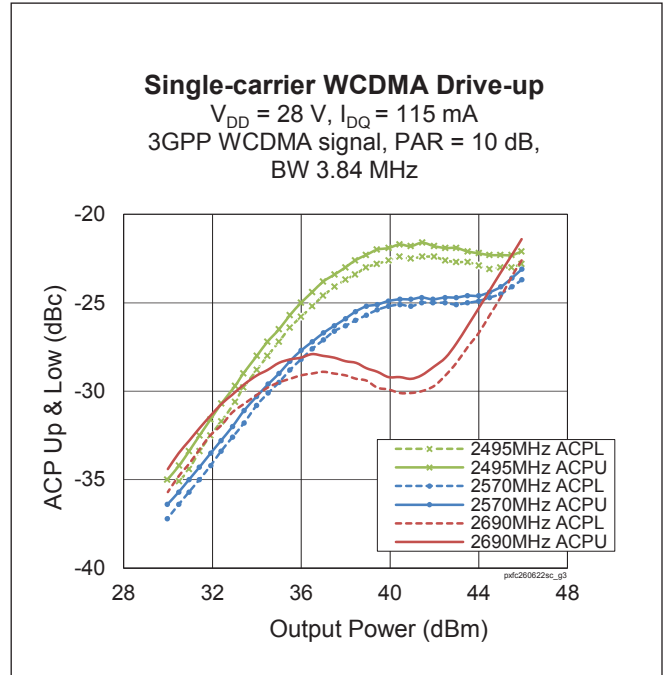
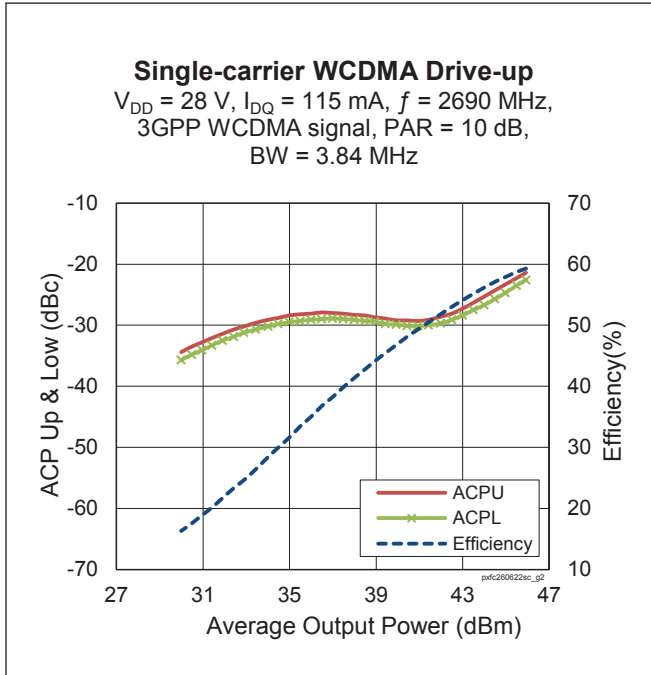
## Maximum Ratings

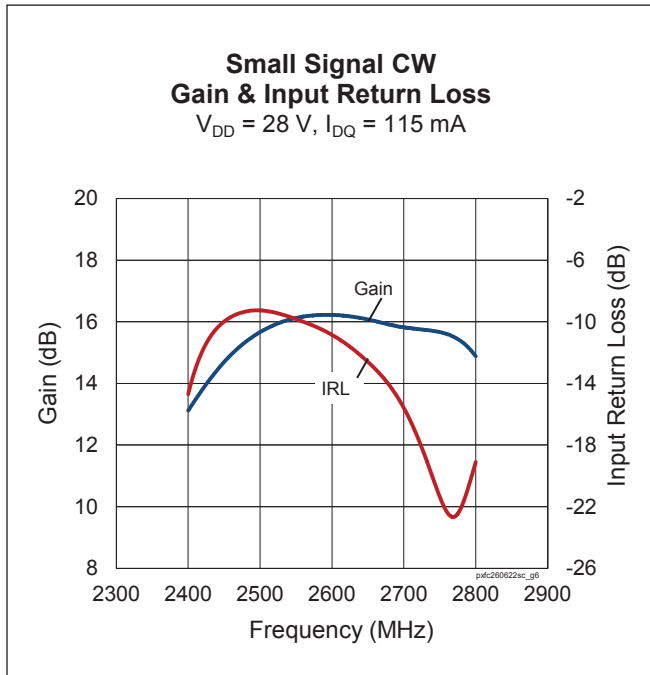
Parameter	Symbol	Value	Unit
Drain-source Voltage	$V_{DSS}$	65	V
Gate-source Voltage	$V_{GS}$	-6 to +10	V
Operating Voltage	$V_{DD}$	0 to +32	V
Junction Temperature	$T_J$	225	$^{\circ}\text{C}$
Storage Temperature Range	$T_{STG}$	-65 to +150	$^{\circ}\text{C}$
Thermal Resistance (main, $T_{CASE} = 70^{\circ}\text{C}$ , 55 W CW)	$R_{\theta JC}$	0.962	$^{\circ}\text{C/W}$
Thermal Resistance (peak, $T_{CASE} = 70^{\circ}\text{C}$ , 55 W CW)	$R_{\theta JC}$	0.499	$^{\circ}\text{C/W}$

## Ordering Information

Type and Version	Order Code	Package Description	Shipping
PXAC260622SC V1 R250	PXAC260622SCV1R250XTMA1	H-37248H-4, earless flange	Tape & Reel, 250 pcs

**Typical Performance** (data taken in a production test fixture)



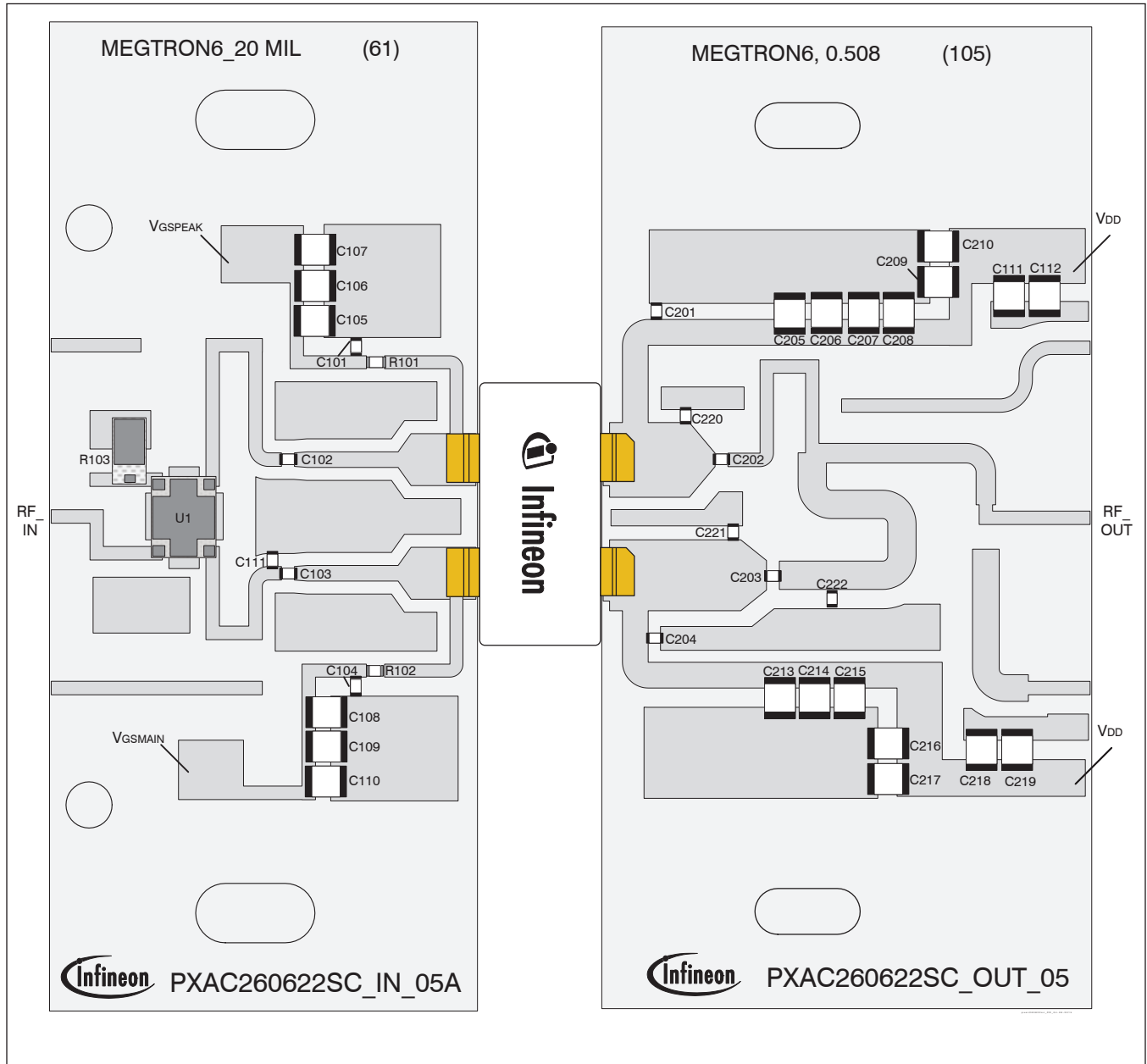
**Typical Performance (cont.)**

**Load Pull Performance**
**Main Side Load Pull Performance** – Pulsed CW signal: 10  $\mu\text{s}$ , 10% duty cycle, 28 V,  $I_{DQ} = 115\text{ mA}$ 

		<b>P<sub>1dB</sub></b>									
		<b>Max Output Power</b>					<b>Max Drain Efficiency</b>				
<b>Freq [MHz]</b>	<b>Z<sub>s</sub> [<math>\Omega</math>]</b>	<b>Z<sub>l</sub> [<math>\Omega</math>]</b>	<b>Gain [dB]</b>	<b>P<sub>OUT</sub> [dBm]</b>	<b>P<sub>OUT</sub> [W]</b>	<b><math>\eta_D</math> [%]</b>	<b>Z<sub>l</sub> [<math>\Omega</math>]</b>	<b>Gain [dB]</b>	<b>P<sub>OUT</sub> [dBm]</b>	<b>P<sub>OUT</sub> [W]</b>	<b><math>\eta_D</math> [%]</b>
2496	16.4 – j12.3	9.8 – j12.0	19.8	44.3	27.1	55.1	10.9 – j5.9	21.6	43.2	20.8	61.3
2570	18.0 – j11.1	8.9 – j11.8	19.4	44.3	26.7	54.1	9.5 – j6.0	21.4	43.0	20.0	60.4
2690	18.3 – j0.1	10.1 – j13.5	19.2	44.4	27.8	56.0	8.0 – j8.4	20.9	43.3	21.4	61.5

**Peak Side Load Pull Performance** – Pulsed CW signal: 10  $\mu\text{s}$ , 10% duty cycle, 28 V,  $V_{GSPEAK} = 1.4\text{ V}$ ,  $I_{DQ} = 115\text{ mA}$ 

		<b>P<sub>1dB</sub></b>									
		<b>Max Output Power</b>					<b>Max Drain Efficiency</b>				
<b>Freq [MHz]</b>	<b>Z<sub>s</sub> [<math>\Omega</math>]</b>	<b>Z<sub>l</sub> [<math>\Omega</math>]</b>	<b>Gain [dB]</b>	<b>P<sub>OUT</sub> [dBm]</b>	<b>P<sub>OUT</sub> [W]</b>	<b><math>\eta_D</math> [%]</b>	<b>Z<sub>l</sub> [<math>\Omega</math>]</b>	<b>Gain [dB]</b>	<b>P<sub>OUT</sub> [dBm]</b>	<b>P<sub>OUT</sub> [W]</b>	<b><math>\eta_D</math> [%]</b>
2495	17.6 – j14.7	5.3 – j11.1	14.7	47.7	59	59.4	7.8 – j7.1	15.6	46.2	42	67.6
2570	19.7 – j11.1	6.2 – j13.2	15.5	47.4	55	56.8	7.0 – j7.4	15.6	45.7	37	65.5
2690	19.0 – j0.5	6.1 – j15.1	14.1	47.4	55	57.8	6.2 – j10.5	15.1	45.9	38	64.8

Reference Circuit , 2496 – 2690 MHz



Reference circuit assembly diagram (not to scale)

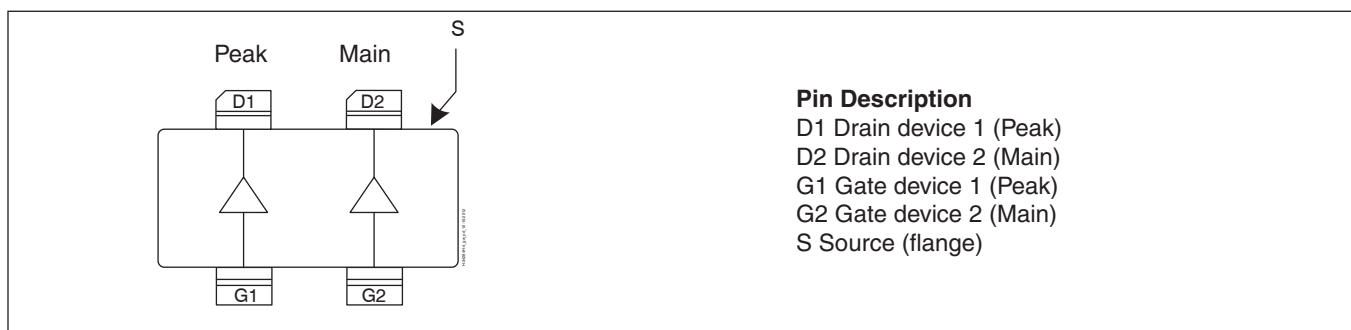
**Reference Circuit** (cont.)

**Reference Circuit Assembly**

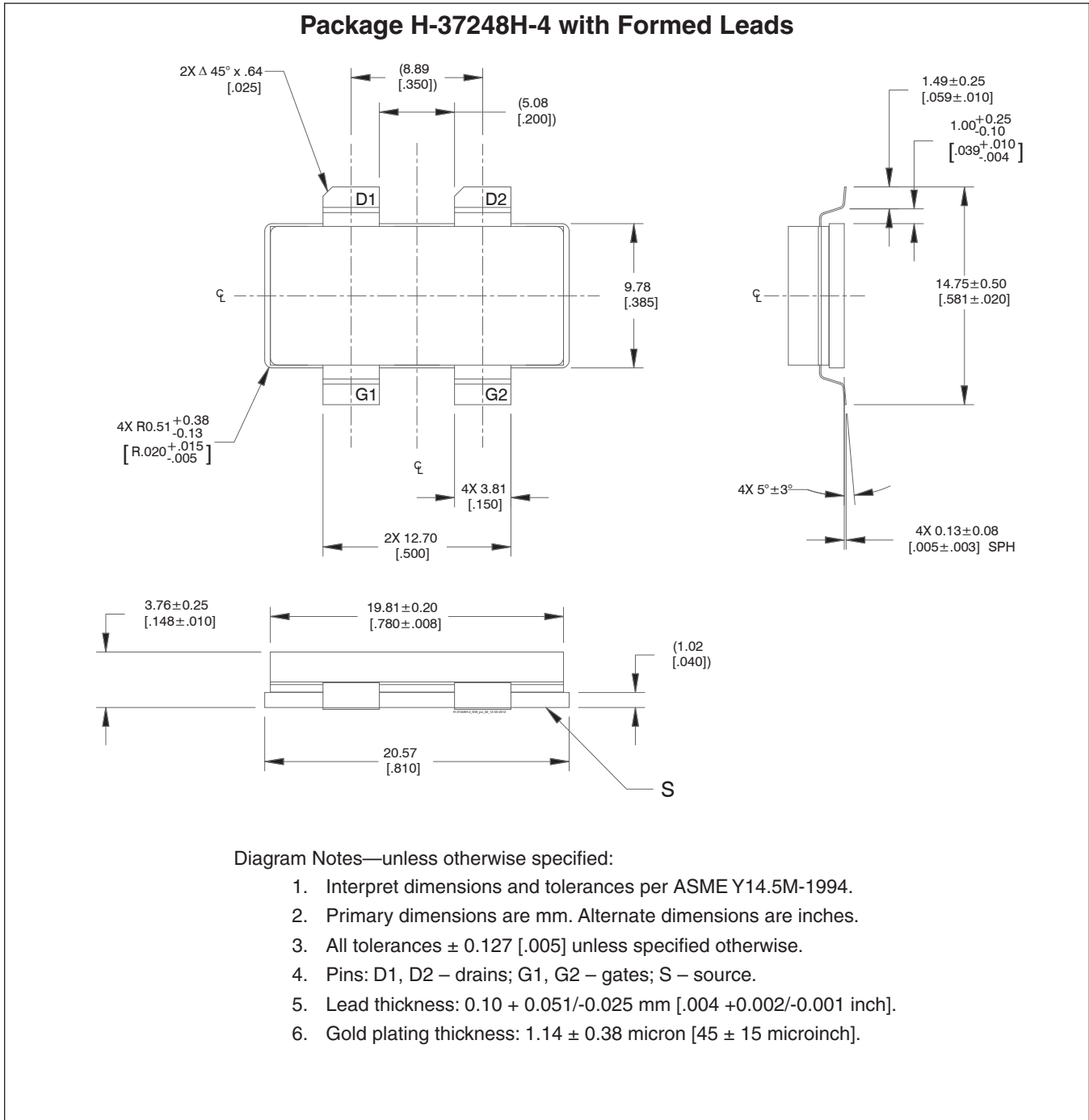
DUT	PXAC260622SC V1
Test Fixture Part No.	LTA/PXAC260062SC V1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$ , $f = 2496 - 2690$ MHz
Find Gerber files for this test fixture on the Infineon Web site at <a href="http://www.infineon.com/rfpower">http://www.infineon.com/rfpower</a>	

**Components Information**

Component	Description	Manufacturer	P/N
<b>Input</b>			
C101, C102, C103, C104	Capacitor, 8.2 pF	ATC	ATC800A8R2JW150XB
C105, C106, C107, C108, C109, C110	Capacitor, 4.7 $\mu$ F	Murata Electronics North America	GRM32ER71H475KA88L
C111	Capacitor, 0.5 pF	ATC	ATC800A0R5CW150XB
R101, R102	Resistor, 10 $\Omega$	Panasonic Electronic Components	ERJ-3GEYJ100V
R103	Resistor, 50 $\Omega$	Richardson	C16A50Z4
U1	Hybrid Coupler	Anaren	X3C25P1-04S
<b>Output</b>			
C201, C202, C203, C204	Capacitor, 8.2 pF	ATC	ATC800A8R2JW150XB
C205, C206, C207, C208, C209, C210, C211, C212, C213, C214, C215, C216, C217, C218, C219	Capacitor, 4.7 $\mu$ F	Murata Electronics North America	GRM32ER71H475KA88L
C220	Capacitor, 1.5 pF	ATC	ATC800A1R5CW150XB
C221	Capacitor, 1.0 pF	ATC	ATC800A1R0CW150XB
C222	Capacitor, 0.6 pF	ATC	ATC800A0R6CW150XB

**Pinout Diagram** (top view)

*Lead connections for PXAC260622SC*

Package Outline Specifications



Find the latest and most complete information about products and packaging at the Infineon Internet page  
<http://www.infineon.com/rfpower>

## Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2014-04-03	Advance	All	Data Sheet reflects advance specification for product development
02	2015-04-06	Production	All All	Data Sheet reflects released product specification Revised all data and includes updated final specs, typical performance graphs, loadpull, reference circuit, package outline
02.1	2015-06-03	Production	1	Updated single-carrier WCDMA test spec

### We Listen to Your Comments

Any information within this document that you feel is wrong, unclear or missing at all?  
Your feedback will help us to continuously improve the quality of this document.  
Please send your proposal (including a reference to this document) to:

[highpowerRF@infineon.com](mailto:highpowerRF@infineon.com)

To request other information, contact us at:  
+1 877 465 3667 (1-877-GO-LDMOS) USA  
or +1 408 776 0600 International



**Edition 2015-06-03**

**Published by**  
**Infineon Technologies AG**  
**85579 Neubiberg, Germany**

**© 2014 Infineon Technologies AG**  
**All Rights Reserved.**

### Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

### Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office ([www.infineon.com/rfpower](http://www.infineon.com/rfpower)).

### Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.