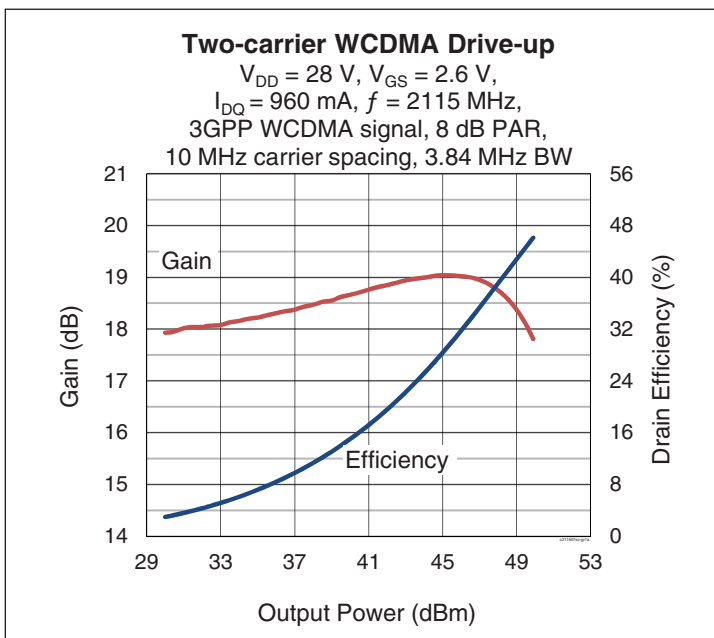
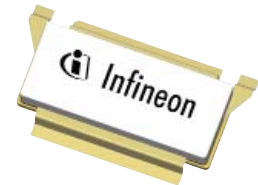


## Thermally-Enhanced High Power RF LDMOS FET 150 W, 28 V, 2110 – 2170 MHz

### Description

The PXFC211507SC is a 150-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 2110 to 2170 MHz frequency band. Features include input and output matching, high gain and a thermally-enhanced package with earless flanges. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXFC211507SC  
Package H-37248G-4/2  
(formed leads)



### Features

- Broadband internal input and output matching
- Typical Pulsed CW performance, 2170 MHz, 28 V, 10  $\mu\text{s}$  pulse width, 10% duty cycle
  - Output power at  $P_{1dB} = 150\text{ W}$
  - Efficiency = 56%
  - Gain = 19 dB
- Typical single-carrier WCDMA performance, 2170 MHz, 28 V, 8 dB PAR @ 0.01% CCDF, Test Model 1 with 64DPCH
  - Output power = 32 W
  - Efficiency = 32%
  - Gain = 20 dB
- Capable of handling 10:1 VSWR @ 28 V, 150 W (CW) output power
- Integrated ESD protection
- ESD Rating: Human Body Model, Class 2 (per ANSI/ESDA/JEDEC JS-001)
- Low thermal resistance
- Pb-free and RoHS compliant

### RF Characteristics

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

$V_{DD} = 28\text{ V}$ ,  $I_{DQ} = 960\text{ mA}$ ,  $P_{OUT} = 32\text{ W avg}$ ,  $f_1 = 2160\text{ MHz}$ ,  $f_2 = 2170\text{ MHz}$ , 3GPP WCDMA signal, 3.84 MHz channel bandwidth, 8 dB peak/average @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	$G_{ps}$	19	20.4	—	dB
Drain Efficiency	$\eta_D$	29	32.9	—	%
Intermodulation Distortion	IMD	—	-30.5	-28	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	$\mu\text{A}$
On-State Resistance	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.05	—	$\Omega$
Operating Gate Voltage	$V_{DS} = 28\text{ V}$ , $I_{DQ} = 960\text{ mA}$	$V_{GS}$	2.3	2.6	2.9	V

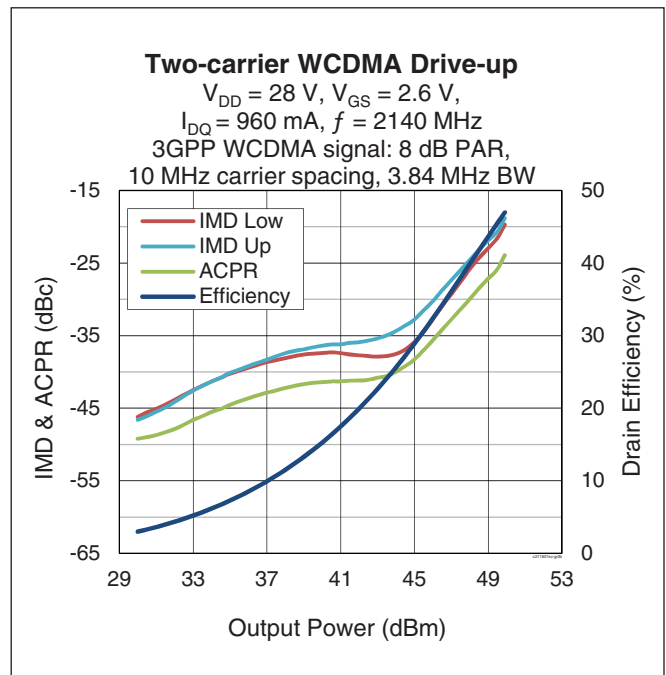
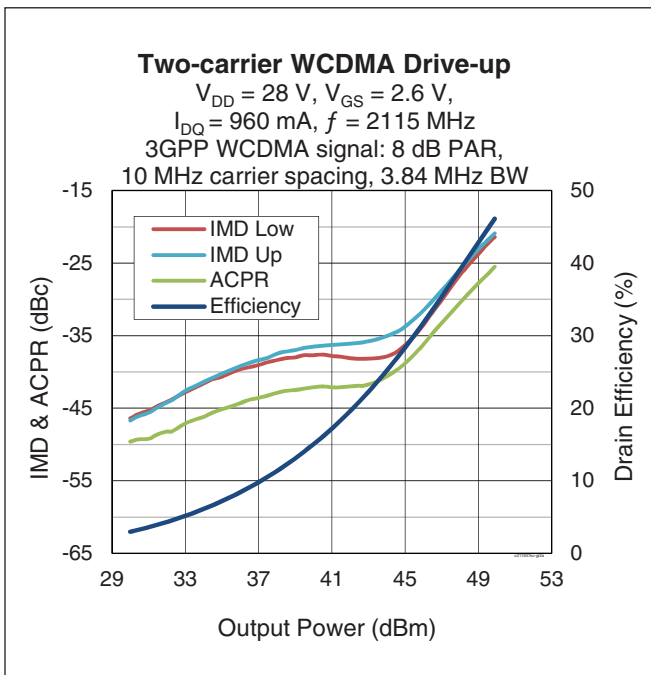
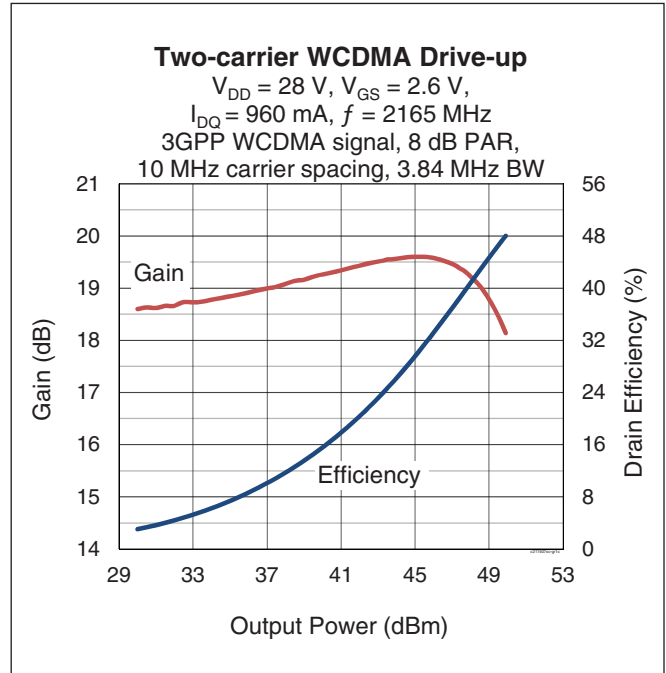
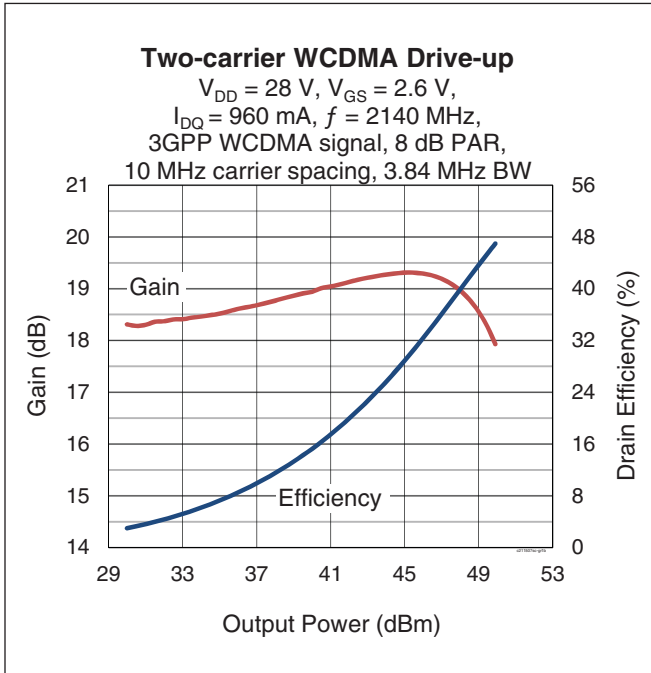
## Maximum Ratings

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 ( $T_{CASE} = 70^{\circ}\text{C}$ , 150 W CW, 28 V)	$R_{\theta JC}$	0.56	$^{\circ}\text{C/W}$

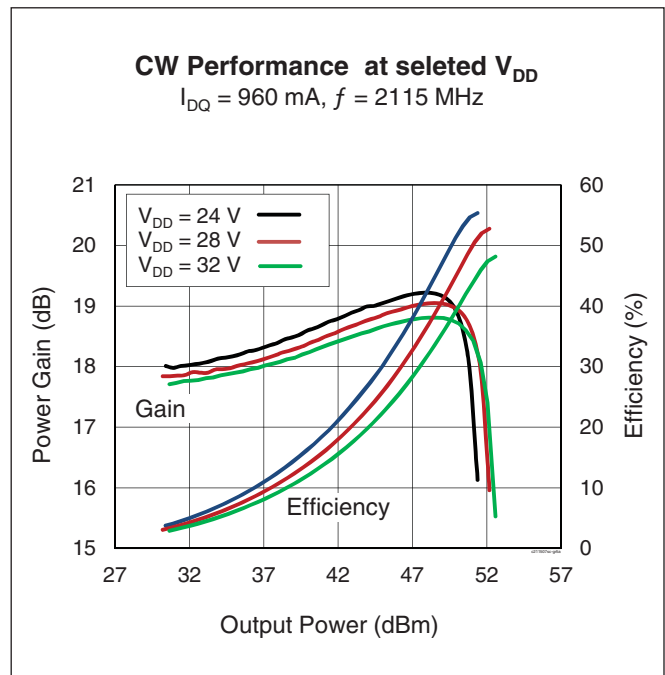
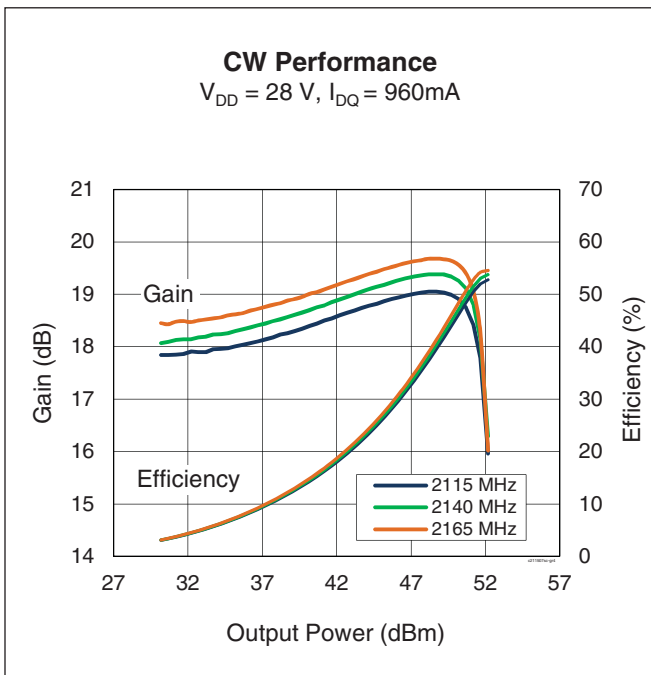
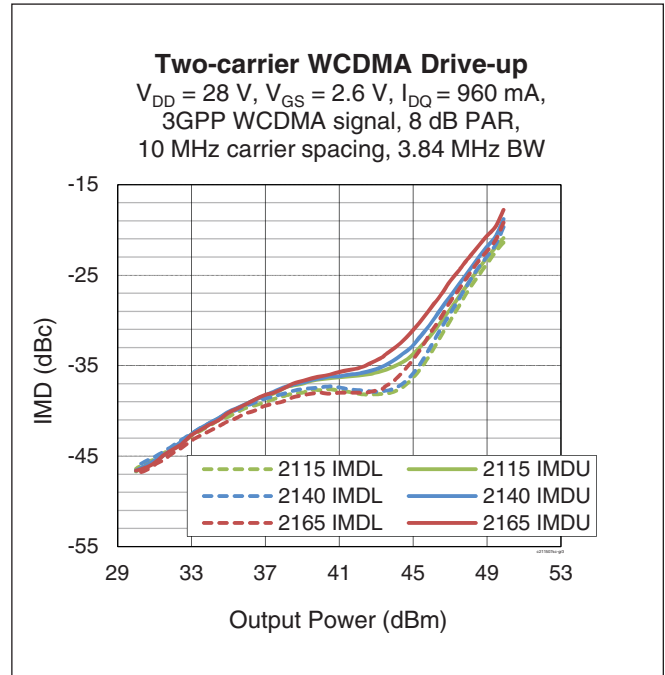
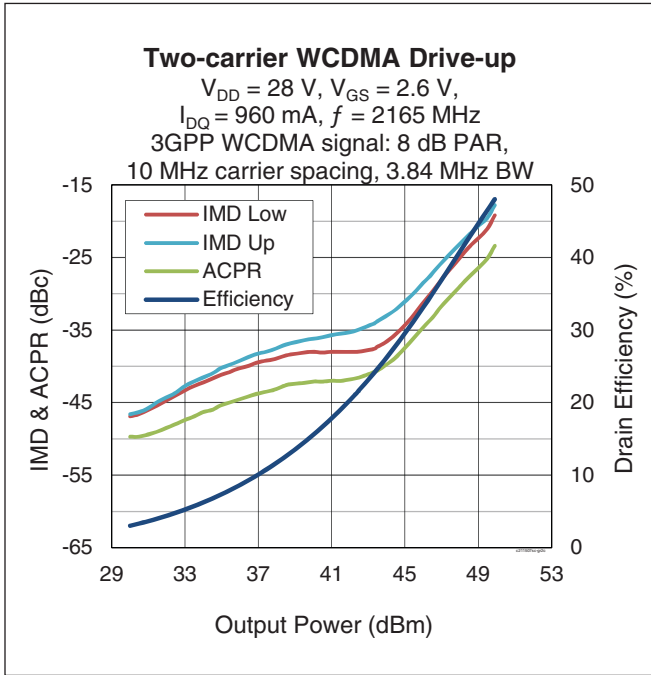
## Ordering Information

Type and Version	Order Code	Package and Description	Shipping
PXFC211507SC V1 R250	PXFC211507SCV1R250XTMA1	H-37248G-4/2, earless flange, formed leads	Tape & Reel, 250 pcs

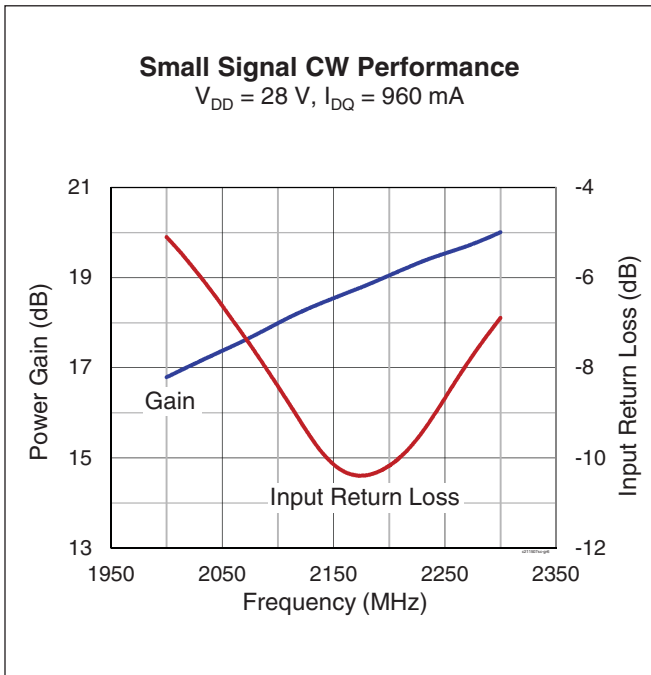
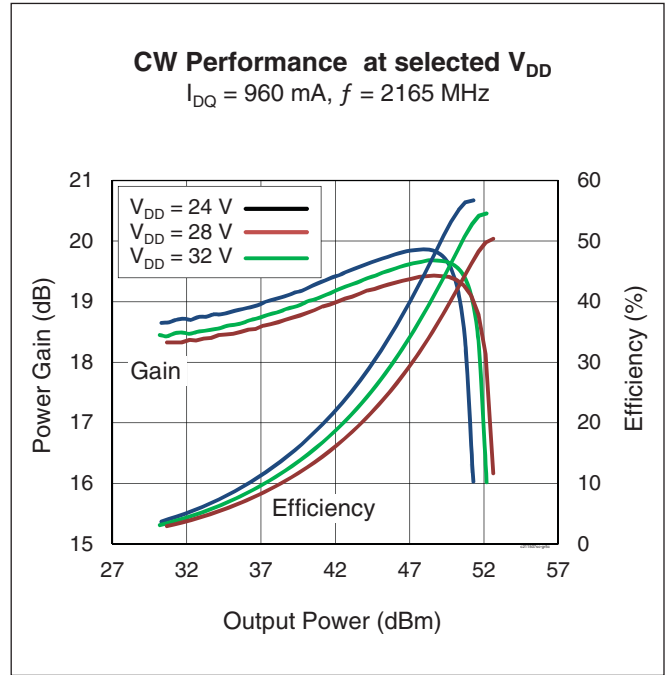
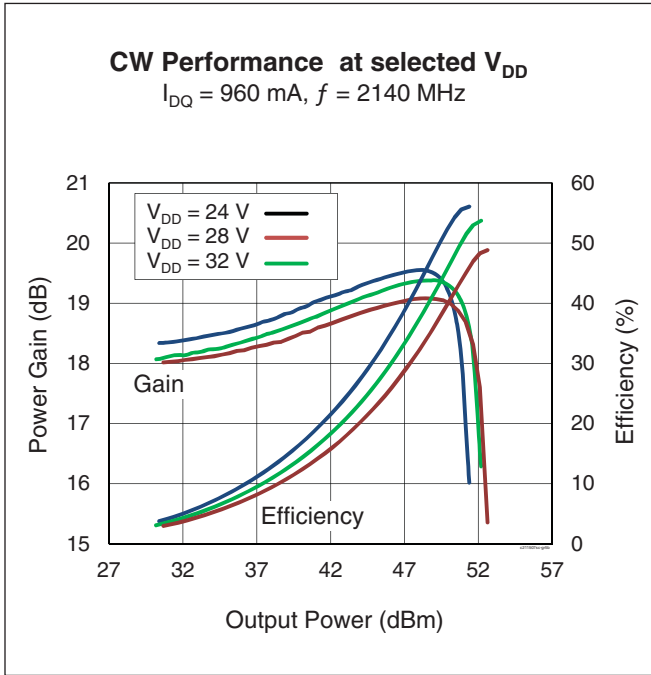
**Typical Performance** (data taken in a production test fixture)

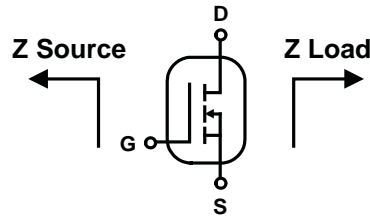


Typical Performance (cont.)



Typical Performance (cont.)



**Load Pull Performance**

**Pulsed CW signal:** 10  $\mu$ s, 10% duty cycle,  $V_{DD} = 28$  V,  $I_{DQ} = 960$  mA

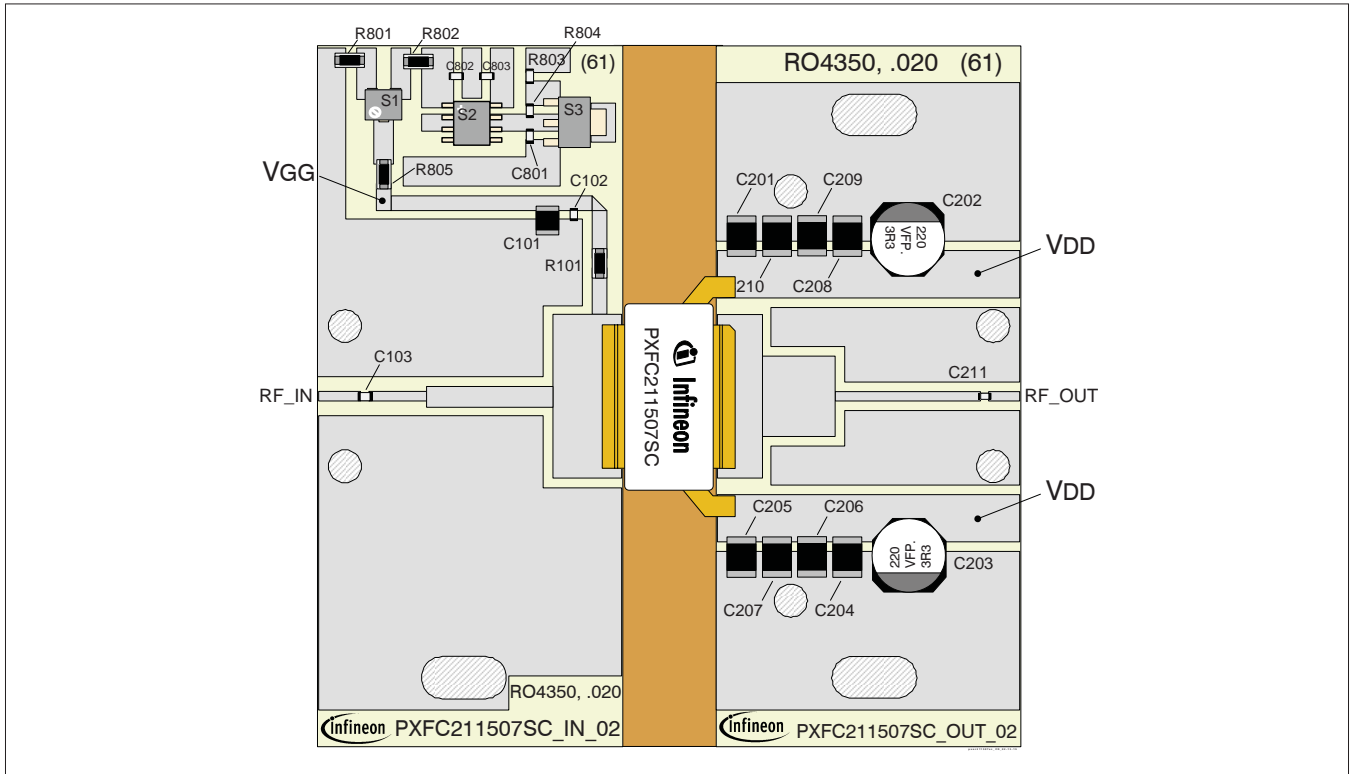
Class AB		P <sub>1dB</sub>										
		Max Output Power					Max PAE					
Freq [MHz]	Z <sub>s</sub> [ $\Omega$ ]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]	Z <sub>l</sub> [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]	
2110	2.10 – j6.55	1.52 – j4.82	18.9	52.10	163	53.7	2.30 – j3.60	21.1	50.90	123	62.5	
2140	2.31 – j6.77	1.58 – j4.87	19.2	52.10	163	54.0	2.22 – j3.56	21.4	50.80	120	62.4	
2170	3.07 – j7.01	1.57 – j4.95	19.4	52.20	166	54.0	2.21 – j3.64	21.7	50.90	123	62.5	

**Reference Circuit Assembly, 2110 – 2170 MHz**

DUT	PXFC211507SC V1
Reference Circuit No.	LTN/PXFC211507SC V1
Order Code	LTNPTFC211507SCE3TOBO1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$

 Find Gerber files for this test fixture on the Infineon Web site at <http://www.infineon.com/rfpower>

Reference Circuit (cont.)

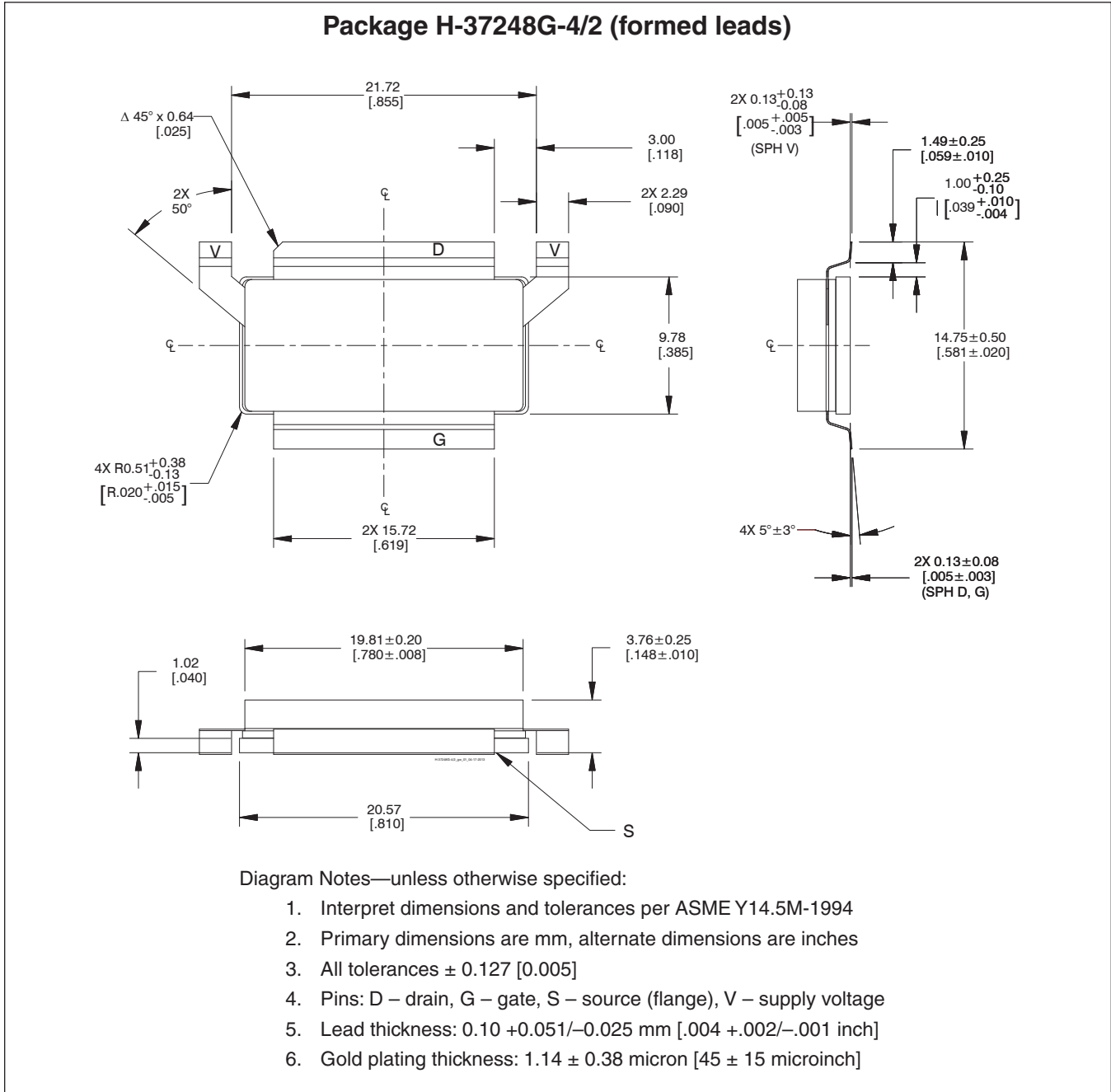


Reference circuit assembly diagram (not to scale)

Components Information

Component	Description	Manufacturer	P/N
<b>In</b>			
C101	Capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C102, C103	Capacitor, 10 pF	ATC	ATC800A100JW150XB
C801, C802, C803	Capacitor, 0.001 $\mu$ F	Panasonic	ECJ-1VB1H102K
R101, R801, R805	Resistor, 10 ohms	Panasonic Electronic Components	ERJ-8GEYJ100V
R802	Resistor, 100 ohms	Panasonic Electronic Components	ERJ-8GEYJ101V
R803	Resistor, 1.3k ohms	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1.2k ohms	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Variable resistor, 2k ohms	Bourns Inc.	3224W-1-202E
S2	Voltage Regulator	Fairchild Semiconductor	LM7805CT
S3	Transistor	Fairchild Semiconductor	BCP56
<b>Out</b>			
C201, C204, C205, C206, C207, C208, C209, C210	Capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C202, C203	Capacitor, 220 $\mu$ F	Panasonic Electronic Components	EEE-FP1V221AP
C211	Capacitor, 10 pF	ATC	ATC800A100JW150XB

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	Page	Subjects (major changes at each revision)
01	2014-05-09	Advance	all	Proposed specification for new product development.
02	2015-03-03	Production	all	Complete final specifications, including production data, performance curves, reference circuit layout and load pull information.

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