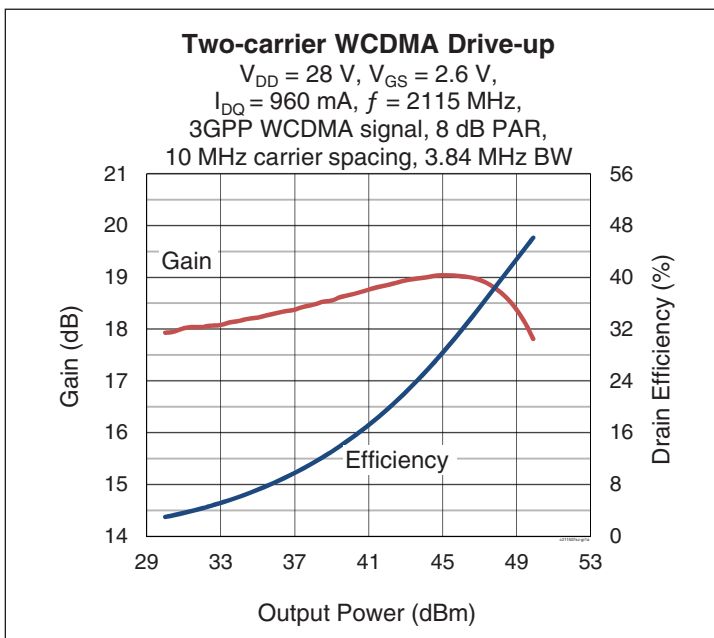
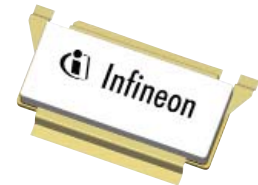


Thermally-Enhanced High Power RF LDMOS FET 150 W, 28 V, 2110 – 2170 MHz

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 μs pulse width, 10% duty cycle
 - Output power at $P_{1\text{dB}} = 150\text{ W}$
 - 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	η_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	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10	μA
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.05	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$, $I_{DQ} = 960\text{ mA}$	V_{GS}	2.3	2.6	2.9	V

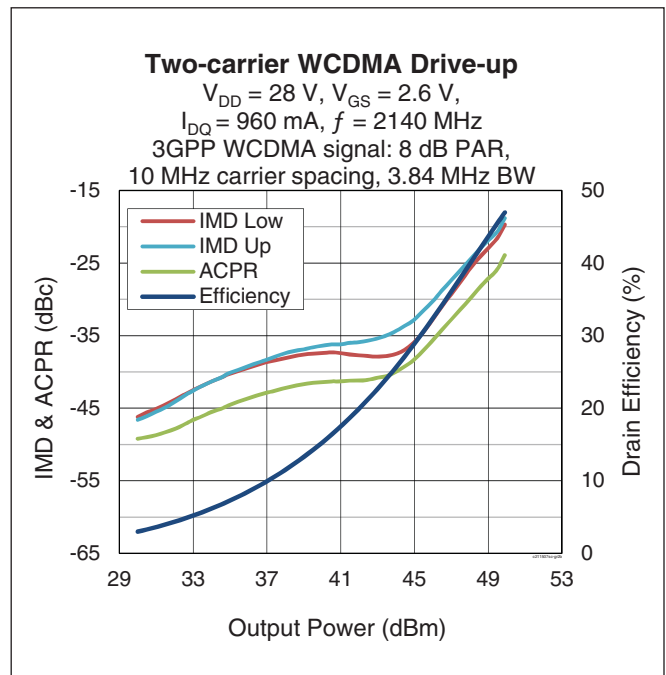
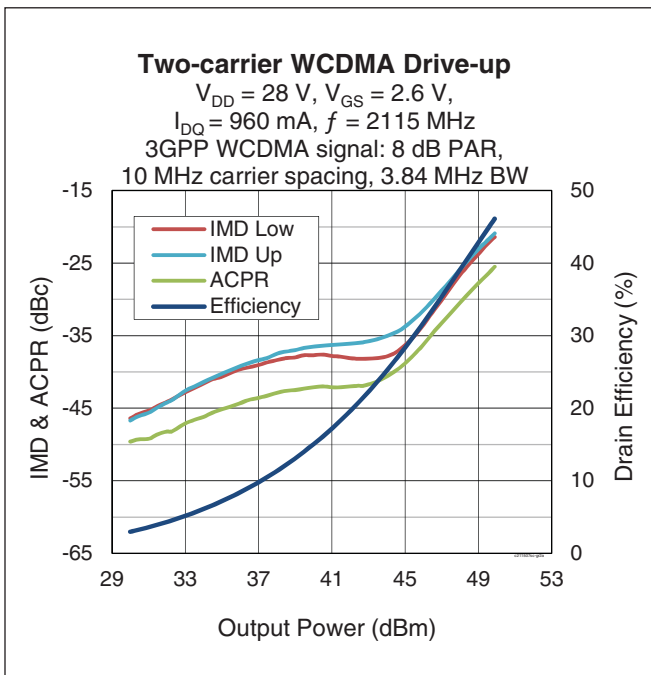
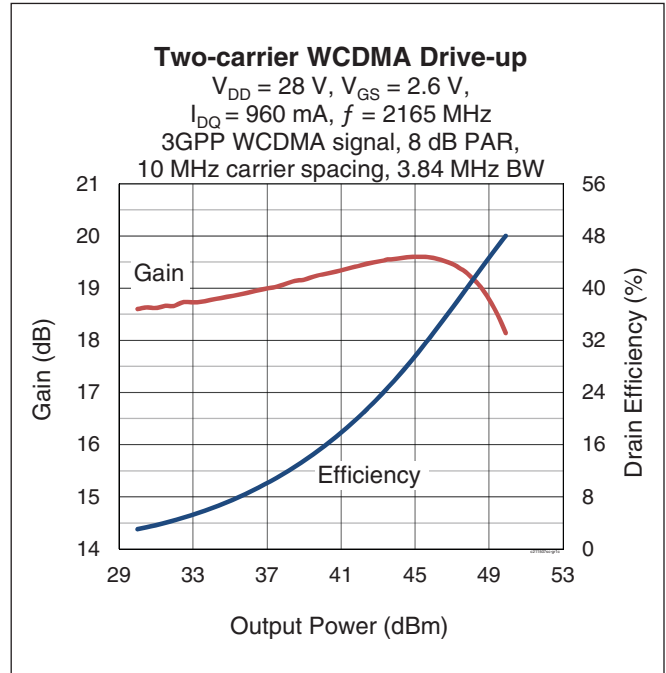
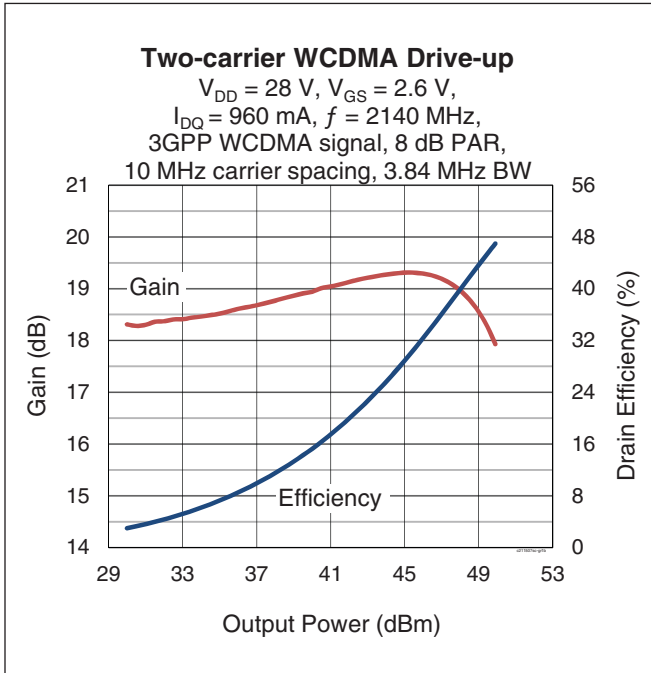
Maximum Ratings

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	$^{\circ}\text{C/W}$

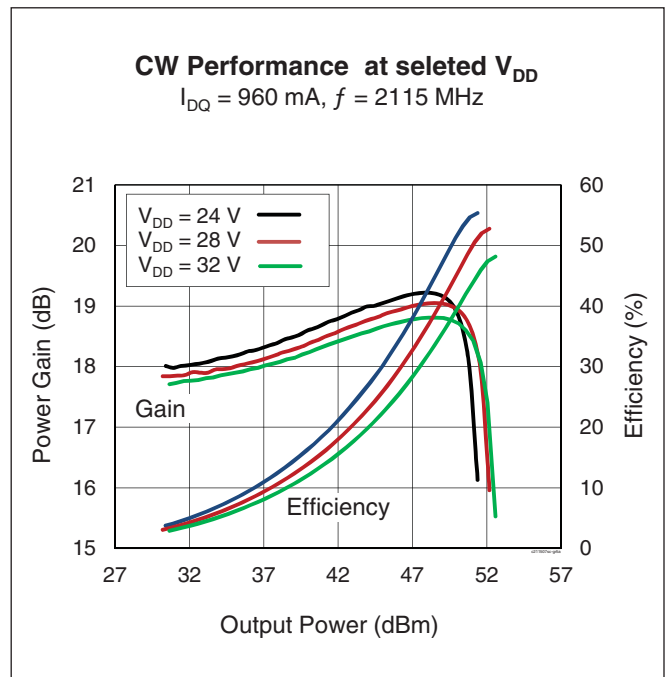
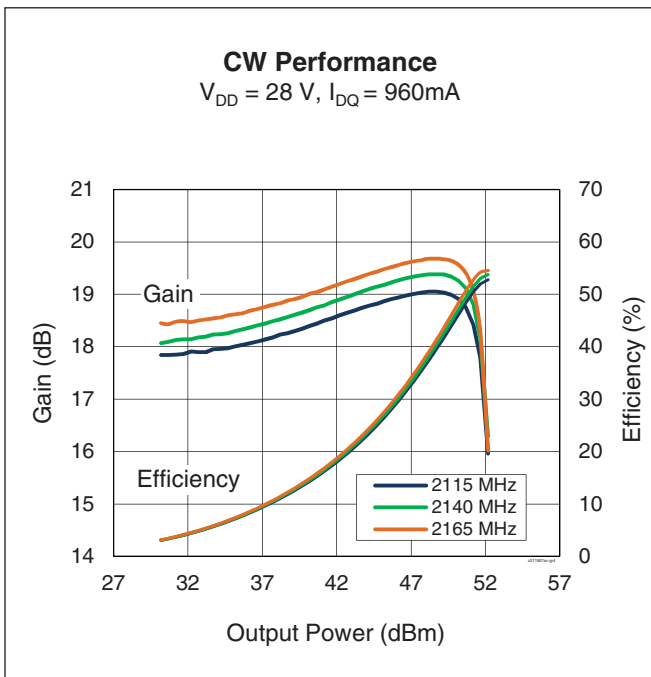
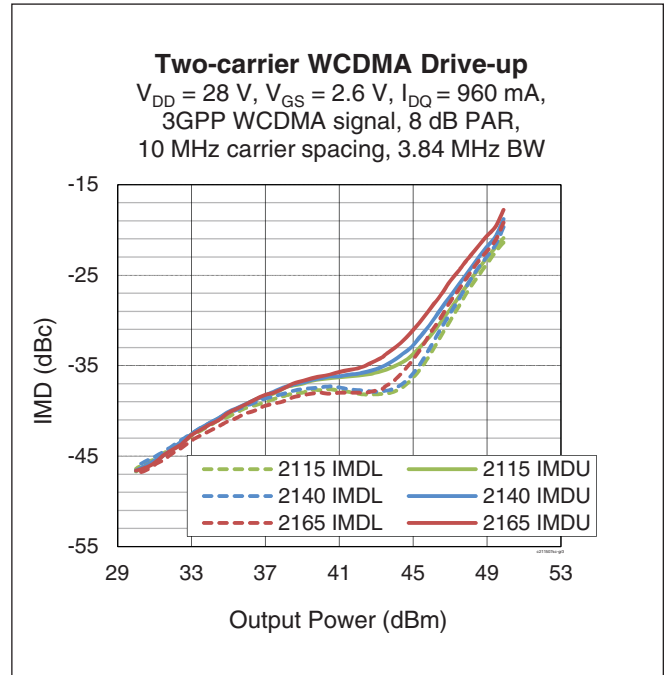
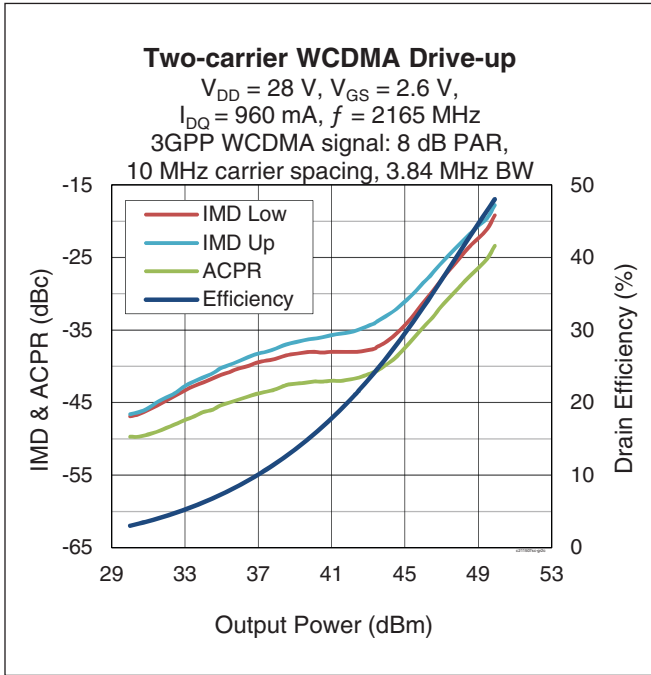
Ordering Information

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

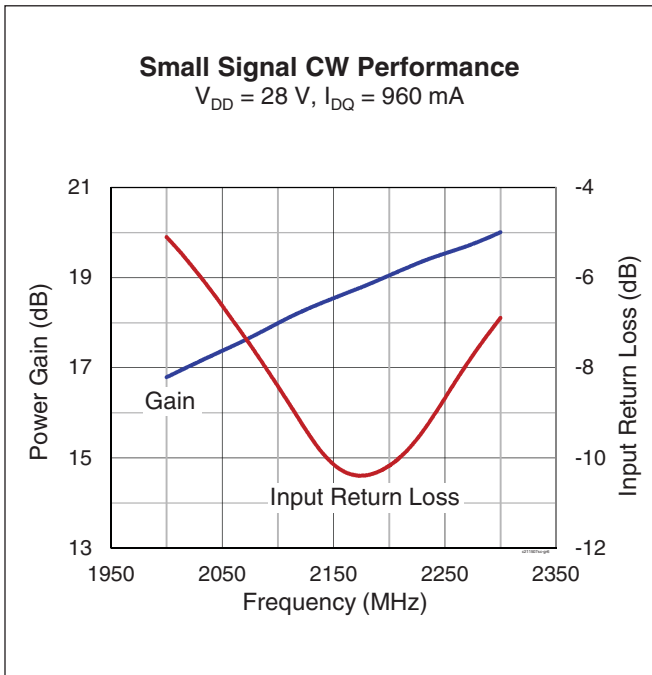
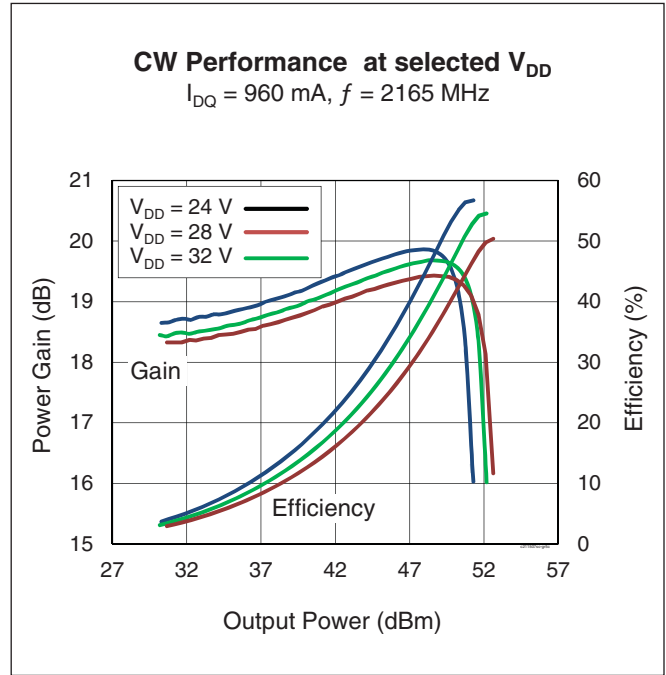
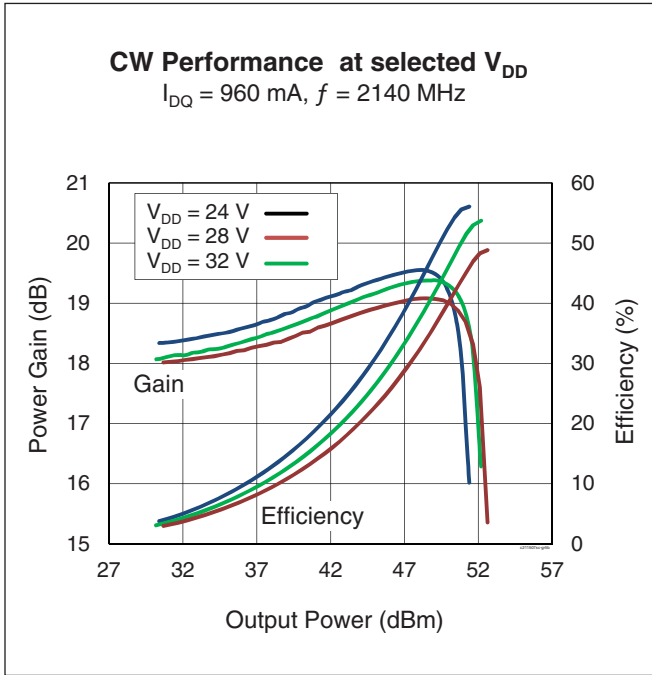
Typical Performance (data taken in a production test fixture)



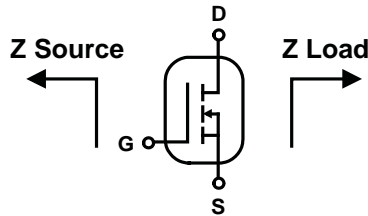
Typical Performance (cont.)



Typical Performance (cont.)



Load Pull Performance



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

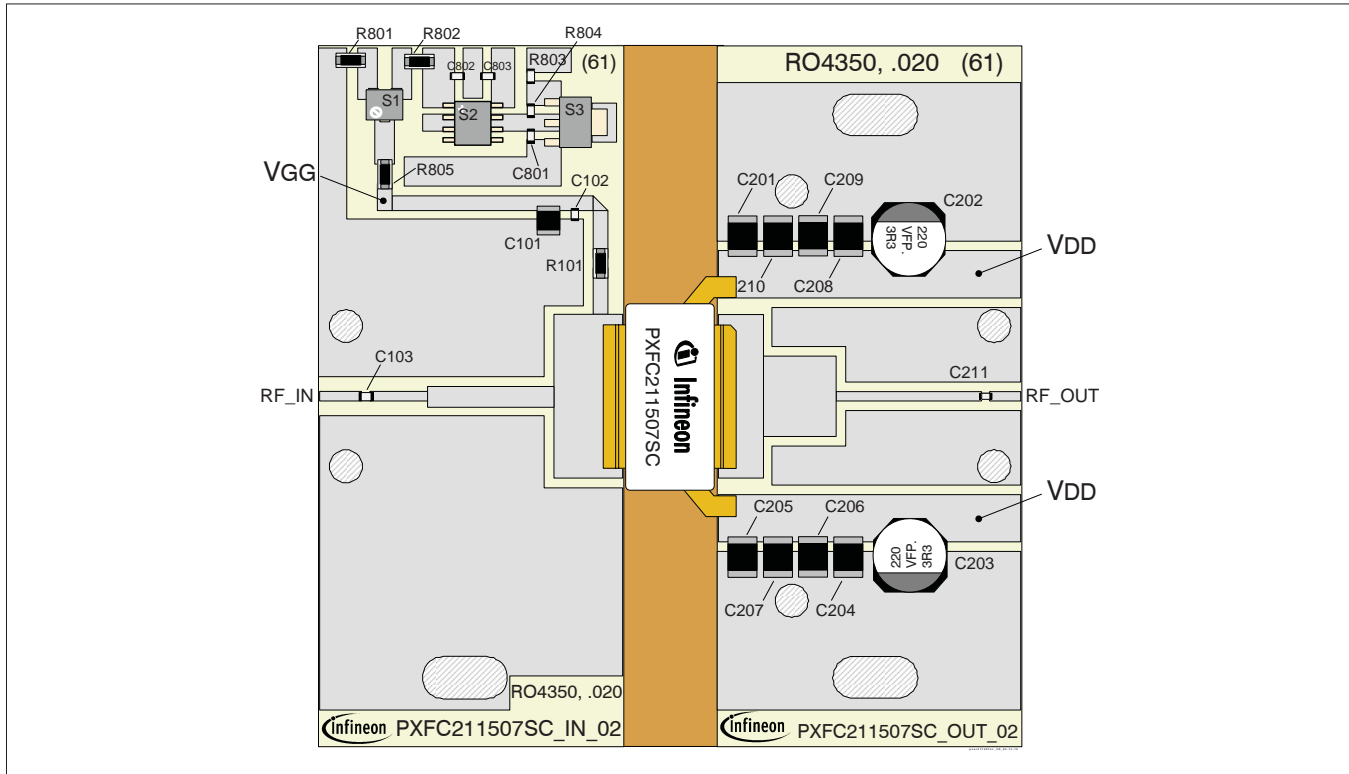
Class AB		P _{1dB}									
		Max Output Power					Max PAE				
Freq [MHz]	Z _s [Ω]	Z _l [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]	Z _l [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]
2110	2.10 – j6.55	1.52 – j4.82	18.9	52.10	163	53.7	2.30 – j3.60	21.1	50.90	123	62.5
2140	2.31 – j6.77	1.58 – 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
In			
C101	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C102, C103	Capacitor, 10 pF	ATC	ATC800A100JW150XB
C801, C802, C803	Capacitor, 0.001 μ 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
Out			
C201, C204, C205, C206, C207, C208, C209, C210	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C202, C203	Capacitor, 220 μ F	Panasonic Electronic Components	EEE-FP1V221AP
C211	Capacitor, 10 pF	ATC	ATC800A100JW150XB

Package Outline Specifications

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

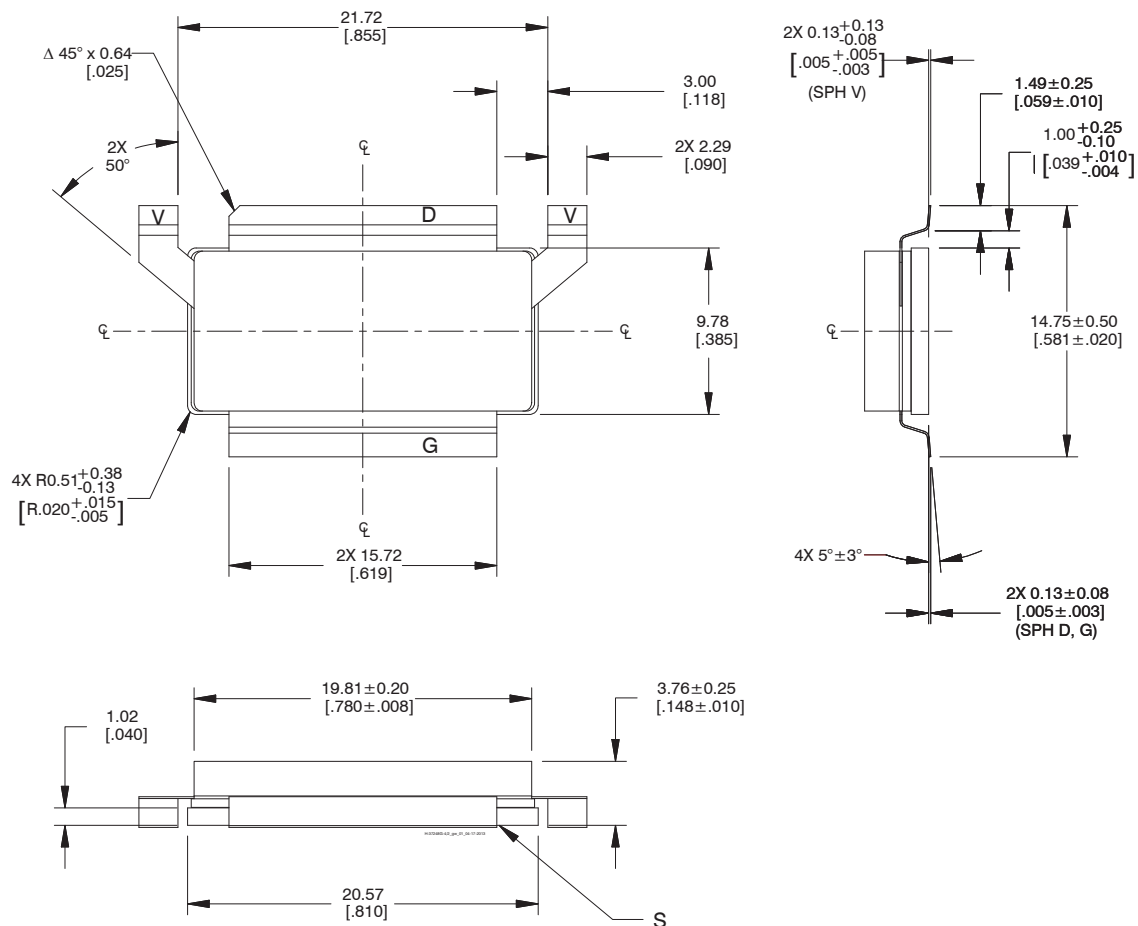


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994
2. Primary dimensions are mm, alternate dimensions are inches
3. All tolerances ± 0.127 [0.005]
4. Pins: D – drain, G – gate, S – source (flange), V – supply voltage
5. Lead thickness: 0.10 +0.051/–0.025 mm [.004 +.002/–.001 inch]
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 15 microinch]

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.

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:

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