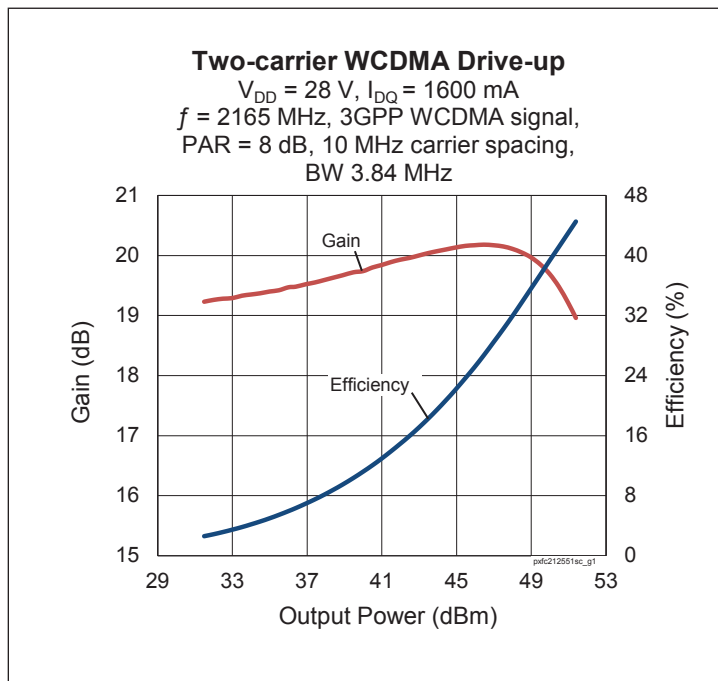
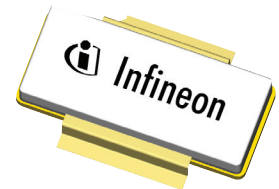


Thermally-Enhanced High Power RF LDMOS FET 240 W, 28 V, 2110 – 2170 MHz

Description

The PXFC212551SC is a 240-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 thermally-enhanced package with earless flanges. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXFC212551SC
Package H-37248H-2



Features

- Broadband internal input and output matching
- Typical Pulsed CW performance, 2140 MHz, 28 V, 10 μs pulse width, 10% duty cycle, Class AB
 - Output power at $P_{1dB} = 240\text{ W}$
 - Efficiency = 50%
 - Gain = 19 dB
- Capable of handling 10:1 VSWR @28 V, 240 W (CW) output power
- Integrated ESD protection
- 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)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$, $P_{OUT} = 50\text{ W avg}$, $f_1 = 2160\text{ MHz}$, $f_2 = 2170\text{ MHz}$, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 8 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	19	20.5	—	dB
Drain Efficiency	η_D	25	28	—	%
Intermodulation Distortion	IMD	—	-31	-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	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	$V_{DS} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$	V_{GS}	2.3	2.64	2.9	V

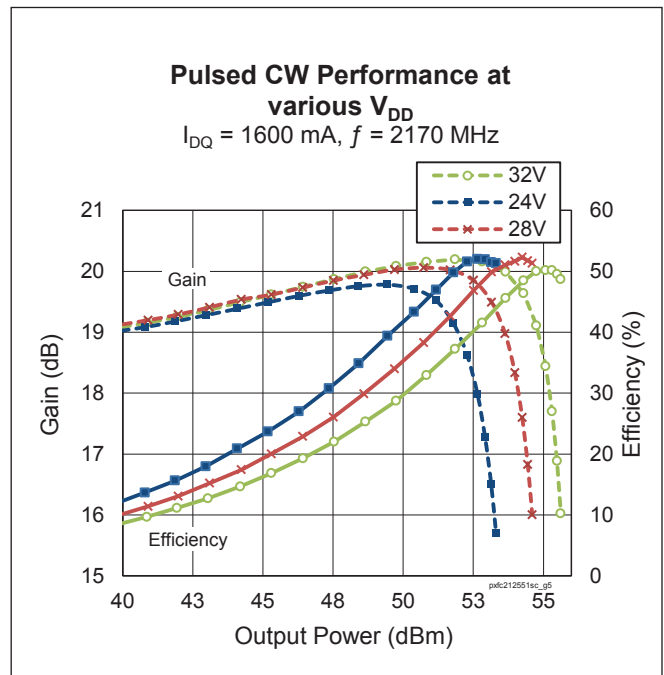
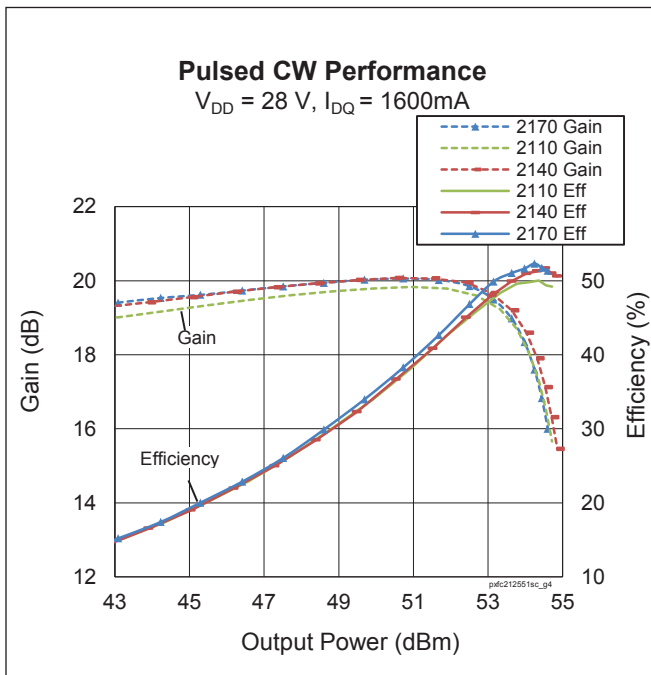
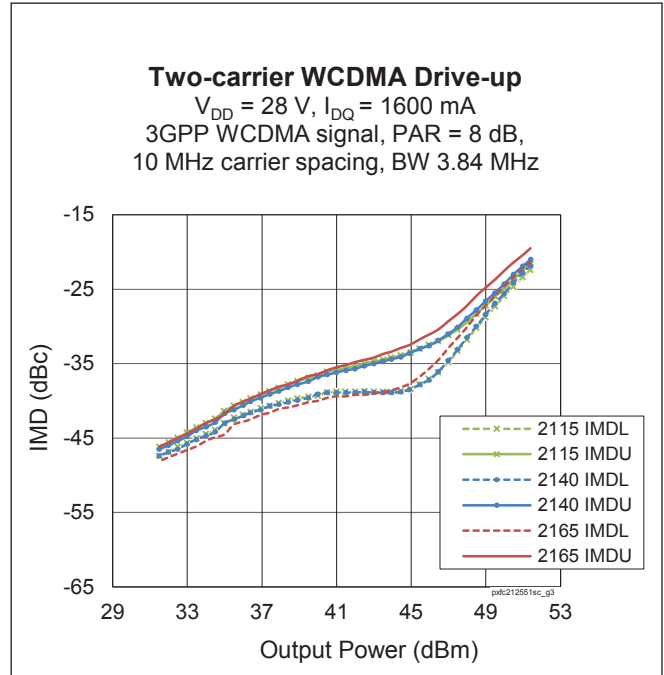
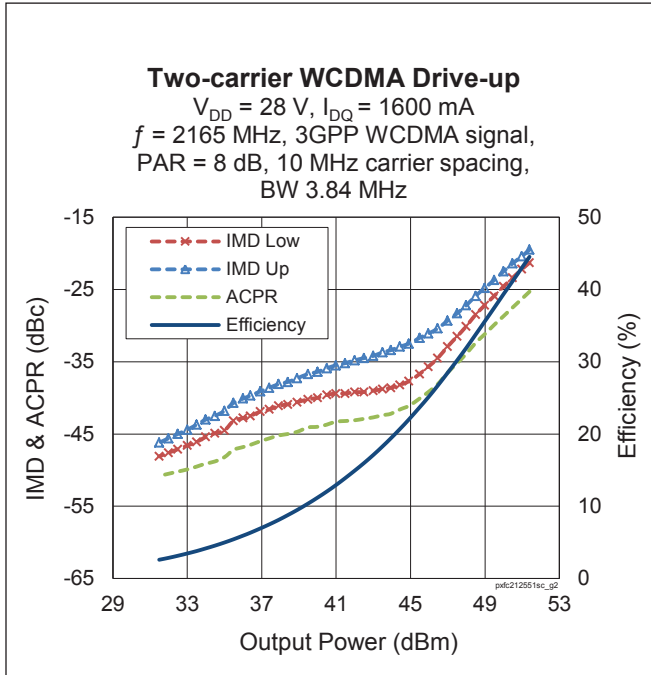
Maximum Ratings

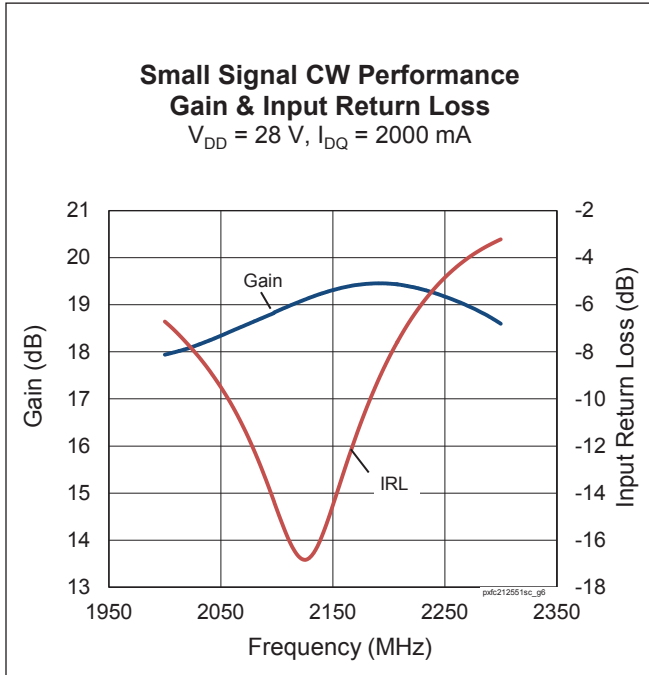
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	-6 to +10	V
Operating Voltage	V_{DD}	0 to +32	V
Junction Temperature	T_J	225	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	-65 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$, 213 W CW)	$R_{\theta JC}$	0.322	$^{\circ}\text{C/W}$

Ordering Information

Type and Version	Order Code	Package Description	Shipping
PXFC212551SC V1 R250	PXFC212551SCV1R250XTMA1	H-37248H-2, earless flange	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)



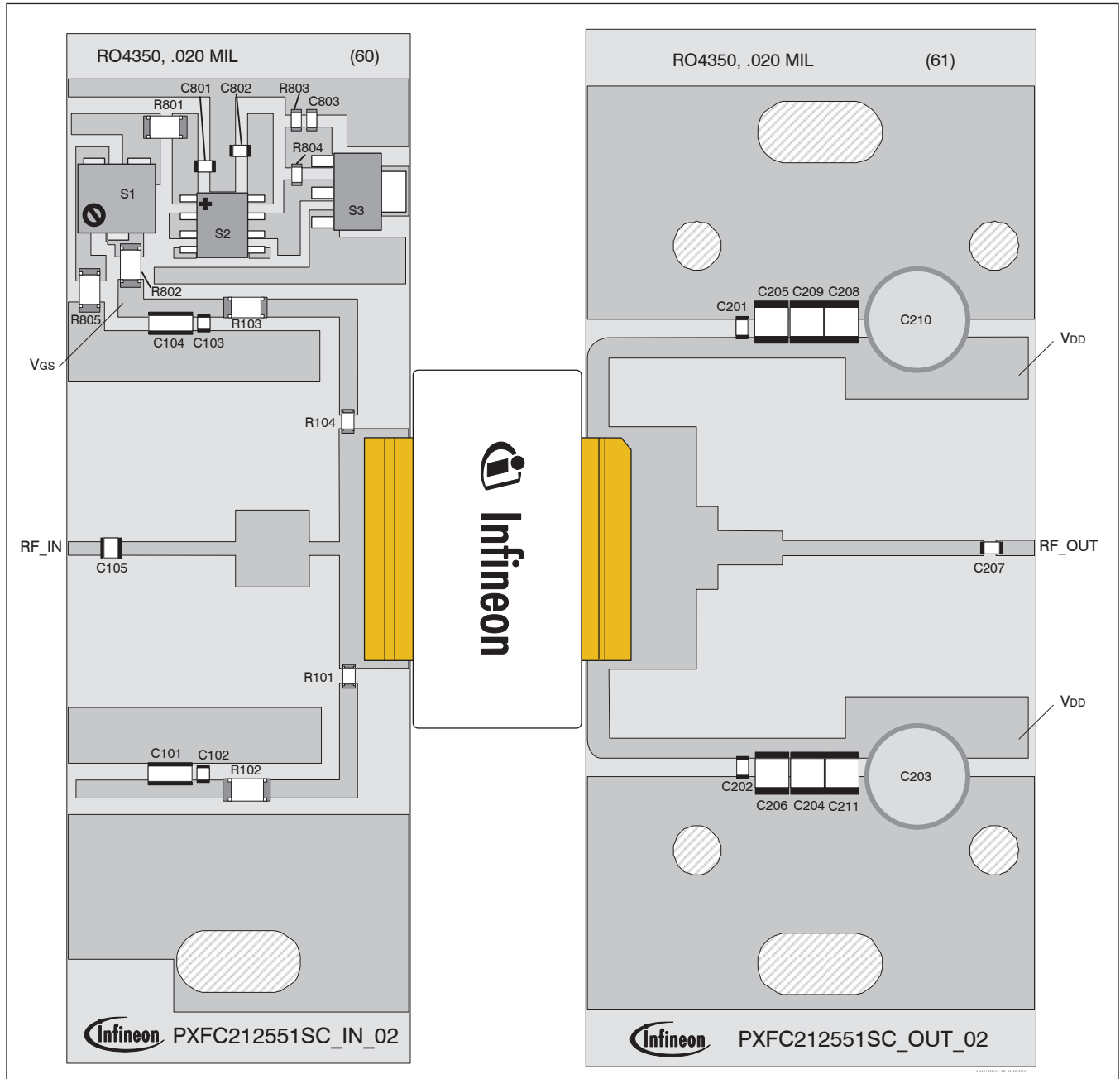
Typical Performance (cont.)

Load Pull Performance
Load Pull Performance – Pulsed CW signal: 10 μs , 10% duty cycle, 28 V, $I_{DQ} = 1600\text{ mA}$

Freq [MHz]	Z_s [Ω]	P_{1dB}									
		Max Output Power					Max Drain Efficiency				
		Z_l [Ω]	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	η_D [%]	Z_l [Ω]	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	η_D [%]
2110	4.92 – j5.64	0.71 – j4.53	18.0	54.7	293	50.8	1.58 – j4.29	20.1	53.2	207	60.9
2140	5.68 – j5.11	0.73 – j4.46	18.8	54.6	286	51.1	1.41 – j4.03	20.8	53.2	207	61.1
2170	6.75 – j2.91	0.80 – j4.40	18.7	54.4	278	50.9	1.42 – j3.98	20.4	53.3	212	59.1

Load Pull Performance – Pulsed CW signal: 10 μs , 10% duty cycle, 28 V, $I_{DQ} = 90\text{ mA}$

Freq [MHz]	Z_s [Ω]	P_{1dB}									
		Max Output Power					Max Drain Efficiency				
		Z_l [Ω]	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	η_D [%]	Z_l [Ω]	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	η_D [%]
2110	4.92 – j5.64	0.66 – j4.58	16.6	55.3	338	53.2	1.59 – j4.35	18.3	53.5	226	64.5
2140	5.68 – j5.11	0.65 – j4.53	17.3	55.2	329	52.3	1.49 – j4.09	19.0	53.4	220	64.0
2170	6.75 – j2.91	0.70 – j4.52	17.0	55.0	315	50.1	1.36 – j3.75	18.8	53.2	211	62.6

Reference Circuit , 2110 – 2170 MHz



Reference circuit assembly diagram (not to scale)

Reference Circuit (cont.)

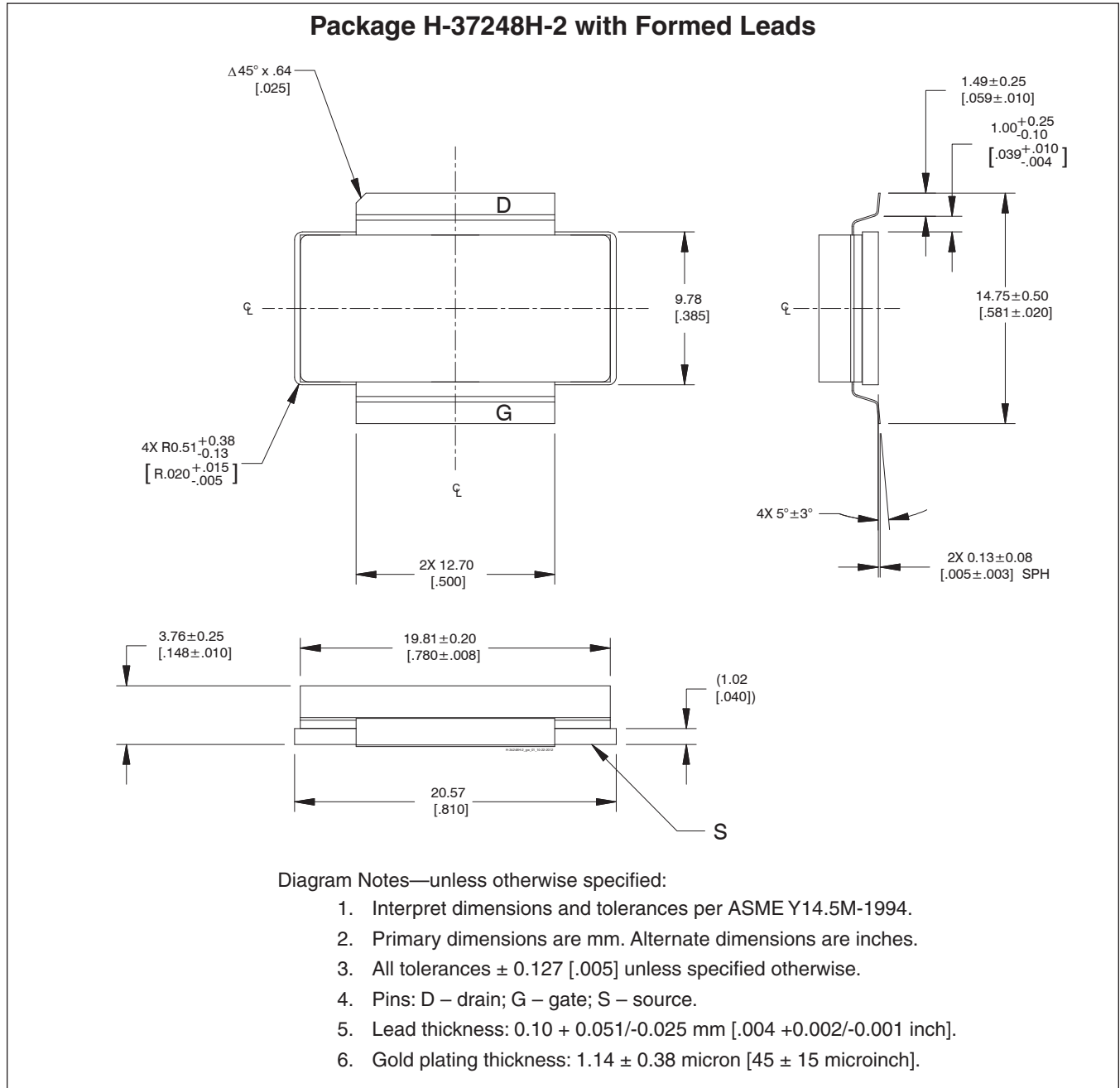
Reference Circuit Assembly

DUT	PXFC212551SC V1
Test Fixture Part No.	LTN/PXFC212551SC V1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$, $f = 2110 - 2170$ MHz
Find Gerber files for this test fixture on the Infineon Web site at http://www.infineon.com/rfpower	

Components Information

Component	Description	Manufacturer	P/N
Input			
C101, C104	Capacitor, 10 μ F	Murata	LLL31BC70G106MA01L
C102, C103	Capacitor, 15 pF	ATC	ATC800A150JW150XB
C105	Capacitor, 10 pF	ATC	ATC800A100JW150XB
C801, C802, C803	Capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
R101, R104, R802	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R102, R103	Resistor, 0.0 Ω	Panasonic Electronic Components	ERJ-8GEY0R00V
R801, R805	Resistor, 2k Ω	Panasonic Electronic Components	ERJ-8GEYJ202V
R803	Resistor, 1.3k Ω	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1.2k Ω	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
S2	Voltage Regulator	Texas Instruments	LM78L05ACM
S3	Transistor	Infineon Technologies	BCP56
Output			
C201, C202	Capacitor, 10 pF	Garrett	8051J100GBTTR
C203, C210	Capacitor, 220 μ F	Panasonic Electronic Components	EEE-FP1V221AP
C204, C205, C206, C208, C209, C211	Capacitor, 4.7 μ F	Murata	GRM32ER71H475KA88
C207	Capacitor, 33 pF	ATC	ATC800A330JW150XB

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	2014-05-12	Advance	All	Data Sheet reflects advance specification for product development
02	2014-05-16	Advance	All	Corrected package to H-37248H-2 throughout
03	2015-02-26	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
03.1	2015-04-13	Production	1	Include HBM classification in Features

We Listen to Your Comments

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Edition 2015-04-13

Published by
Infineon Technologies AG
85579 Neubiberg, Germany

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