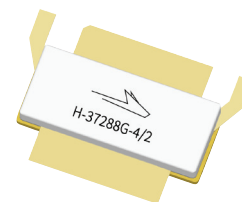


PXFC192207FH

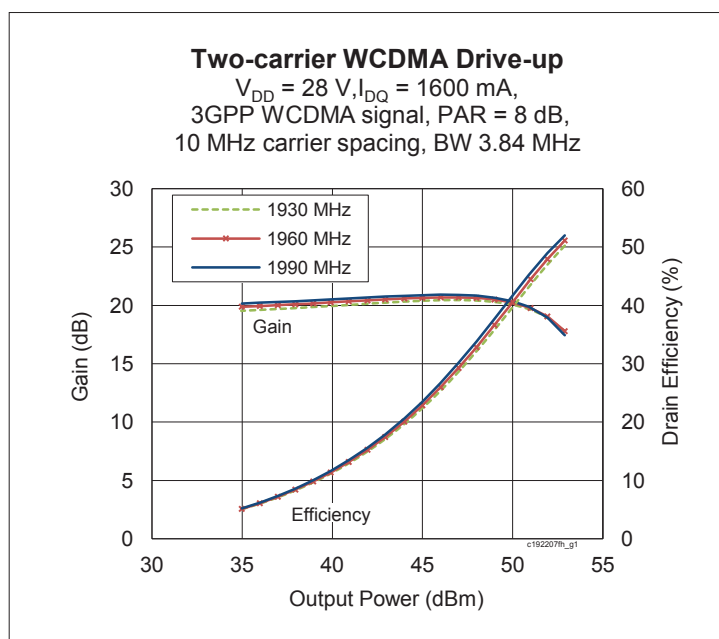
Thermally-Enhanced High Power RF LDMOS FET 220 W, 28 V, 1805 – 1990 MHz

Description

The PXFC192207FH is a 220-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 1805 to 1990 MHz frequency band. Features include input and output matching, high gain and thermally-enhanced package with earless flanges. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PXFC192207FH
Package H-37288G-4/2



Features

- Broadband input and output matching
- Typical Pulsed CW performance, 1990 MHz, 28 V, 16 μs pulse width, 10 % duty cycle, class AB
 - Output power at $P_{1dB} = 220\text{ W}$
 - Efficiency = 55%
 - Gain = 20 dB
- Typical single-carrier WCDMA performance, 1990 MHz, 28 V, 9.9 dB PAR @ 0.01% CCDF
 - Output power = 50 W
 - Efficiency = 29%
 - Gain = 20 dB
 - ACPR = -34 dBc @ 5 MHz
- Capable of handling 10:1 VSWR @28 V, 220 W (CW) output power
- 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 Wolfspeed production test fixture)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1600\text{ mA}$, $P_{OUT} = 50\text{ W avg}$, $f_1 = 1980\text{ MHz}$, $f_2 = 1990\text{ MHz}$, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 8 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	19	20.5	—	dB
Drain Efficiency	η_D	29	32	—	%
Intermodulation Distortion	IMD	—	-32.5	-29	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
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.03	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$, $I_{DQ} = 1.6\text{ A}$	V_{GS}	2.3	2.6	2.9	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA

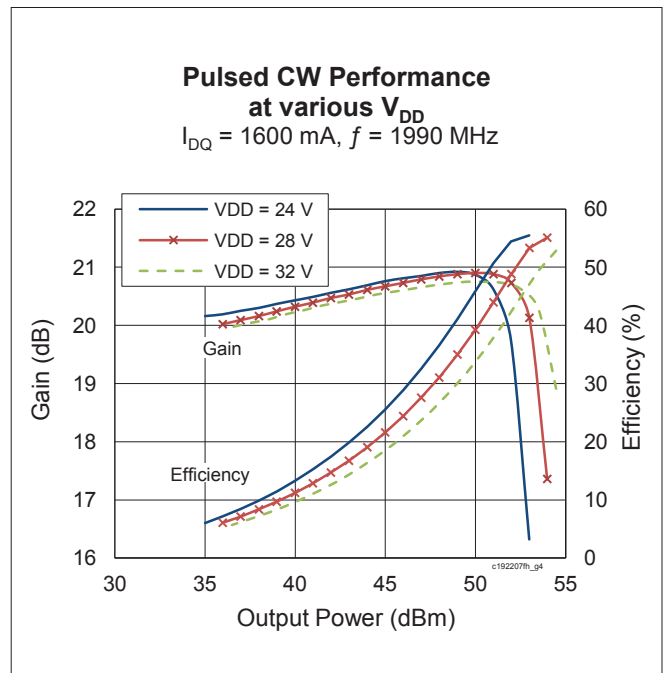
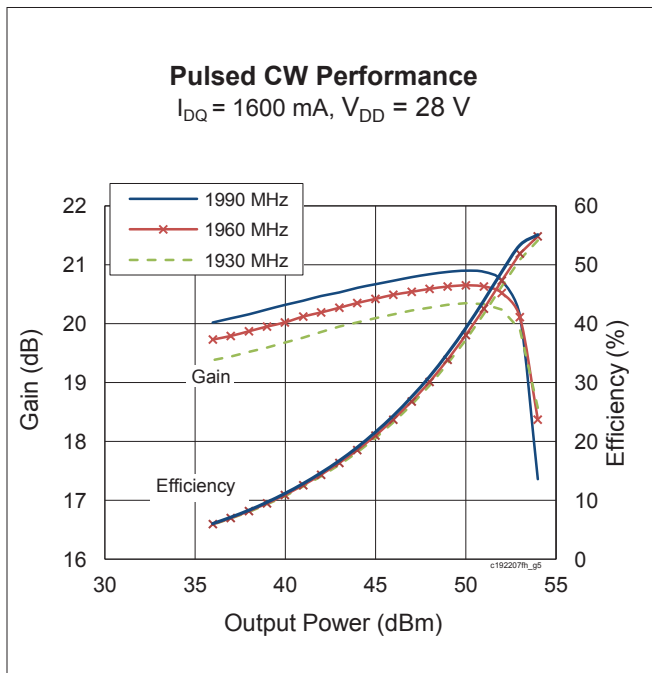
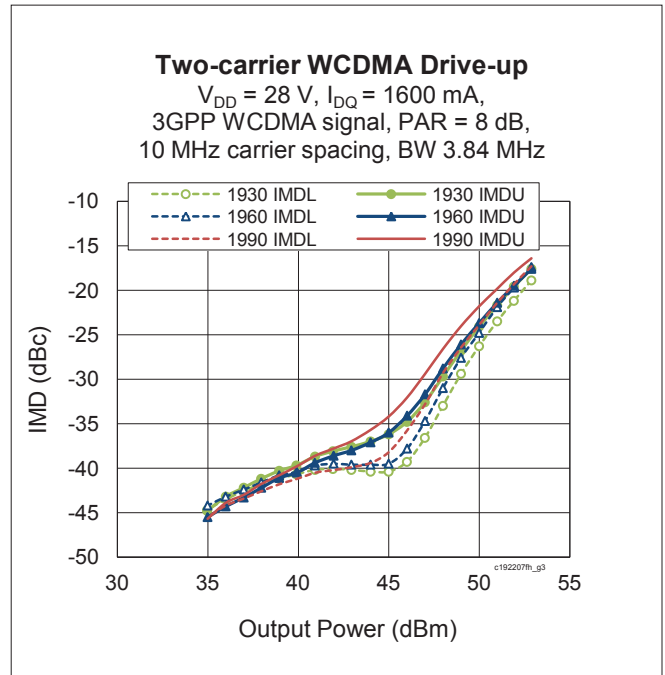
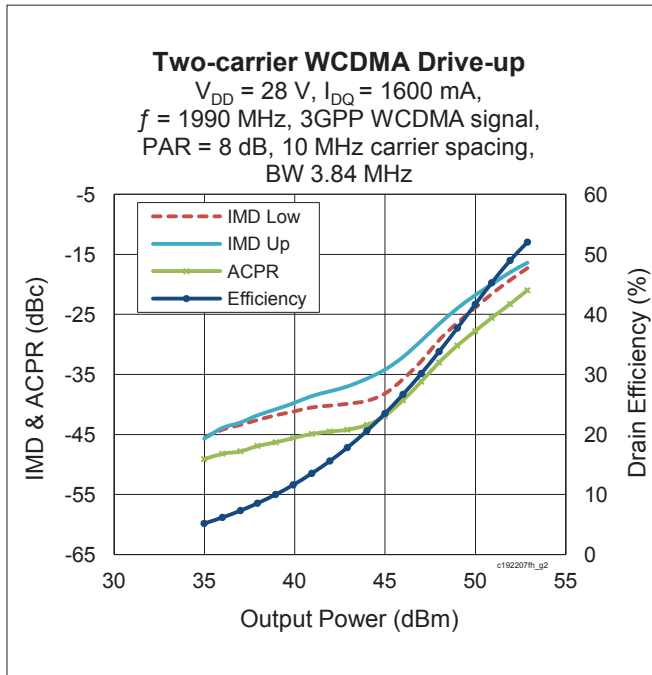
Maximum Ratings

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 ($T_{CASE} = 70^{\circ}\text{C}$, 200 W CW)	$R_{\theta JC}$	0.28	$^{\circ}\text{C/W}$

Ordering Information

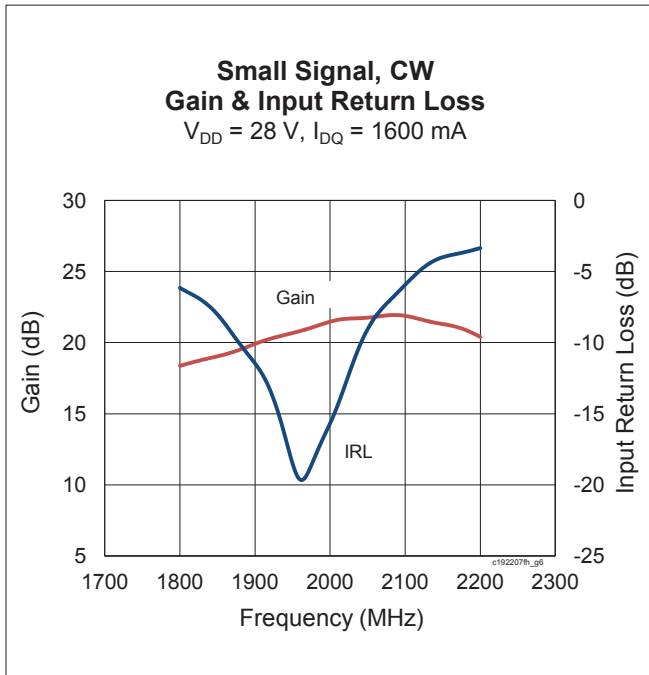
Type and Version	Order Code	Package Description	Shipping
PXFC192207FH V3 R0	PXFC192207FH-V3-R0	H-37288G-4/2, earless flange	Tape & Reel, 50 pcs
PXFC192207FH V3 R250	PXFC192207FH-V3-R250	H-37288G-4/2, earless flange	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)



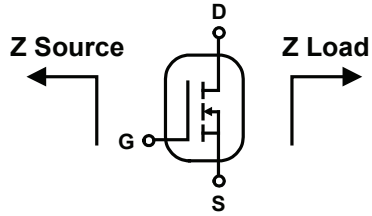


Typical Performance (cont.)



See next page for broadband circuit impedance

Broadband Circuit Impedance



Freq [MHz]	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1930	3.12	-4.70	1.15	-2.80
1960	3.11	-4.62	1.14	-2.69
1990	3.10	-4.55	1.13	-2.58

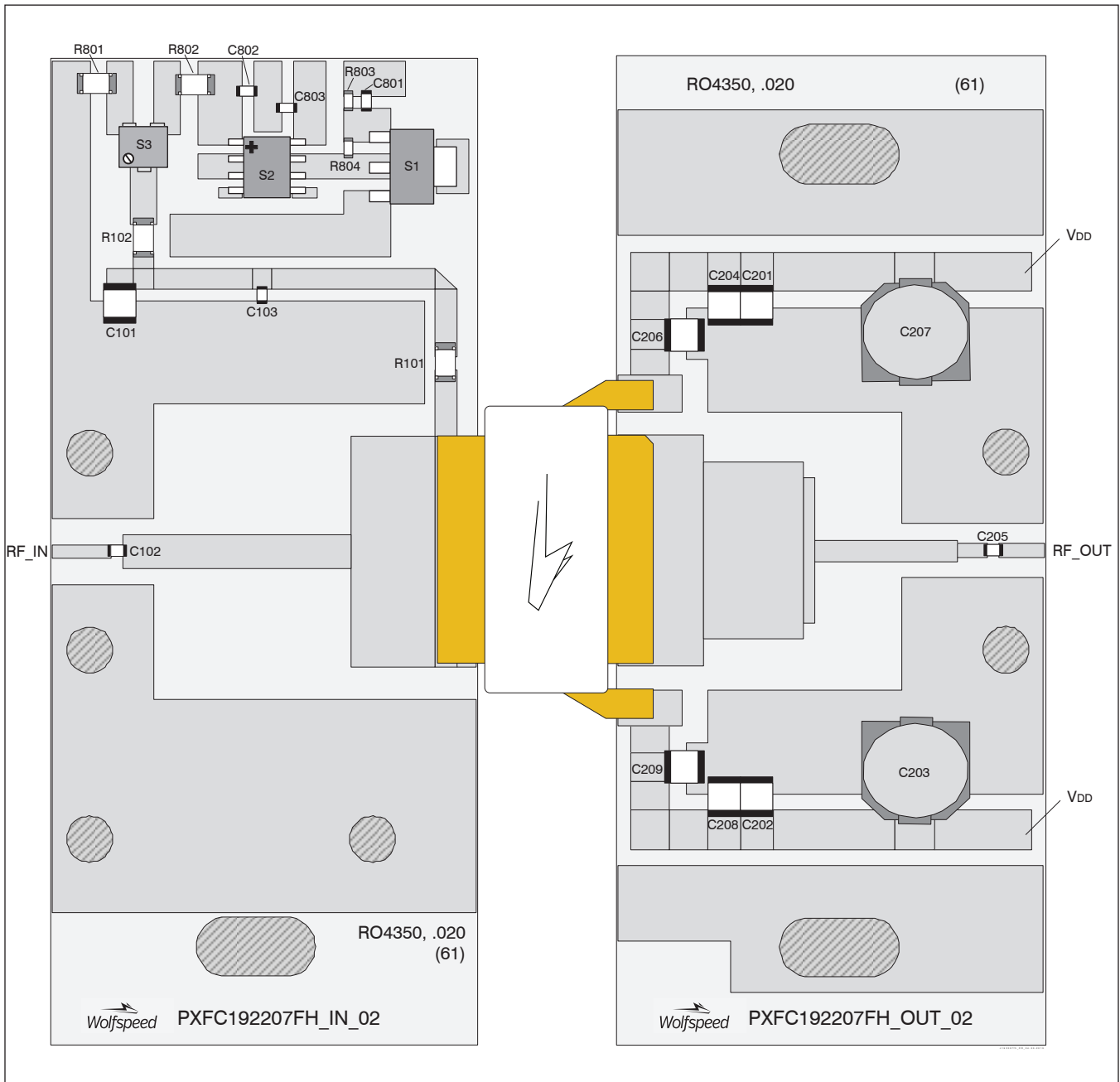
Load Pull Performance

Each Side Load Pull Performance – Pulsed CW signal: 16 μ s, 10% duty cycle, 28 V, 1100 mA

Freq [MHz]	Zs [Ω]	P _{1dB}									
		Max Output Power					Max PAE				
		ZI [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]	ZI [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]
1805	2.1-j3.4	0.7-j2.4	16.8	55.1	324	54.1	1.6-j1.9	19.3	53.4	219	65.7
1880	2.1-j3.3	0.7-j2.5	17.6	55.0	316	54.4	1.6-j1.9	20.3	53.0	200	65.0
1930	1.9-j3.7	0.8-j2.6	17.8	54.7	295	50.0	1.4-j2.0	20.6	53.0	200	62.8
1990	3.8-j4.1	0.7-j2.8	18.4	54.6	288	50.8	1.4-j2.1	21	52.8	191	61.7



Reference Circuit , 1930 – 1990 MHz



Reference circuit assembly diagram (not to scale)*

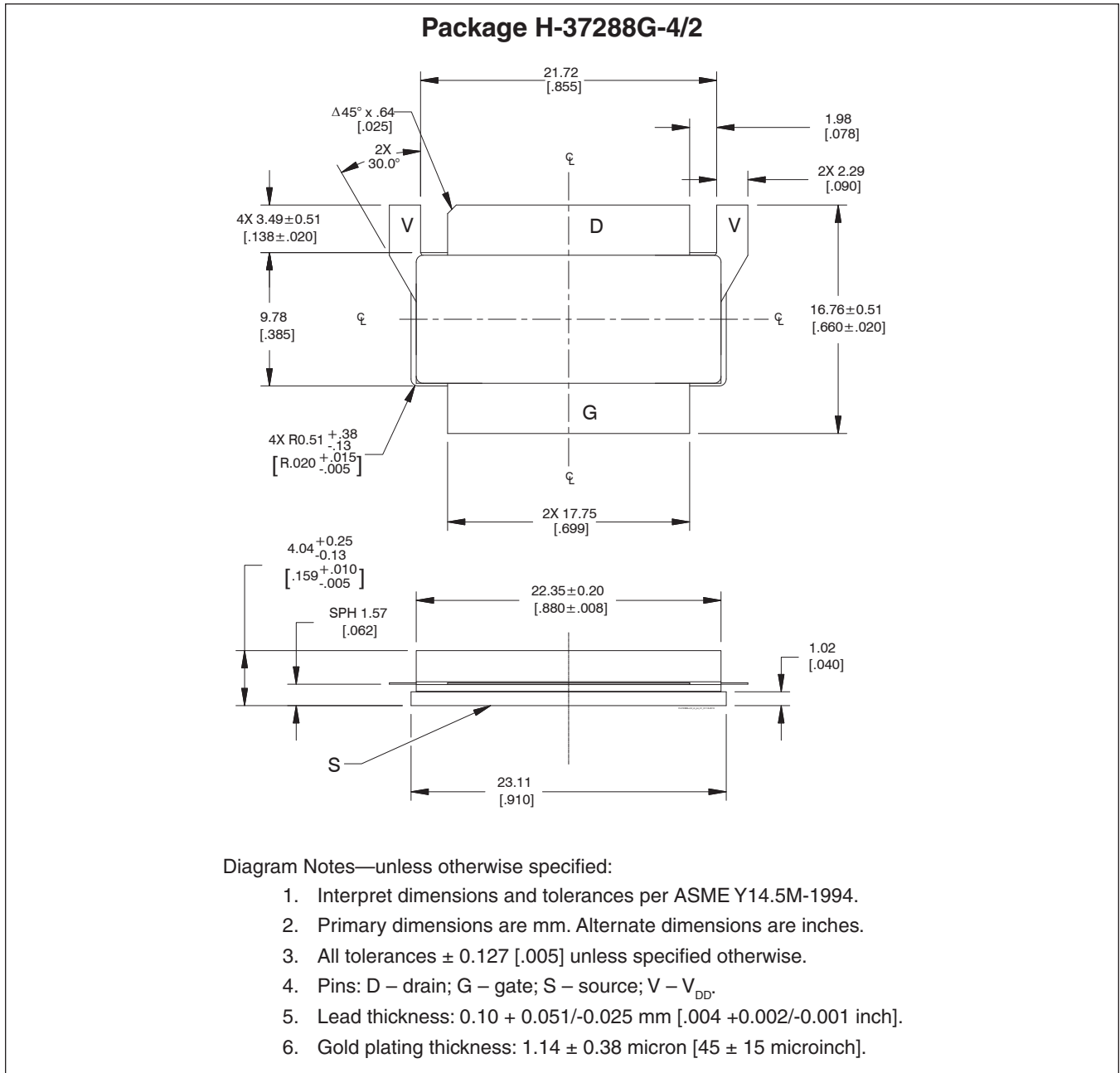
Reference Circuit (cont.)**Reference Circuit Assembly**

DUT	PXFC192207FH
Test Fixture Part No.	LTN/PXFC192207FH V3
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$, $f = 1930 - 1990$ MHz
Find Gerber files for this test fixture on the Wolfspeed Web site at http://www.wolfspeed.com/RF	

Components Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C102, C103	Capacitor, 33 pF	ATC	ATC100A330JW150XB
C801, C802, C803	Capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
R101, R102, R801	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-8GEYJ100V
R802	Resistor, 100 Ω	Panasonic Electronic Components	ERJ-8GEYJ101V
R803	Resistor, 1300 Ω	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1200 Ω	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Transistor	Infineon Technologies	BCP56
S2	Voltage Regulator	Texas Instruments	LM78L05ACM
S3	Potentiometer, 2k Ω	Bourns Inc.	3224W-1-202E
Output			
C201, C202, C204, C206, C208, C209	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C203, C207	Capacitor, 220 μ F	Panasonic Electronic Components	EEE-FP1V221AP
C205	Capacitor, 33 pF	ATC	ATC100A330JW150XB

Package Outline Specifications





Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2013-02-04	Advance	All	Data Sheet reflects advance specification for product development
02	2013-04-29	Production	All	Data Sheet reflects released product specifications
03	2013-07-18	Production	All 1 2 7 8	Updated package from V1 to V2 for general release Updated package and revised efficiency in Two-carrier WCDMA specifications table Updated ordering information table Updated LTN version Updated package outline
04	2014-07-15	Production	All 1 2	Updated package from V2 to V3 for general release Updated Two-carrier WCDMA specifications table Revised junction temperature in Maximum Ratings table
04.1	2016-06-22	Production	2	Updated ordering information
05	2018-06-25	Production	All	Converted to Wolfspeed Data Sheet

For more information, please contact:

4600 Silicon Drive
Durham, North Carolina, USA 27703
www.wolfspeed.com/RF

Sales Contact
RFSales@wolfspeed.com

RF Product Marketing Contact
RFMarketing@wolfspeed.com
919.407.7816

Notes

Disclaimer

Specifications are subject to change without notice. Cree, Inc. believes the information contained within this data sheet to be accurate and reliable. However, no responsibility is assumed by Cree for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of Cree. Cree makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose. “Typical” parameters are the average values expected by Cree in large quantities and are provided for information purposes only. These values can and do vary in different applications and actual performance can vary over time. All operating parameters should be validated by customer’s technical experts for each application. Cree products are not designed, intended or authorized for use as components in applications intended for surgical implant into the body or to support or sustain life, in applications in which the failure of the Cree product could result in personal injury or death or in applications for planning, construction, maintenance or direct operation of a nuclear facility.