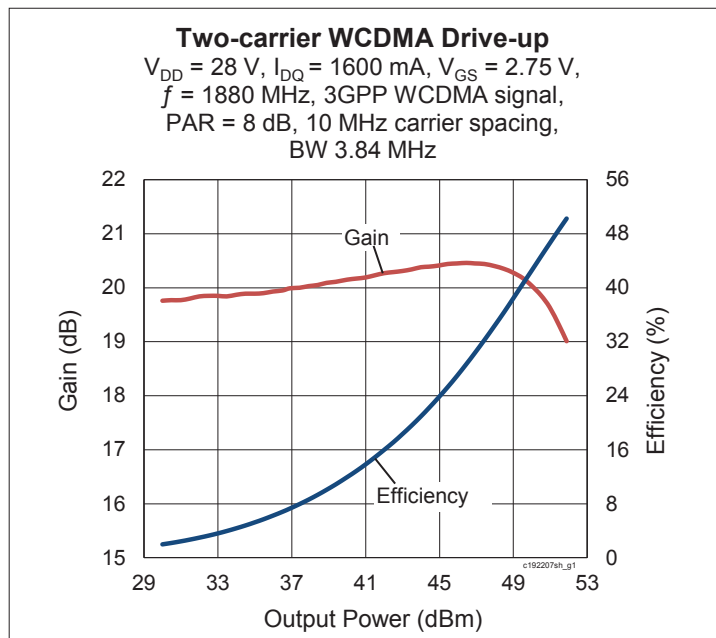
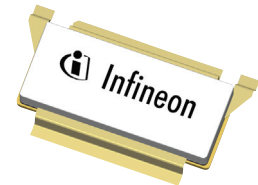


## Thermally-Enhanced High Power RF LDMOS FET 220 W, 28 V, 1805 – 1990 MHz

### Description

The PXFC192207SH 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 Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXFC192207SH  
Package H-37288G-4/2



### Features

- Broadband internal input and output matching
- Typical Pulsed CW performance, 1880 MHz, 28 V, 10  $\mu\text{s}$  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, 1880 MHz, 28 V, 10 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, 200 W (CW) output power
- Integrated ESD protection
- Low thermal resistance
- Pb-free and RoHS compliant

### RF Characteristics

#### Two-carrier WCDMA Specifications (tested in Infineon 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
Gain	$G_{ps}$	19	20	—	dB
Drain Efficiency	$\eta_D$	29	30.5	—	%
Intermodulation Distortion	IMD	—	-32	-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	$\mu\text{A}$
	$V_{DS} = 63\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10	$\mu\text{A}$
On-State Resistance	$V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.03	—	$\Omega$
Operating Gate Voltage	$V_{DS} = 28\text{ V}, I_{DQ} = 1600\text{ mA}$	$V_{GS}$	2.3	2.6	2.9	V
Gate Leakage Current	$V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V}$	$I_{GSS}$	—	—	1	$\mu\text{A}$

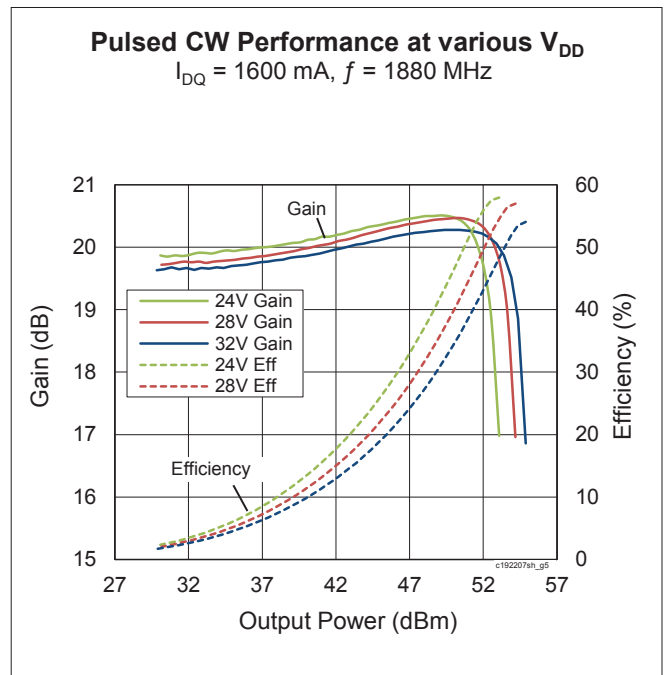
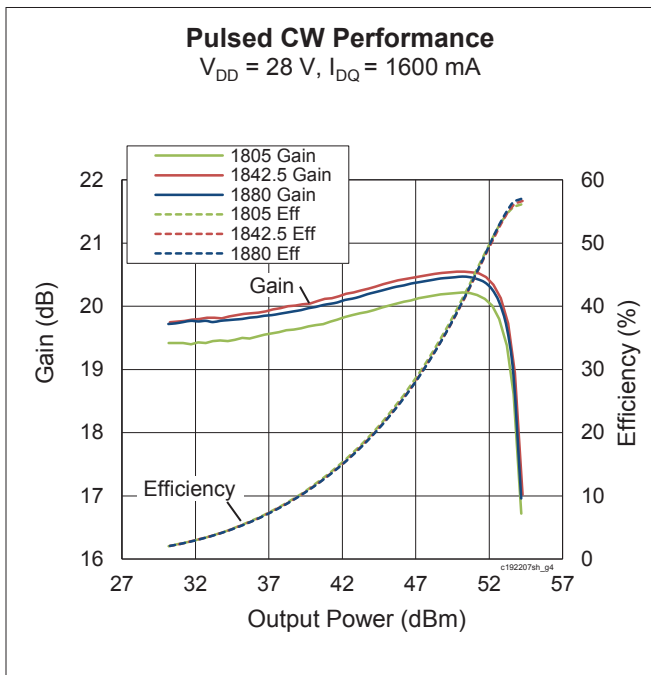
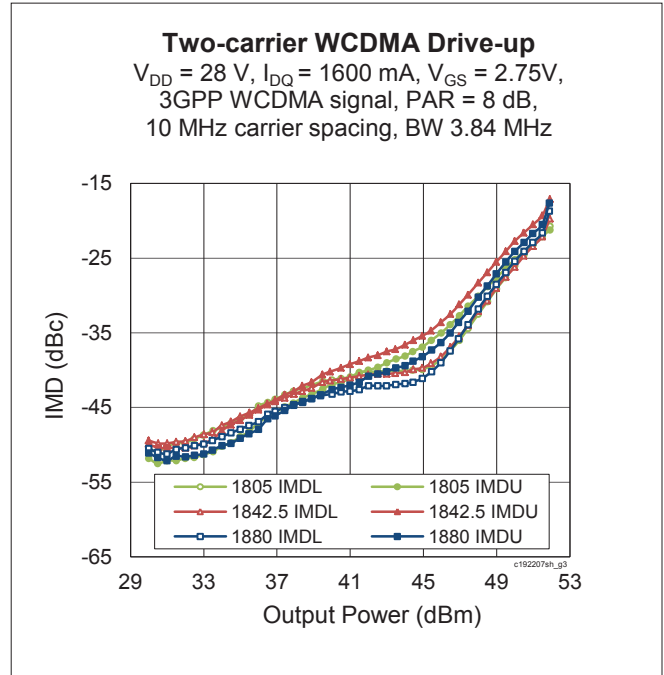
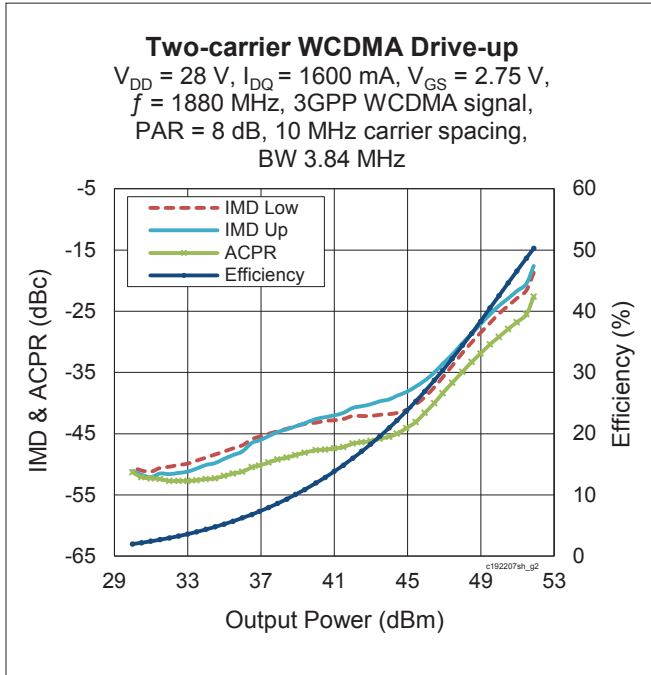
## Maximum Ratings

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

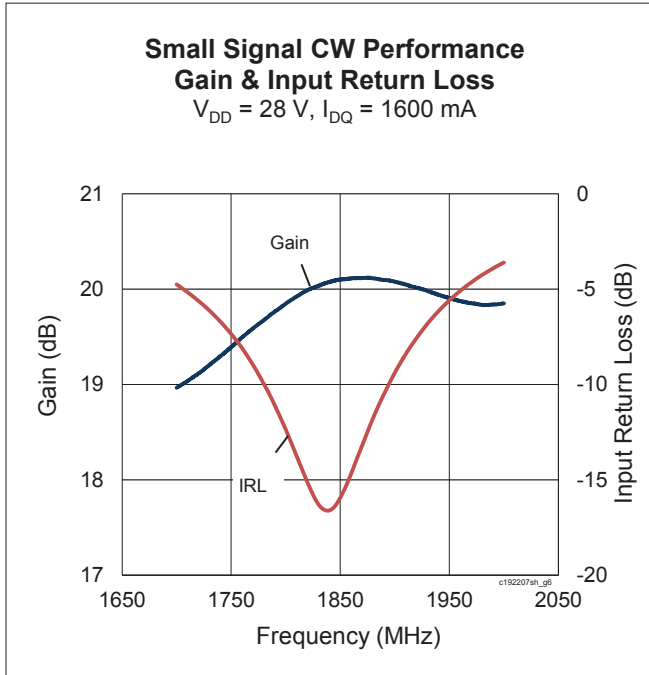
## Ordering Information

Type and Version	Order Code	Package Description	Shipping
PXFC192207SH V1 R250	PXFC192207SHV1R250XTMA1	H-37288G-4/2, earless flange	Tape & Reel, 250 pcs

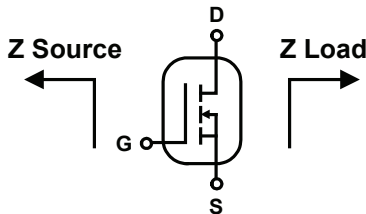
**Typical Performance** (data taken in a production test fixture)



Typical Performance (cont.)



Broadband Circuit Impedance



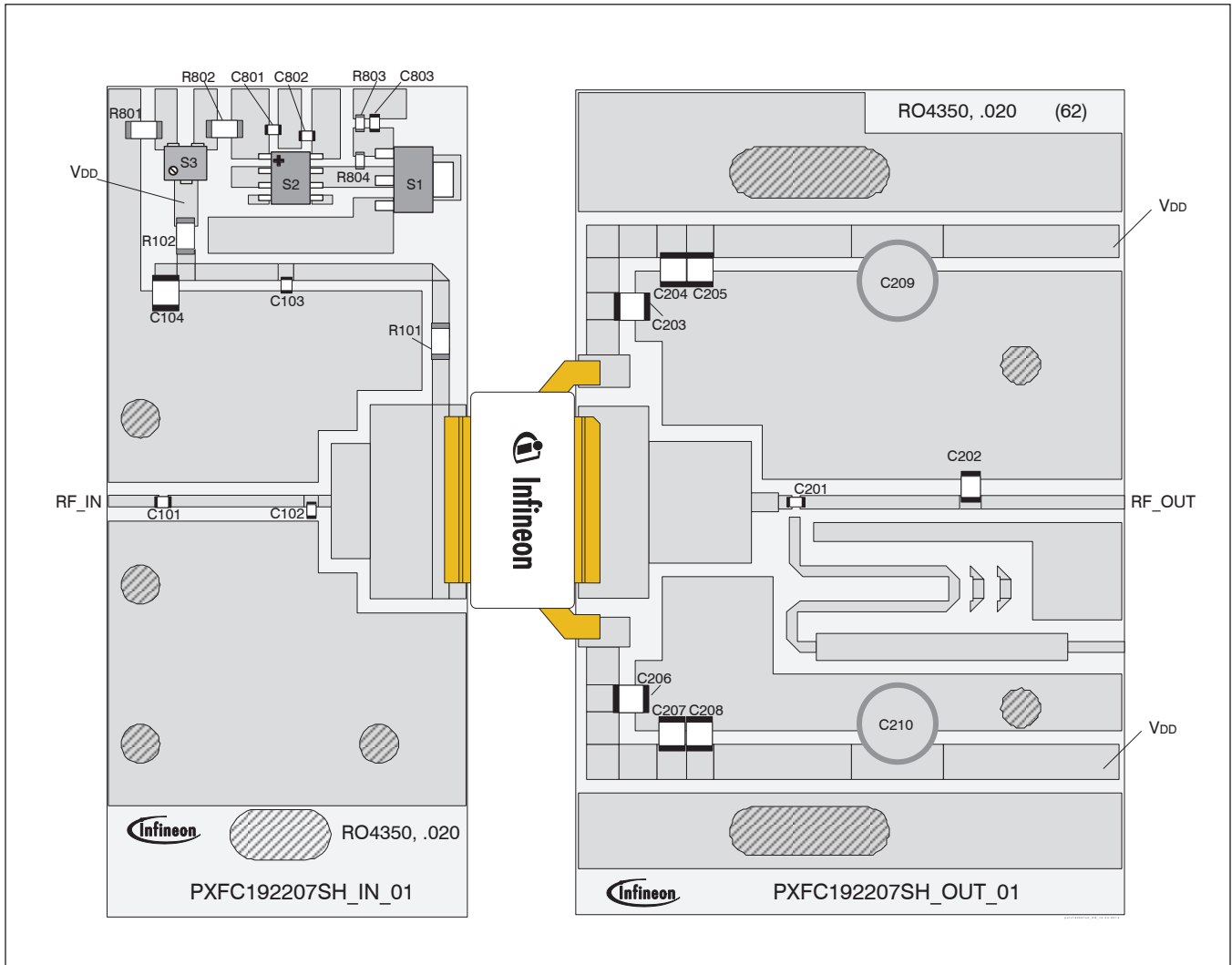
Freq [MHz]	Z Source $\Omega$		Z Load $\Omega$	
	R	jX	R	jX
1805	1.57	-6.18	1.13	-3.50
1843	1.50	-5.97	1.11	-3.32
1880	1.42	-5.76	1.09	-3.18

Load Pull Performance

Main Side Load Pull Performance – Pulsed CW signal: 10  $\mu\text{s}$ , 10% duty cycle,  $V_{DD} = 28\text{ V}, I_{DQ} = 1600\text{ mA}$

Freq [MHz]	Zs [ $\Omega$ ]	P <sub>1dB</sub>									
		Max Output Power					Max PAE				
		Zl [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]	Zl [ $\Omega$ ]	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE [%]
1805	0.62 - j4.61	0.79 - j3.74	19.7	54.30	269	50.8	2.00 - j3.31	22.7	52.30	170	61.7
1880	1.25 - j5.48	0.82 - j3.85	19.9	54.40	275	52.8	1.62 - j3.45	22.1	53.00	200	62.1
1930	1.83 - j6.05	0.79 - j4.00	19.5	54.30	269	51.1	1.60 - j3.33	22.2	52.50	178	61.2
1990	3.23 - j6.50	0.81 - j4.14	20.1	54.10	257	51.4	1.40 - j3.31	22.7	52.00	158	60.1

Reference Circuit , 1805 – 1880 MHz



Reference circuit assembly diagram (not to scale)

**Reference Circuit** (cont.)

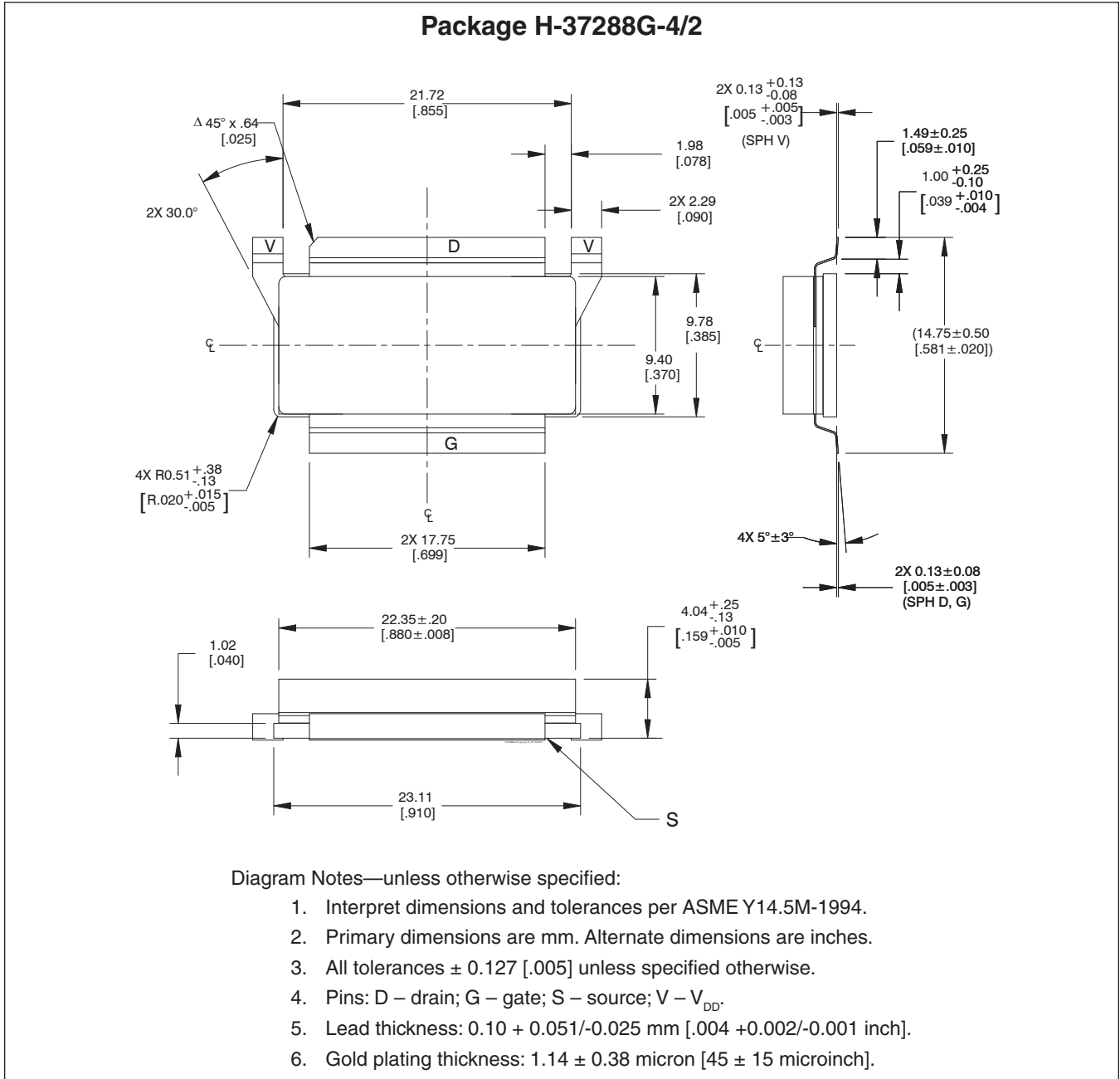
**Reference Circuit Assembly**

DUT	PXFC192207SH V1
Test Fixture Part No.	LTN/PXFC192207SH V1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$ , $f = 1805 - 1880$ 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	Suggested Manufacturer	P/N
<b>Input</b>			
C101, C103	Capacitor, 33 pF	ATC	ATC800A330JT250
C102	Capacitor, 0.9 pF	ATC	ATC800A0R9CT250
C104	Capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C801, C802, C803	Capacitor, 1000 pF	Panasonic Electronic Components	ECJ-1VB1H102K
R101, R102, R801	Resistor, 10 $\Omega$	Panasonic Electronic Components	ERJ-8GEYJ100V
R802	Resistor, 100 $\Omega$	Panasonic Electronic Components	ERJ-8GEYJ101V
R803	Resistor, 1300 $\Omega$	Panasonic Electronic Components	ERJ-3GEYJ132V
R804	Resistor, 1200 $\Omega$	Panasonic Electronic Components	ERJ-3GEYJ122V
S1	Transistor	Infineon Technologies	BCP56
S2	Voltage Regulator	Texas Instruments	LM78L05ACM
S3	Potentiometer, 2k $\Omega$	Bourns Inc.	3224W-1-202E
<b>Output</b>			
C201	Capacitor, 33 pF	ATC	ATC800A330JT250
C202	Capacitor, 0.5 pF	ATC	ATC800B0R5CW500
C203, C204, C205, C206, C207, C208	Capacitor, 10 $\mu$ F	Taiyo Yuden	UMK325C7106MM-T
C209, C210	Capacitor, 220 $\mu$ F	Panasonic Electronic Components	EEE-FP1V221AP

Package Outline Specifications



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