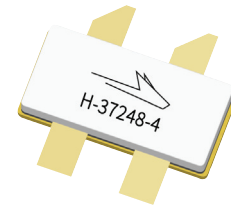


# PXAC261212FC

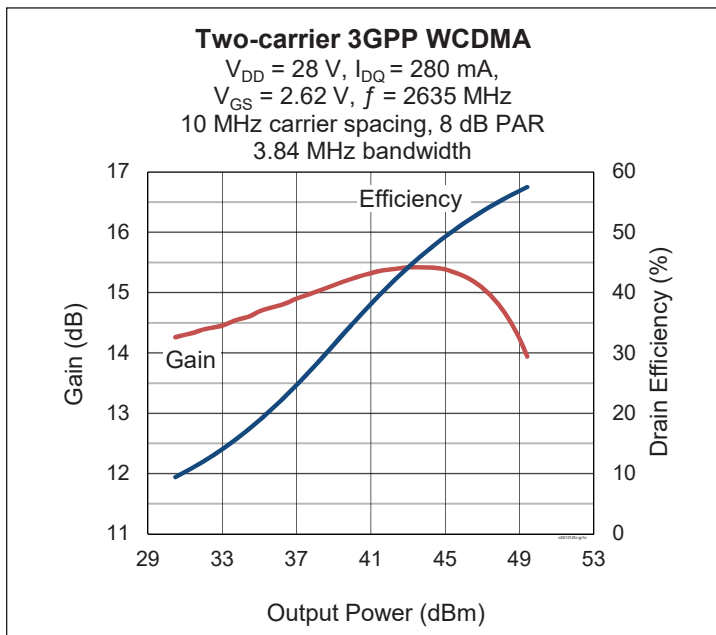
## Thermally-Enhanced High Power RF LDMOS FET 120 W, 28 V, 2496 – 2690 MHz

### Description

The PXAC261212FC is a 120-watt LDMOS FET with an asymmetric designed for use in multi-standard cellular power amplifier applications in the 2496 to 2690 MHz frequency band. It features dual-path design, input and output matching, and a thermally-enhanced package with earless flange. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PXAC261212FC  
Package H-37248-4



### Features

- Broadband internal matching
- Asymmetric design
  - Main  $P_{1dB} = 50\text{ W}$
  - Peak  $P_{1dB} = 75\text{ W}$
- CW performance in Doherty configuration, 2635 MHz, 28 V
  - Output power at  $P_{1dB} = 107\text{ W}$
  - Gain = 14.4 dB
  - Efficiency = 57%
- Integrated ESD protection: Human Body Model, class 1C (per JESD22-A114)
- Capable of handling 10:1 VSWR @28 V, 120 W (CW) output power
- Low thermal resistance
- Pb-free and RoHS-compliant

### RF Characteristics

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

$V_{DD} = 28\text{ V}$ ,  $V_{GS(peak)} = 1.3\text{ V}$ ,  $I_{DQ} = 280\text{ mA}$ ,  $P_{OUT} = 28\text{ W}$  average,  $f_1 = 2630\text{ MHz}$ ,  $f_2 = 2640\text{ MHz}$ . 3GPP WCDMA signal: 3.84 MHz bandwidth, 8 dB PAR @0.01% CCDF.

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	$G_{ps}$	14.2	15.0	—	dB
Drain Efficiency	$\eta_D$	45	48	—	%
Intermodulation Distortion	IMD	—	-25	-22	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	$V_{DS} = 28\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	1.0	$\mu\text{A}$
	$V_{DS} = 63\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10.0	$\mu\text{A}$
Gate Leakage Current	$V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V}$	$I_{GSS}$	—	—	1.0	$\mu\text{A}$
On-state Resistance	(main) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.19	—	$\Omega$
	(peak) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.16	—	$\Omega$
Operating Gate Voltage	(main) $V_{DS} = 28\text{ V}, I_{DQ} = 280\text{ mA}$	$V_{GS}$	2.1	2.6	3.1	V
	(peak) $V_{DS} = 28\text{ V}, I_{DQ} = 0\text{ A}$	$V_{GS}$	0.80	1.3	1.8	V

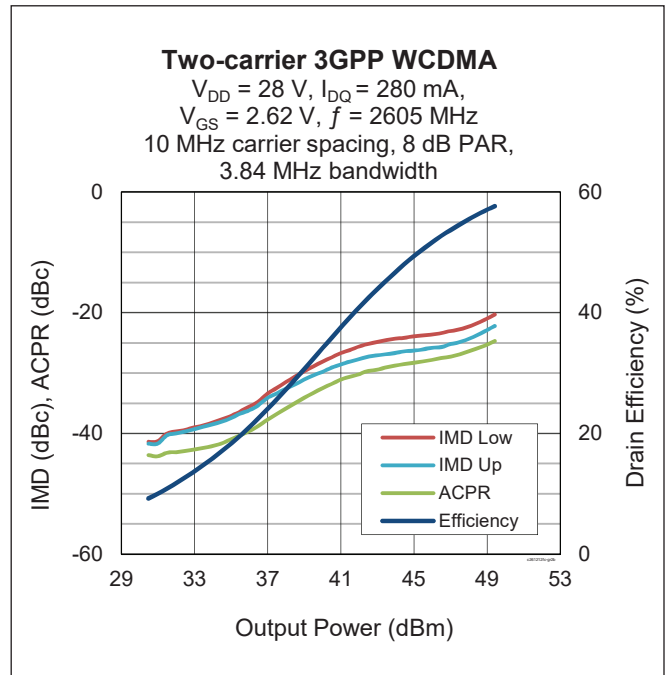
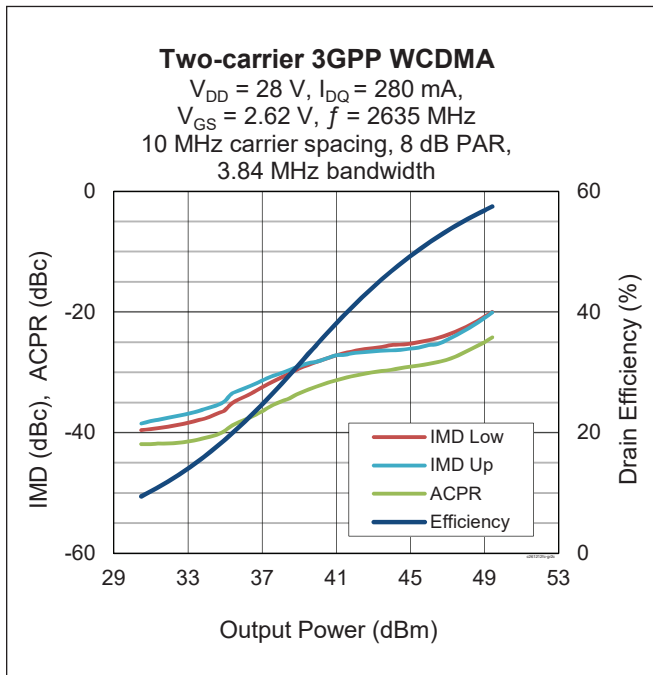
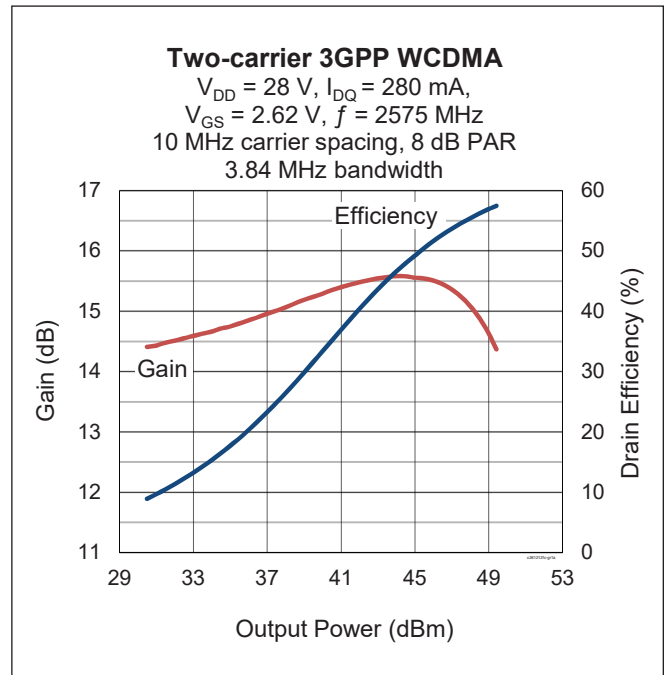
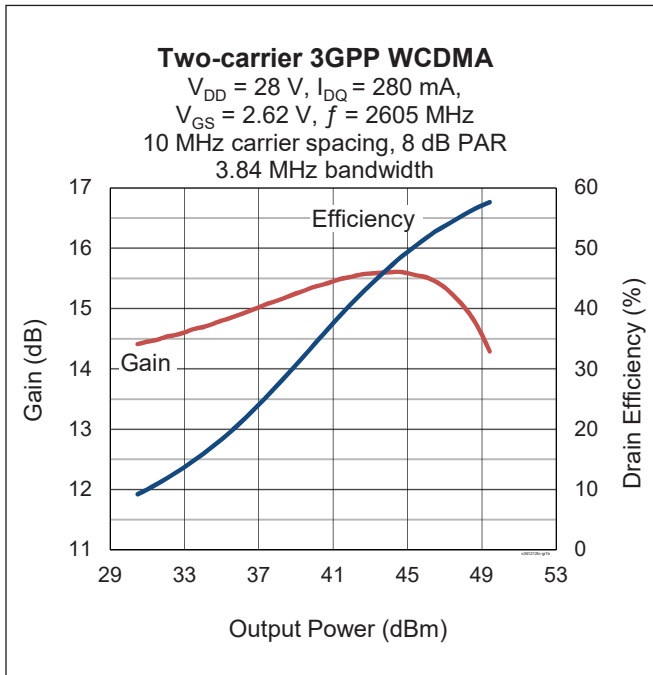
## Maximum Ratings

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 ( $T_{CASE} = 70^{\circ}\text{C}, 100\text{ W CW}$ )	$R_{\theta JC}$	0.61	$^{\circ}\text{C/W}$

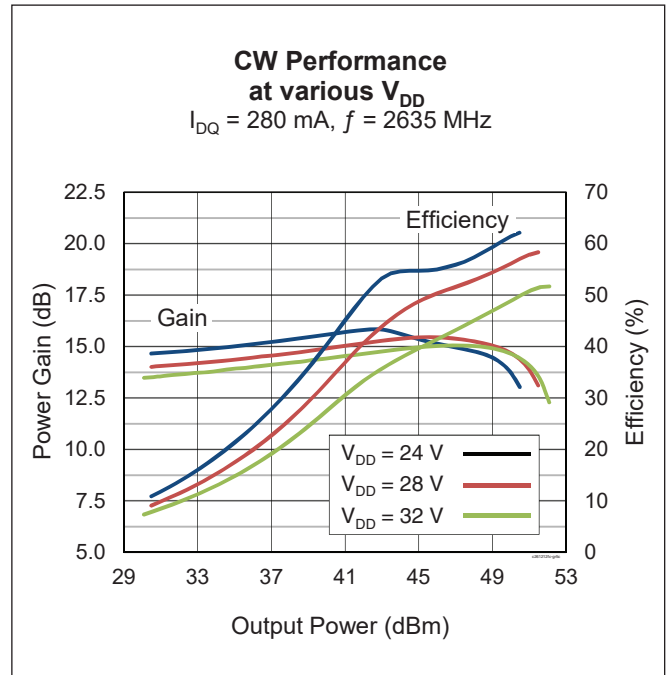
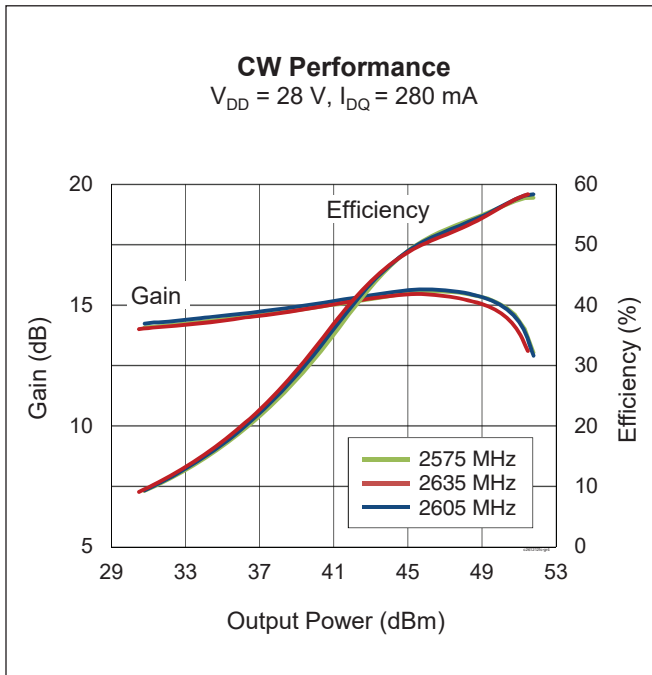
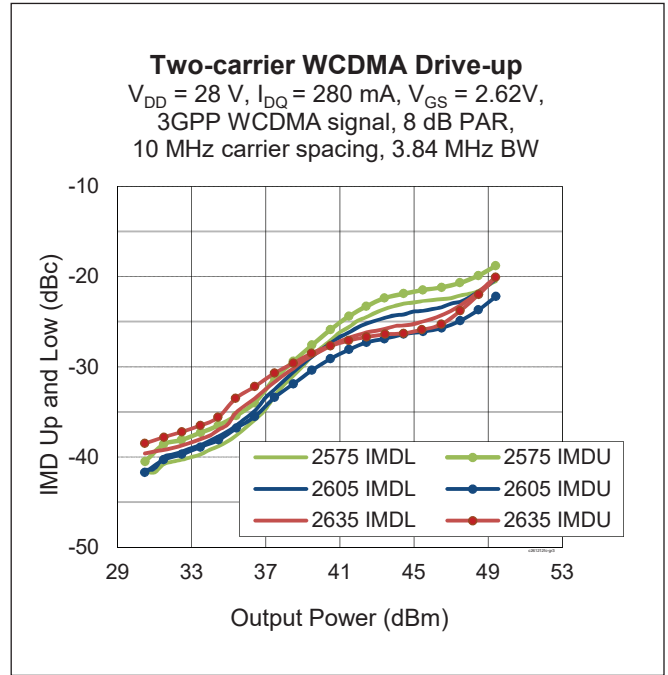
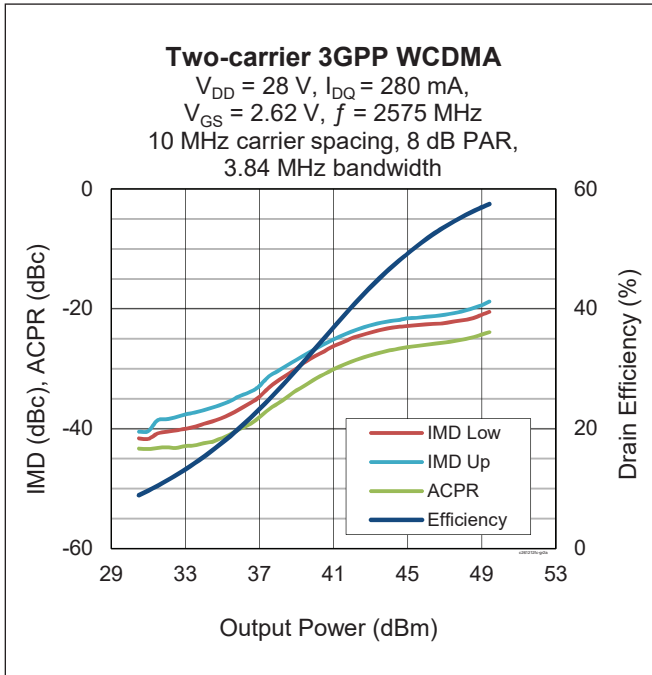
## Ordering Information

Type and Version	Order Code	Package and Description	Shipping
PXAC261212FC V1 R0	PXAC261212FC-V1-R0	H-37248-4, ceramic open-cavity, earless	Tape & Reel, 50 pcs
PXAC261212FC V1 R250	PXAC261212FC-V1-R250	H-37248-4, ceramic open-cavity, earless	Tape & Reel, 250 pcs

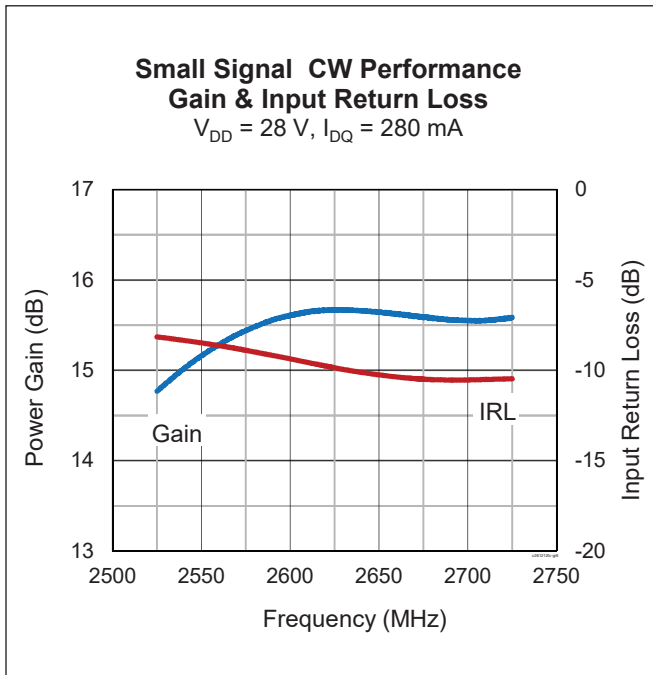
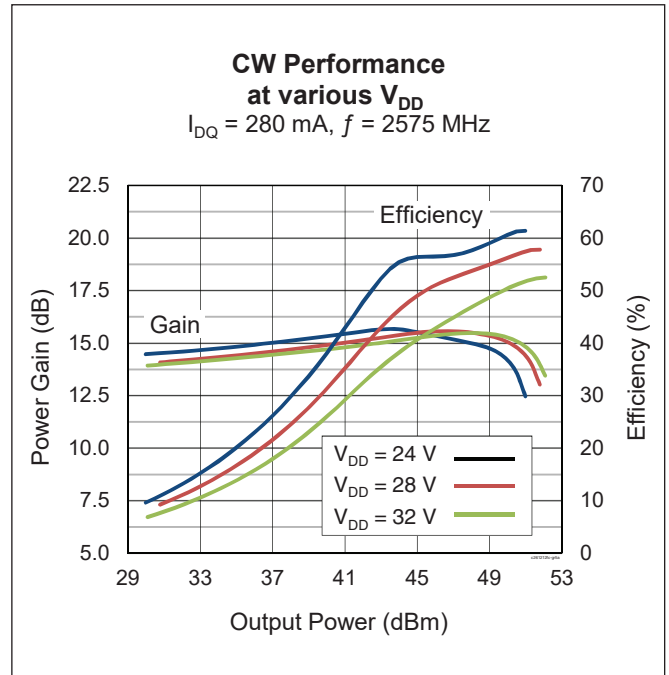
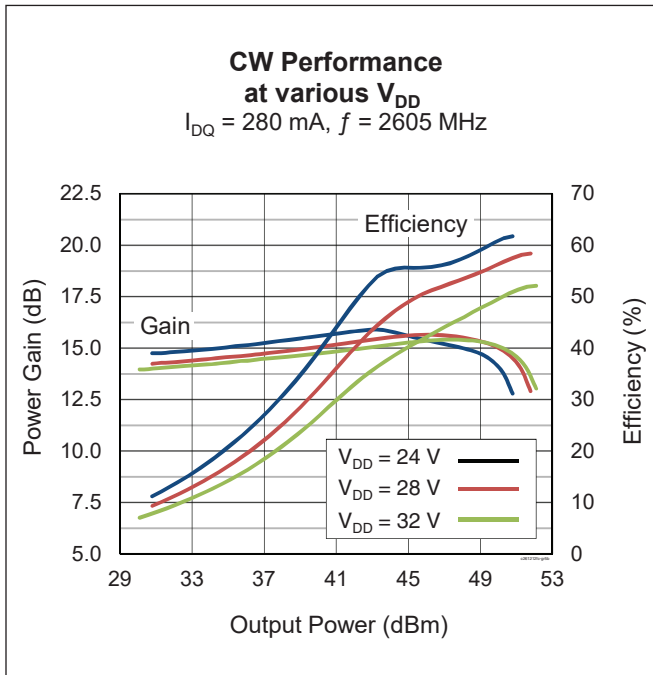
**Typical Performance** (data taken in Wolfspeed Doherty reference test fixture)



Typical Performance (cont.)

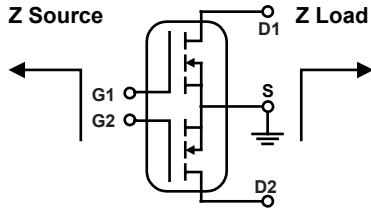


Typical Performance (cont.)





### Load Pull Performance



Main side pulsed CW signal: 160  $\mu$ sec, 10% duty cycle; 28 V,  $V_{GS} = 1.4$  V,  $I_{DQ} = 250$  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 [%]	
2490	5.1 – j14.5	2.8 – j5.8	16.9	48.53	71.3	52.8	6.0 – j4.2	19.1	46.90	49.0	62.4	
2590	6.8 – j16.6	2.8 – j6.2	17.0	48.30	67.6	50.4	5.5 – j3.6	19.4	46.68	46.6	61.1	
2690	12.9 – j17.8	2.9 – j6.0	17.2	48.30	67.6	50.4	4.5 – j3.3	19.5	46.76	47.4	60.4	

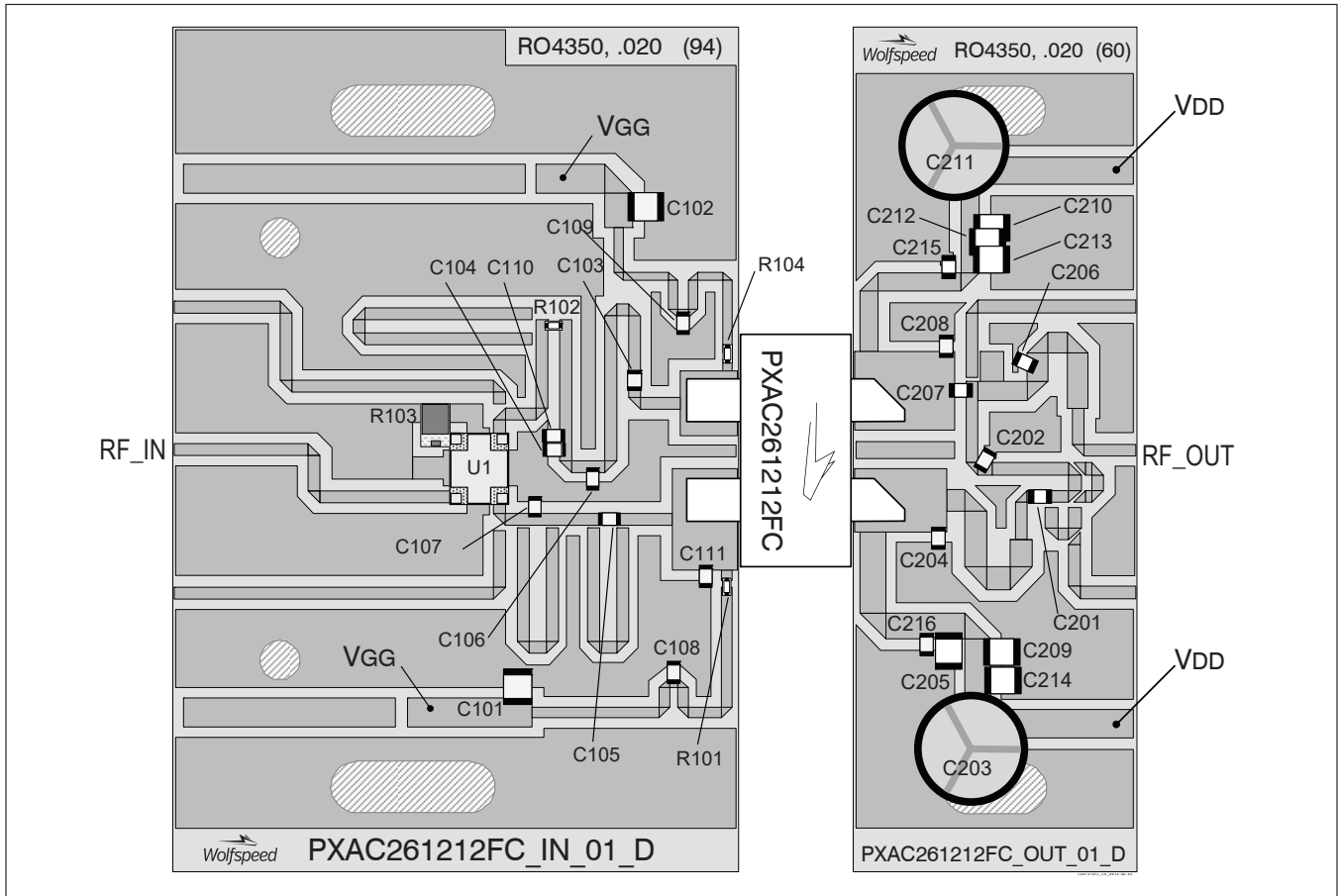
Peak side pulsed CW signal: 160  $\mu$ sec, 10% duty cycle; 28 V,  $V_{GS} = 1.4$  V

Class C		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 [%]	
2490	4.5 – j11.4	11.2 – j7.5	13.0	50.27	106.4	55.6	4.3 – j5.4	14.1	48.40	69.2	65.3	
2590	4.7 – j12.9	13.1 – j6.3	13.4	50.08	101.9	54.1	6.0 – j6.3	14.6	48.60	72.4	63.2	
2690	9.2 – j14.5	14.1 – j3.4	13.7	50.03	100.7	55.5	8.0 – j7.0	14.7	48.70	74.1	62.0	

### Reference Circuit, tuned for 2575 – 2675 MHz

DUT	PXAC261212FC
Test Fixture Part No.	LTA/PXAC261212FC V1
PCB	Rogers 4350, 0.508 mm [.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$
Find Gerber files for this reference fixture on the Wolfspeed Web site at ( <a href="http://www.wolfspeed.com/RF">www.wolfspeed.com/RF</a> )	

Reference Circuit (cont.)



Reference circuit assembly diagram (not to scale)

Assembly Information

Component	Description	Manufacturer	P/N
<b>Input</b>			
C101, C102	Chip capacitor, 4.7 $\mu$ F	Murata Electronics North America	GRM32ER71H475KA88L
C103, C105, C108, C109	Chip capacitor, 10 pF	ATC	ATC600F100JW250T
C104	Chip capacitor, 0.4 pF	ATC	ATC600F0R4CW250T
C106, C107	Chip capacitor, 0.8 pF	ATC	ATC600F0R8AW250T
C110	Chip capacitor, 0.2 pF	ATC	ATC600F0R2AW250T
C111	Chip capacitor, 0.3 pF	ATC	ATC600F0R3CW250T
R101, R104	Resistor, 10 Ohm	Panasonic – ECG	ERJ-3GEYJ100V
R102	Resistor, 5.1k Ohm	Panasonic – ECG	ERJ-3GEYJ512V
R103	Resistor, 50 Ohm	Anaren	RFP-060120A15Z50
U1	90° RF hybrid coupler	Anaren	XC2650P-03S

(table continued next page)

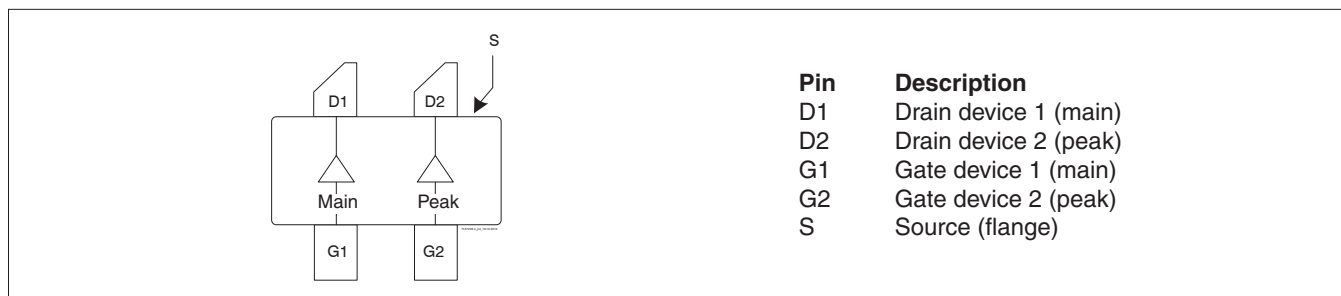


**Reference Circuit** (cont.)

**Assembly Information** (cont.)

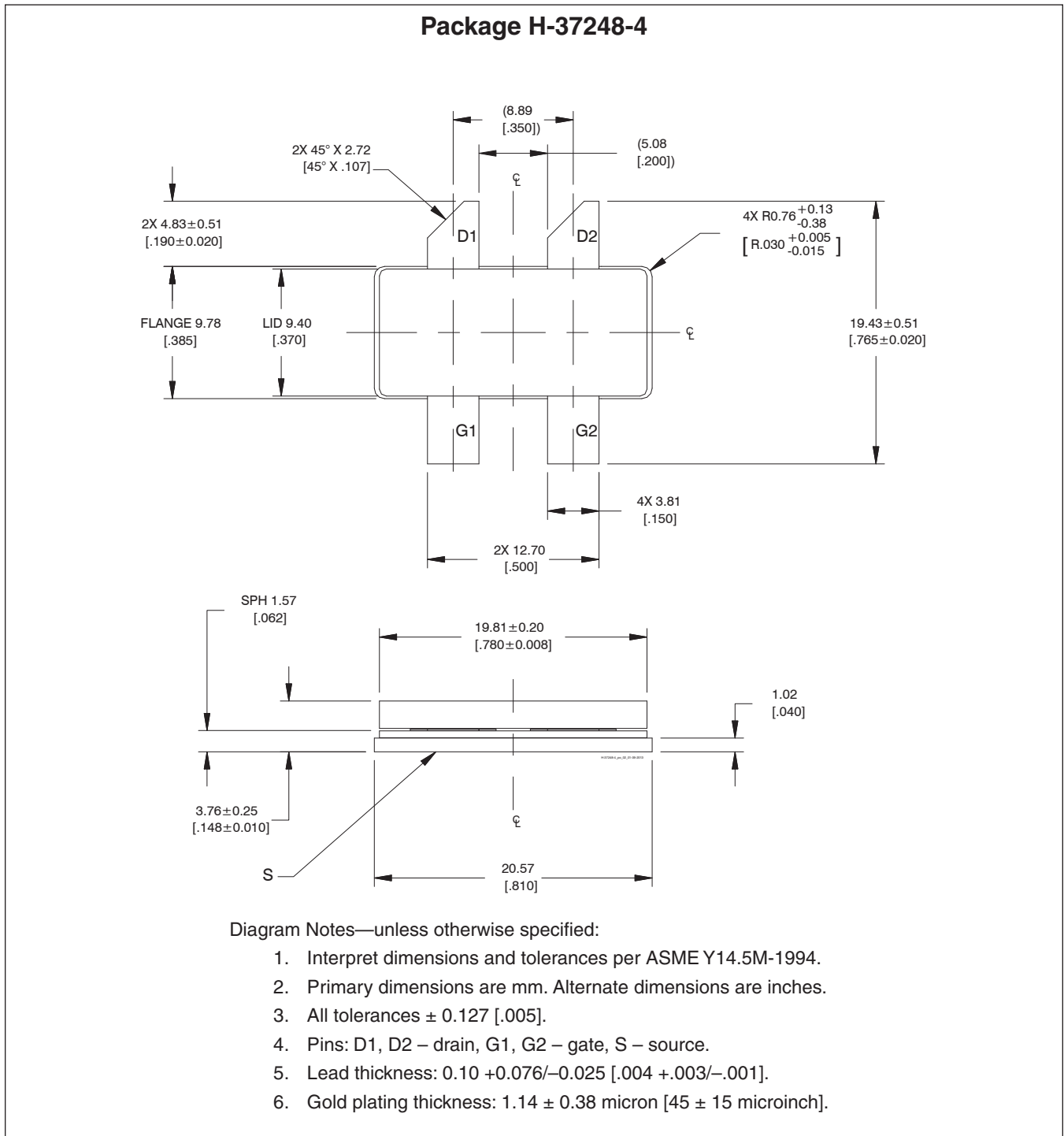
Component	Description	Manufacturer	P/N
<b>Output</b>			
C201, C215, C216	Chip capacitor, 10 pF	ATC	ATC600F100JW250T
C202, C204, C211, C208	Chip capacitor, 0.5 pF	ATC	ATC600F0R5CW250T
C203	Capacitor, 220 μF	Cornell Dubilier Electronics (CDE)	SK221M050ST
C205, C209, C210, C212, C213, C214	Chip capacitor, 4.7 μF	Murata Electronics North America	GRM32ER71H475KA88L
C206	Chip capacitor, 0.3 pF	ATC	ATC600F0R3CW250T
C207	Chip capacitor, 3.9 pF	ATC	ATC600F3R9CW250T

**Pinout Diagram** (top view)





Package Outline Specifications





## Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2014-03-03	Advance	all	Proposed specification for new product development.
02	2014-06-12	Production	all	Specification for production-released device.
02.1	2014-06-30	Production	1	Corrected typo in features.
02.2	2016-06-22	Production	2	Updated ordering information
03	2018-07-03	Production	All	Converted to Wolfspeed Data Sheet

For more information, please contact:

4600 Silicon Drive  
 Durham, North Carolina, USA 27703  
[www.wolfspeed.com/RF](http://www.wolfspeed.com/RF)

Sales Contact  
[RFSales@wolfspeed.com](mailto:RFSales@wolfspeed.com)

RF Product Marketing Contact  
[RFMarketing@wolfspeed.com](mailto: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.



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.