

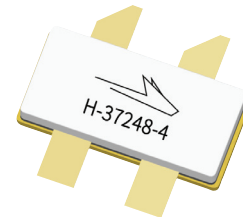
PXAC260602FC

Thermally-Enhanced High Power RF LDMOS FET 60 W, P_{3dB} @ 28 V, 2620 – 2690 MHz

Description

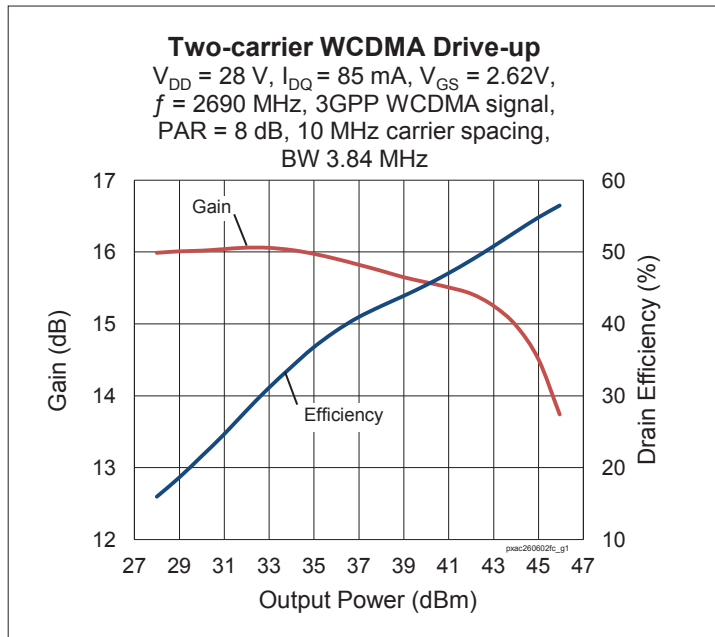
The PXAC260602FC is a 60-watt LDMOS FET with an asymmetrical design intended for use in multi-standard cellular power amplifier applications in the 2620 to 2690 MHz frequency band. Features include dual-path design, high gain and thermally-enhanced package with earless flanges. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PXAC260602FC
Package H-37248-4



Features

- Main: Input matched
Peak: Input and output matching
- Asymmetric Doherty design
 - Main: P_{1dB} = 15 W Typ
 - Peak: P_{1dB} = 50 W Typ
- Typical Pulsed CW performance, 2690 MHz, 28 V, 10 μs pulse width, 10% duty cycle, class AB, Doherty Configuration
 - Output power at P_{1dB} = 50 W
 - Efficiency = 50%
 - Gain = 15 dB
- Typical two-carrier WCDMA performance, 2690 MHz, 28 V, 8 dB PAR @ 0.01% CCDF, Doherty Configuration
 - Output power = 5 W
 - Efficiency = 40%
 - Gain = 15.7 dB
 - IMD = -30 dBc
- Capable of handling 10:1 VSWR @ 28 V, 50 W (CW) output power
- Integrated ESD protection : Human Body Model, Class 1B (per JESD22-A114)
- Low thermal resistance
- Pb-free and RoHS compliant



RF Characteristics

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

V_{DD} = 28 V, I_{DQ} = 85 mA, P_{OUT} = 5 W avg, V_{GS(PK)} = V_{GS} at 300 mA -1.0V, f = 2620 – 2690 MHz, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G _{ps}	14	15.7	—	dB
Drain Efficiency	η _D	35	39	—	%
Adjacent Channel Power Ratio	ACPR	—	-31	-28	dBc

All published data at T_{CASE} = 25°C unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics (each side)

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}	—	—	0.1	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	μA
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $I_{DS} = 0\text{ V}$	I_{GSS}	—	—	—	μA
On-State Resistance (main) (peak)	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.8	—	Ω
	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.22	—	Ω
Operating Gate Voltage (main) (peak)	$V_{DS} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$	V_{GS}	2.5	2.75	3.0	V
	$V_{DS} = 28\text{ V}$, $I_{DQ} = 300\text{ mA}$	V_{GS}	2.3	2.7	3.1	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 (main, $T_{CASE} = 70^{\circ}\text{C}$, 5 W CW) (doherty, $T_{CASE} = 70^{\circ}\text{C}$, 20 W CW)	$R_{\theta JC}$	4.1	$^{\circ}\text{C/W}$
	$R_{\theta JC}$	2.0	$^{\circ}\text{C/W}$

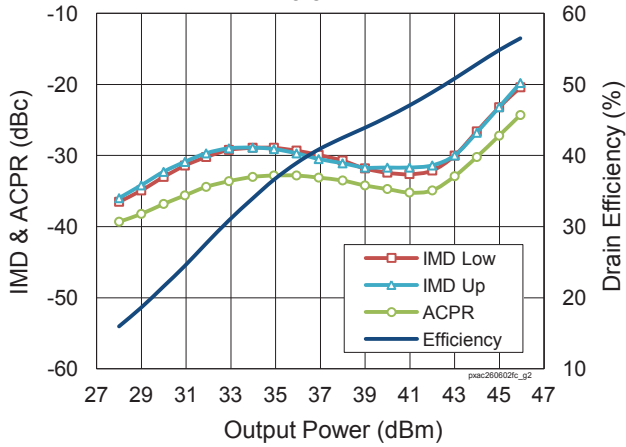
Ordering Information

Type and Version	Order Code	Package Description	Shipping
PXAC260602FC V1 R0	PXAC260602FC-V1-R0	H-37248-4, earless flange	Tape & Reel, 50 pcs
PXAC260602FC V1 R250	PXAC260602FC-V1-R250	H-37248-4, earless flange	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)

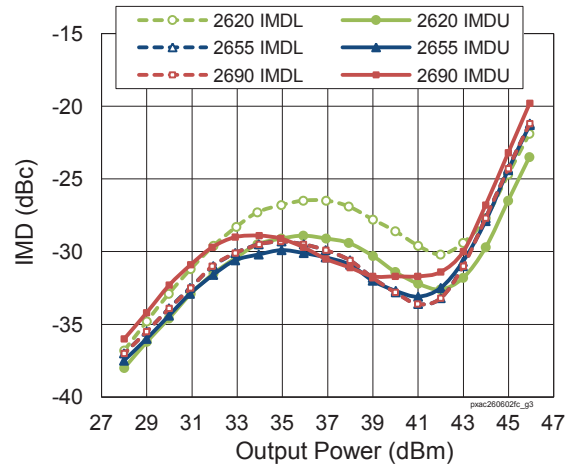
Two-carrier WCDMA Drive-up

$V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $V_{GS} = 2.62\text{ V}$,
 $f = 2690\text{ MHz}$, 3GPP WCDMA signal,
 PAR = 8 dB, 10 MHz carrier spacing,
 BW 3.84 MHz



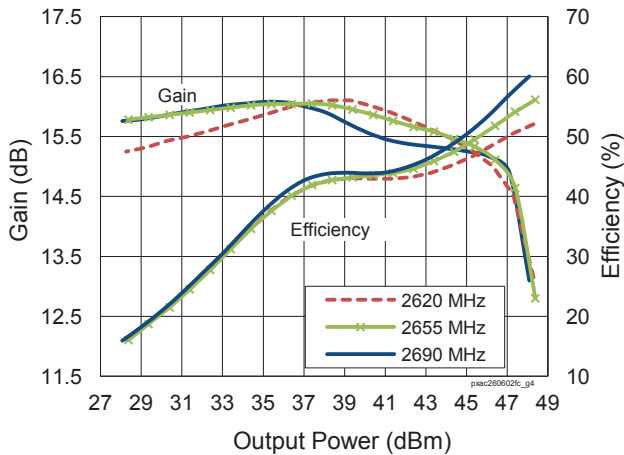
Two-carrier WCDMA Drive-up

$V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $V_{GS} = 2.62\text{ V}$,
 3GPP WCDMA signal, PAR = 8 dB,
 10 MHz carrier spacing, BW 3.84 MHz



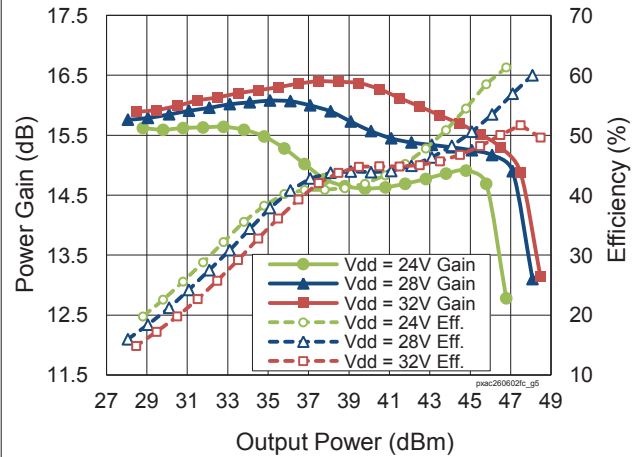
CW Performance

$V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$

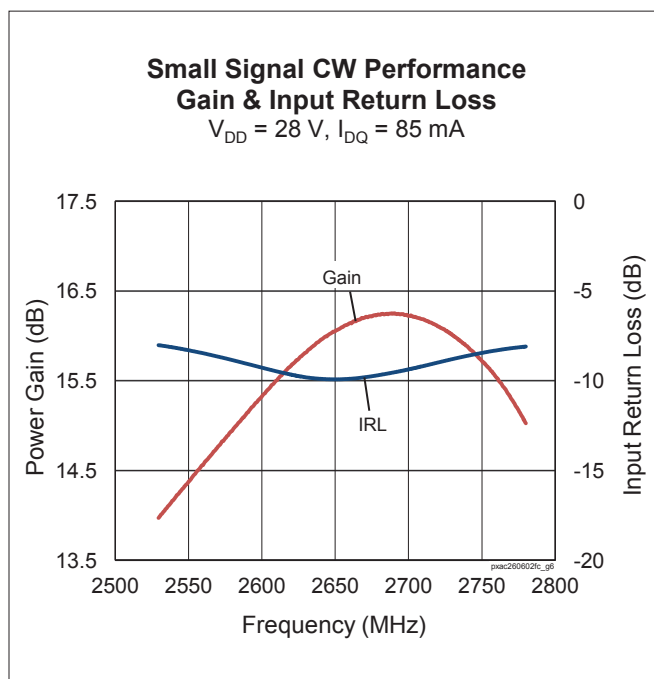


CW Performance

at various V_{DD}
 $I_{DQ} = 85\text{ mA}$, $f = 2690\text{ MHz}$



Typical Performance (cont.)



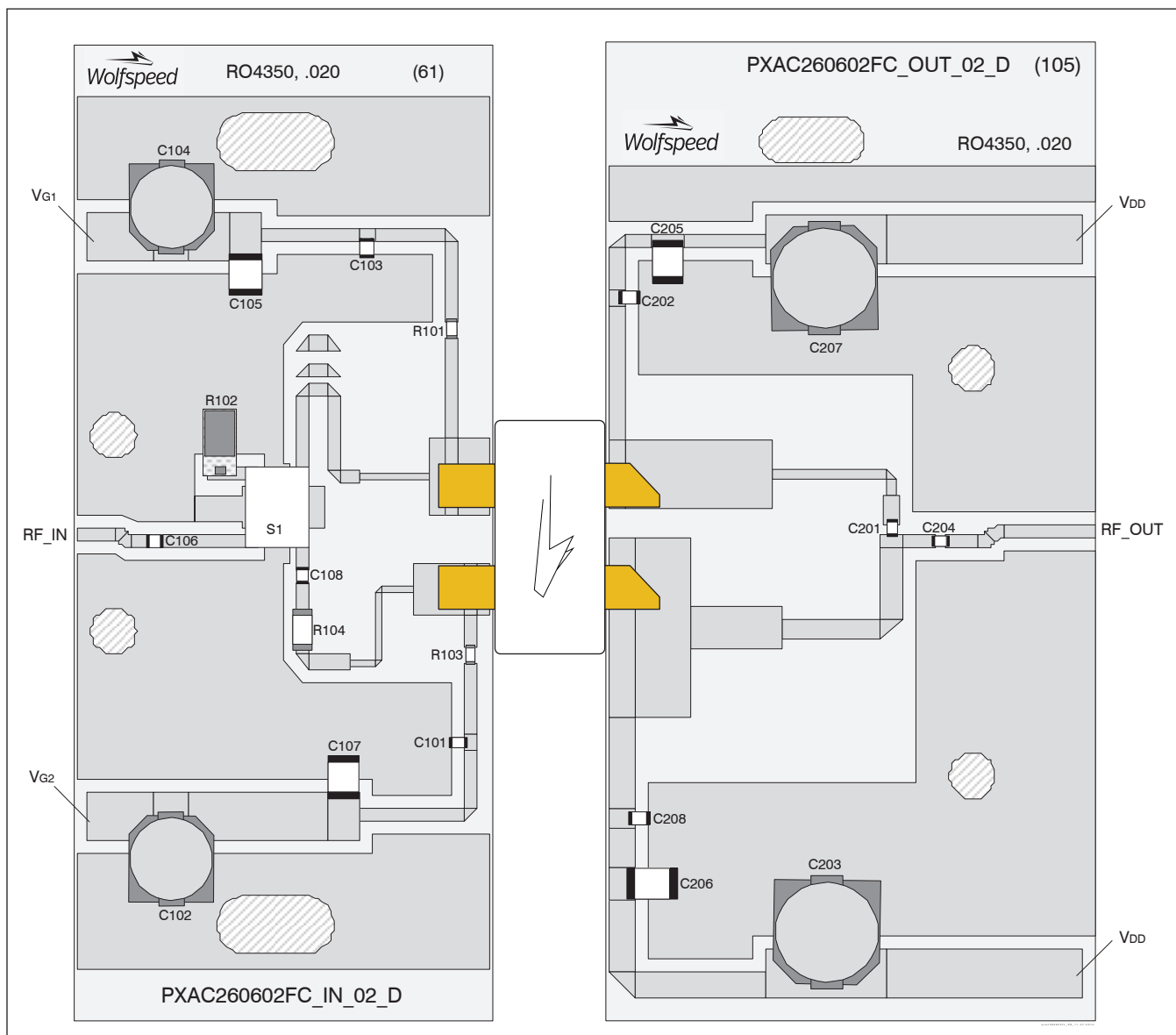
Load Pull Performance

Main Side Load Pull Performance – Pulsed CW signal: 10 μs , 10% duty cycle, 28 V, 80 mA

Freq [MHz]	Z _s [Ω]	P _{1dB}									
		Max Output Power					Max PAE				
		Z _L [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]	Z _L [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]
2490	9.0 – j33	12.8 – j9.5	19.2	42.84	19.2	54.2	5.8 – j4.4	21.9	41.49	14.1	68.7
2620	25 – j47	13.9 – j10.6	18.8	43.15	20.6	58.7	8.9 – j6.8	20.4	42.24	16.7	66.4
2690	35 – j52	12.7 – j13.0	18.6	42.76	18.9	55.4	6.8 – j9.2	20.6	41.73	14.9	65.6

Peak Side Load Pull Performance – Pulsed CW signal: 10 μs , 10% duty cycle, 28 V, 250 mA

Freq [MHz]	Z _s [Ω]	P _{1dB}									
		Max Output Power					Max PAE				
		Z _L [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]	Z _L [Ω]	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE [%]
2490	4.1 – j13.1	3.7 – j5.2	16.7	48.44	70	56.0	6.2 – j1.3	18.9	46.59	46	63.4
2620	6.5 – j14.8	3.7 – j6.5	17	48.28	67	55.4	5.9 – j3.7	19.1	46.96	50	63.1
2690	9.0 – j17.8	3.7 – j6.1	17.6	48.11	65	56.2	5.7 – j2.4	20.9	46.30	43	64.6

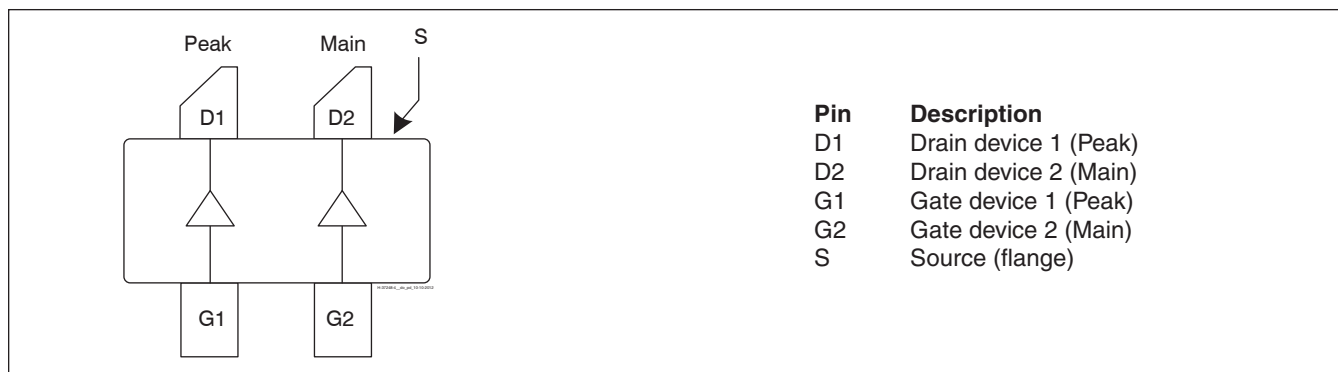
Reference Circuit , 2620 – 2690 MHz*Reference circuit assembly diagram (not to scale)*

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

DUT	PXAC260602FC V1
Test Fixture Part No.	LTA/PXAC260602FC V1
PCB	Rogers 4350, 0.508 mm [0.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$, $f = 2620 - 2690$ MHz
Find Gerber files for this test fixture on the Wolfspeed Web site at www.wolfspeed.com/RF	

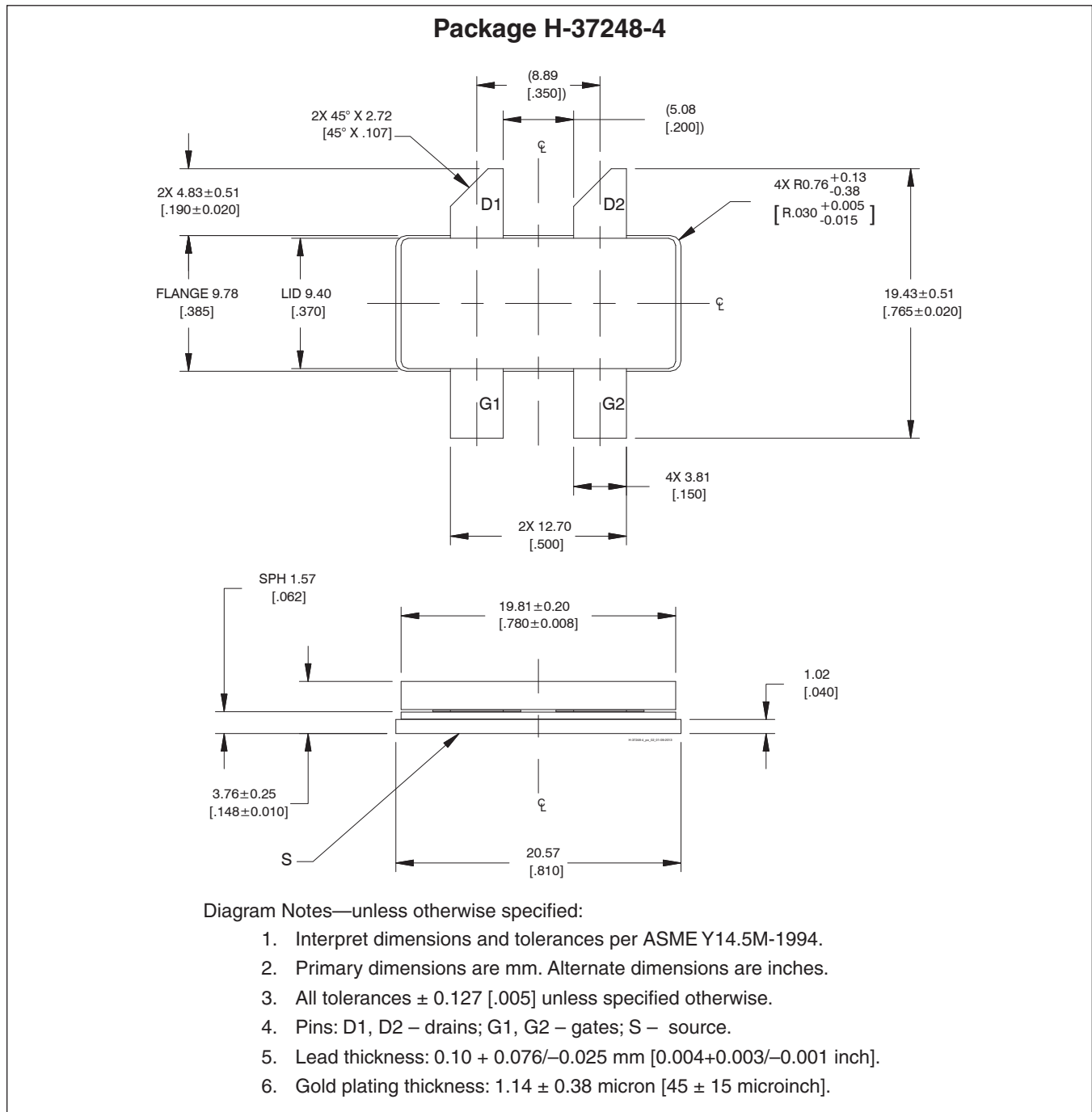
Components Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101, C103, C106, C108	Capacitor, 18 pF	ATC	ATC800A180JT250T
C102, C104	Capacitor, 10 μ F	Panasonic Electronic Components	EEE-HB1H100AP
C105, C107	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
R101, R103	Resistor, 10 Ω	Panasonic Electronic Components	ERJ-3GEYJ100V
R102	Resistor, 50 Ω	Anaren	C16A5024
R104	Resistor, 20 Ω	Panasonic Electronic Components	ERJ-8GEYJ200V
S1	Directional Coupler, 5dB	Anaren	X3C25P1-05S
Output			
C201, C202, C204, C208	Capacitor, 18 pF	ATC	ATC800A180JT250T
C203, C207	Capacitor, 100 μ F	Panasonic Electronic Components	EEE-FP1V101AP
C205, C206	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T

Pinout Diagram (top view)

Lead connections for PXAC260602FC

Package Outline Specifications



Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2013-10-14	Advance	All	Data Sheet reflects advance specification for product development
02	2013-12-02	Production	All	Data Sheet reflects released product specification
02.1	2013-12-12	Production	1	Revised ESD classification
02.2	2014-05-14	Production	2 6	Revised junction temperature in Maximum Ratings table Corrected naming typo in Pinout Diagram
02.3	2015-12-23	Production	2	DC Characteristic table
02.4	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

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.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

Wolfspeed:

[PXAC260602FC-V1-R250](#) [PXAC260602FC-V1-R0](#)