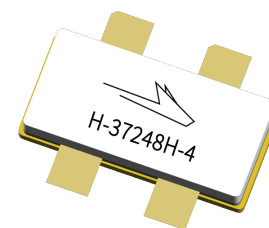


PTAC260302FC

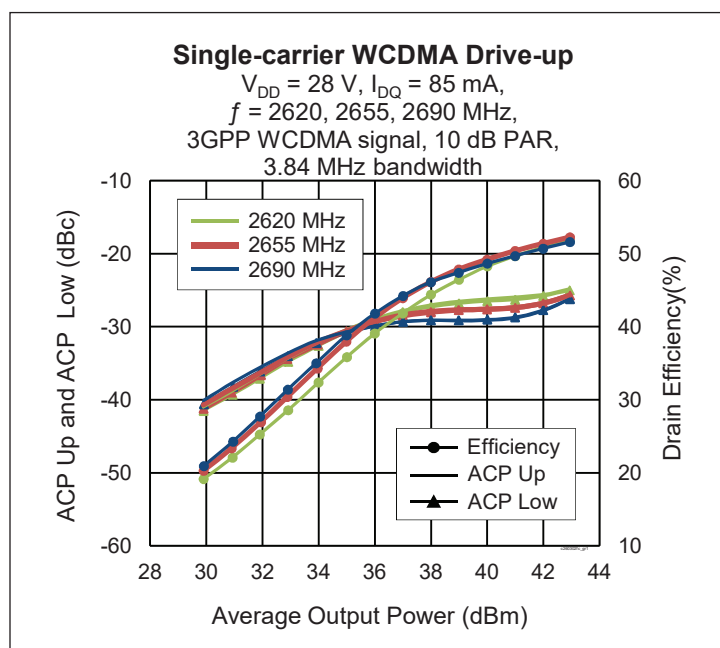
Thermally-Enhanced High Power RF LDMOS FET 30 W, 28 V, 2620 – 2690 MHz

Description

The PTAC260302FC is a 30-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 2620 to 2690 MHz frequency band. This device integrates a 10-W (main) and a 20-W (peak) transistor, making it ideal for asymmetric Doherty amplifier designs. Features include input matching, high gain and thermally-enhanced package with earless flange. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTAC260302FC
Package H-37248H-4



Features

- Asymmetric design
- Broadband internal matching
- Typical CW performance, 2690 MHz, 28 V (Doherty configuration, combined output)
 - Output power @ $P_{3dB} = 30\text{ W}$
 - Efficiency = 54%
 - Gain = 13 dB
- Typical single-carrier WCDMA performance, 2690 MHz, 28 V, 10 dB PAR
 - Output power = 37.5 dBm avg
 - Gain = 15.5 dB
 - Efficiency = 45%
- Capable of handling 10:1 VSWR @ 32 V, 30 W (CW) output power
- Integrated ESD protection
- Human Body Model Class 1B (per ANSI/ESDA/ JEDEC JS-001)
- Pb-free and RoHS compliant

RF Characteristics

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

$V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $V_{GS1} = 1.1\text{ V}$, $P_{OUT} = 5.6\text{ W avg}$, $f = 2690\text{ MHz}$,
 3GPP WCDMA signal, 3.84 MHz channel bandwidth, 10 dB peak/average @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	14.5	15.5	—	dB
Drain Efficiency	η_D	42	45	—	%
Adjacent Channel Power Ratio	ACPR	—	-27	-25	dBc

All published data at $T_{CASE} = 25^\circ\text{C}$ 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}	—	—	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	(main) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.8	—	Ω
	(peak) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.6	—	Ω
Operating Gate Voltage	(main) $V_{DS} = 28\text{ V}, I_{DQ} = 0.085\text{ A}$	V_{GS}	2	2.7	3.5	V
	(peak) $V_{DS} = 28\text{ V}, I_{DQ} = 0\text{ A}$	V_{GS}	0.4	1.1	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	
Junction Temperature	T_J	225	$^{\circ}\text{C}$	
Storage Temperature Range	T_{STG}	-65 to +150	$^{\circ}\text{C}$	
Thermal Resistance	(main) $(T_{CASE} 70^{\circ}\text{C}, 30\text{ W CW})$	R_{qJC}	1.5	$^{\circ}\text{C/W}$
	(peak) $(T_{CASE} 70^{\circ}\text{C}, 30\text{ W CW})$	R_{qJC}	1.7	$^{\circ}\text{C/W}$

Ordering Information

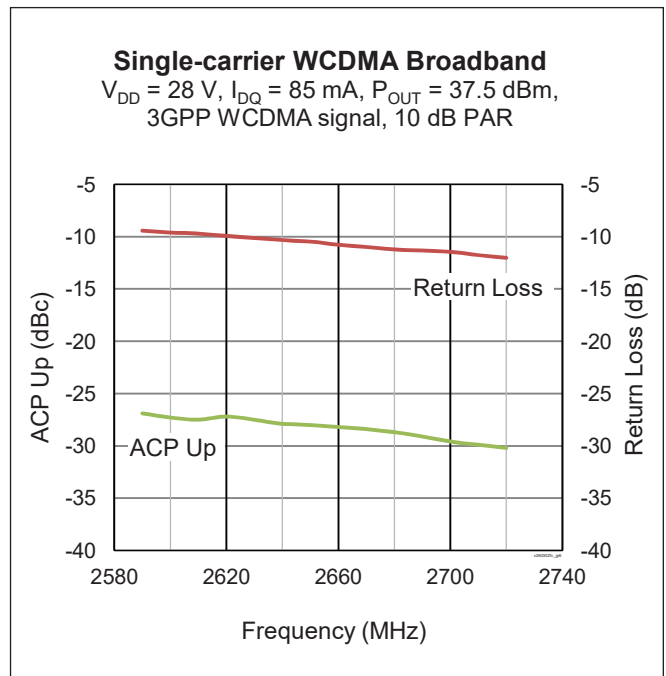
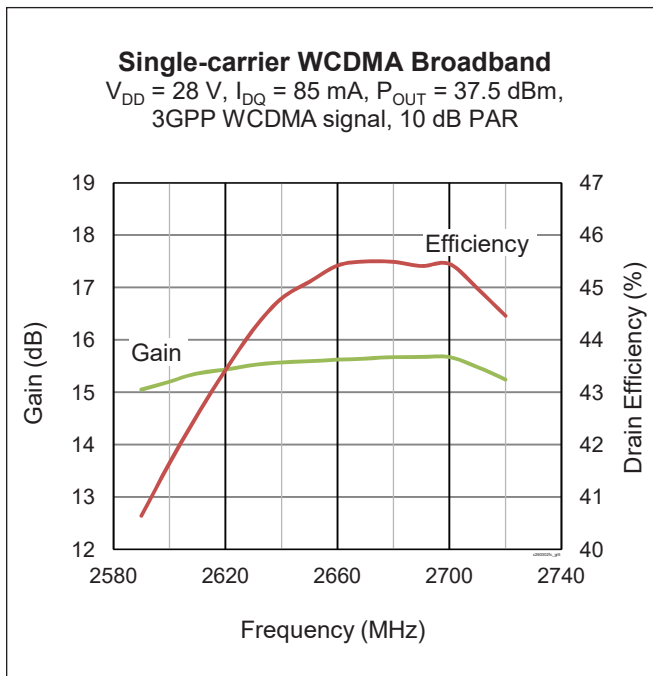
Type and Version	Order Code	Package and Description	Shipping
PTAC260302FC V1 R0	PTAC260302FC-V1-R0	H-37248H-4, Ceramic open-cavity, earless	Tape & Reel, 50 pcs
PTAC260302FC V1 R250	PTAC260302FC-V1-R250	H-37248H-4, Ceramic open-cavity, earless	Tape & Reel, 250 pcs

Pinout Diagram (top view)



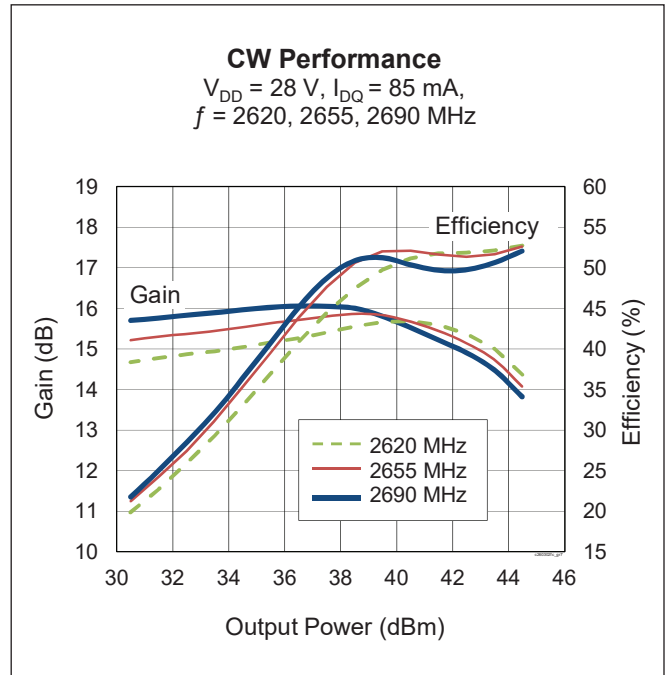
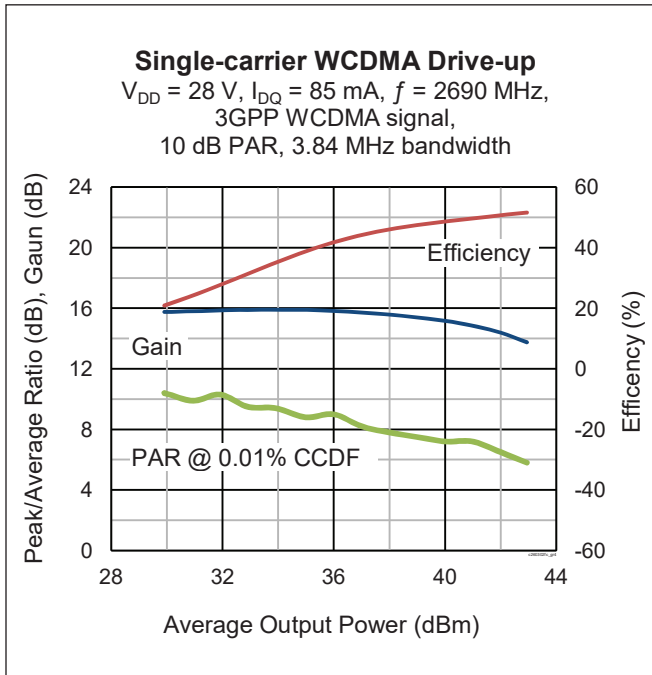
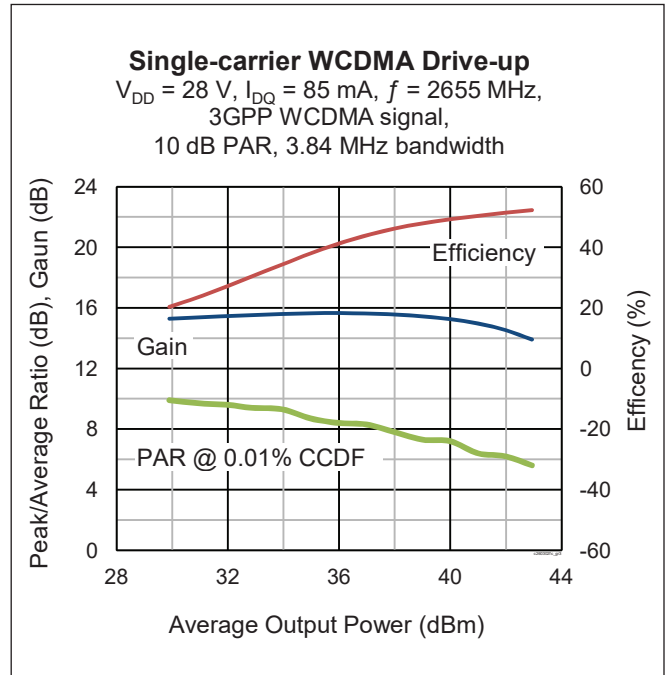
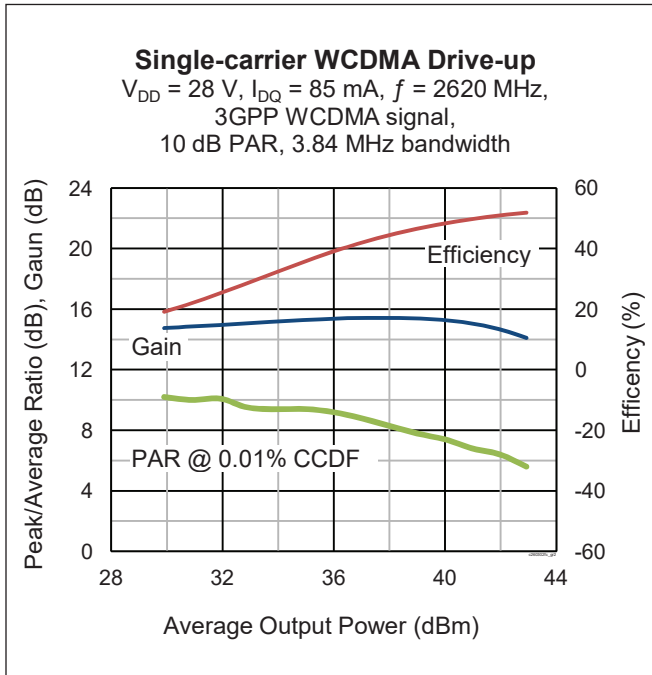
Lead connections for PTAC260302FC

Typical Performance (data taken in a production test fixture)

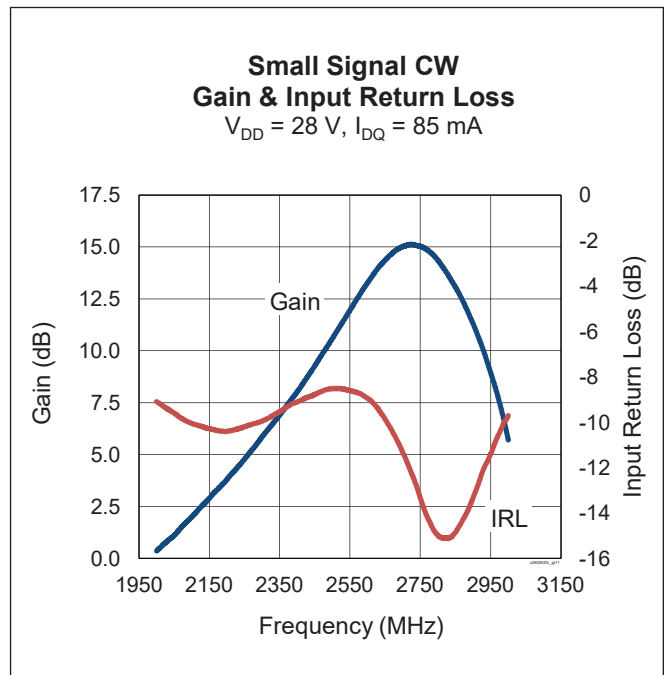
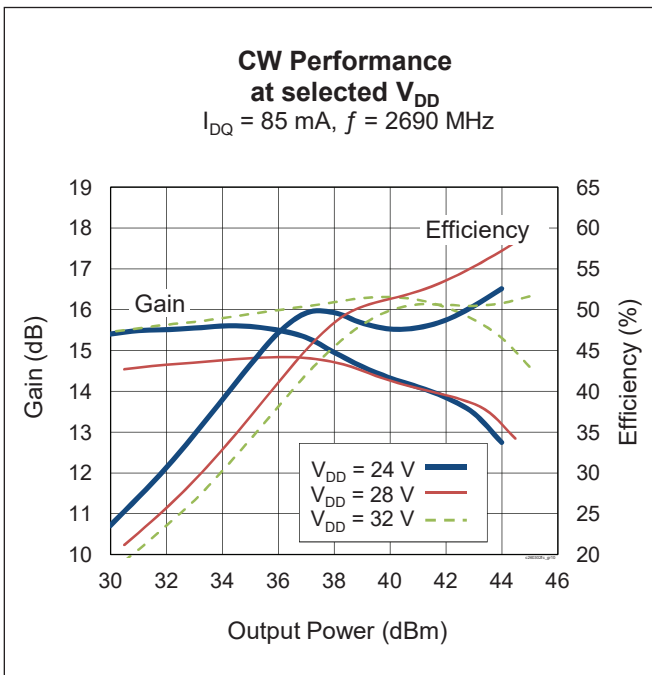
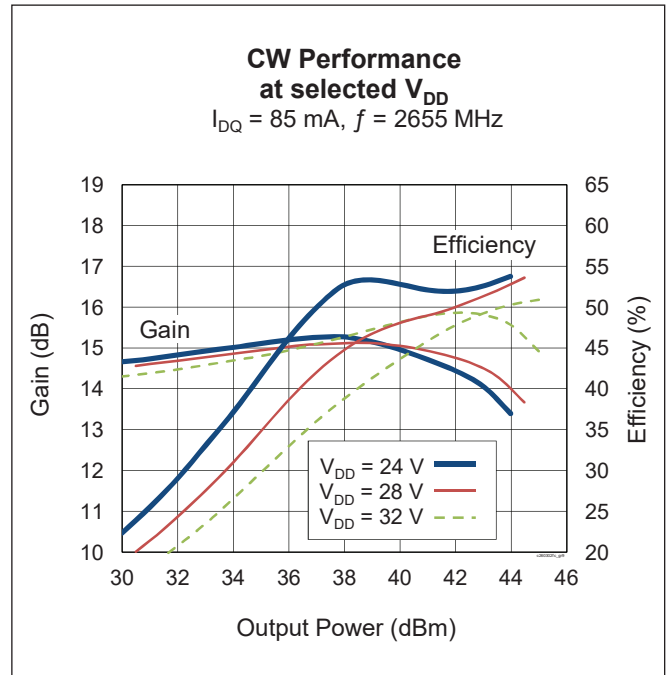
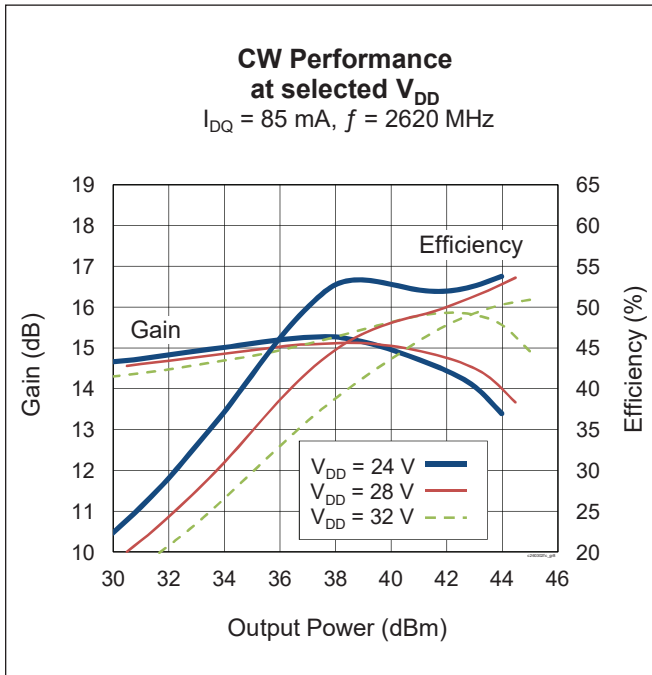




Typical Performance (cont.)

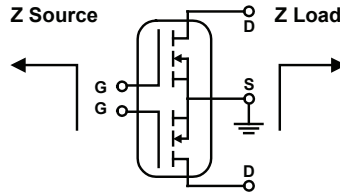


Typical Performance (cont.)





Load Pull Performance



Main Side – Pulsed CW signal: 16 μ sec, 10% duty cycle; 28 V, 85 mA

Class AB		P _{1dB}										
		Max Output Power					Max PAE					
Freq [MHz]	Z _s Ω	Z _l Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %	Z _l Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %	
2620	26 - j22	10.9 - j9.7	19.7	42.36	17.2	61.0	5.9 - j7.0	21.6	40.70	11.7	66.4	
2655	33 - j32	12.7 - j9.6	20.0	42.45	17.6	59.8	7.1 - j8.1	21.4	41.36	13.7	65.9	
2690	55 - j34	15.2 - j11.4	19.3	42.86	19.3	55.1	6.8 - j9.0	21.2	41.33	13.6	64.4	

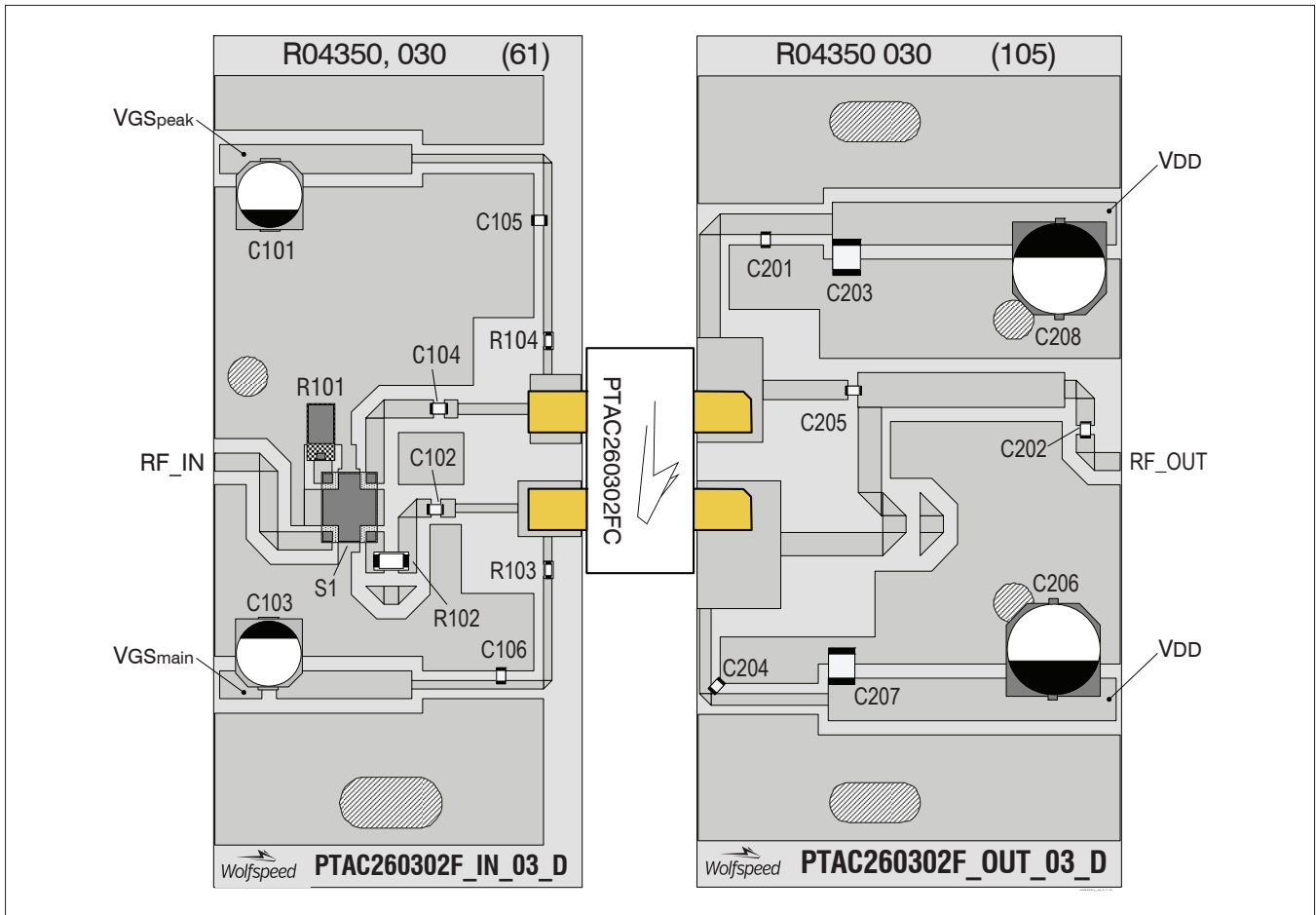
Peak Side – Pulsed CW signal: 16 μ sec, 10% duty cycle; 28 V, 115 mA

Class AB		P _{1dB}										
		Max Output Power					Max PAE					
Freq [MHz]	Z _s Ω	Z _l Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %	Z _l Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %	
2620	36 - j41	11.5 - j14.9	19.6	43.11	20.5	58.8	6.4 - j13.4	20.9	41.92	15.6	63.9	
2655	42 - j31	11.9 - j12.7	20	43.09	20.4	61.1	7.0 - j13.9	20.8	42.07	16.1	63.2	
2690	55 - j33	12.9 - j15.0	19.5	42.87	19.4	57.2	7.8 - j15.1	20.5	42.16	16.4	61.8	

Reference Circuit

DUT	PTAC260302FC
Test Fixture Part No.	LTA/PTAC260302FC
PCB	Rogers 4350, 0.762 mm [.030"] thick, 2 oz. copper, $\epsilon_r = 3.66$
Find Gerber files for this test fixture on the Wolfspeed Web site at (http://www.wolfspeed.com/RF)	

Reference Circuit (cont.)



Reference circuit assembly diagram (not to scale)

Component Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101, C103	Capacitor, 10 μ F, 50 V	Panasonic Electronic Components	EEV-HD1H100P
C102, C104, C105, C106	Chip capacitor, 18 pF	ATC	ATC100A180JW150XB
R101	Resistor, 50 Ohm	Anaren	C16A50Z4
R102	Resistor, 20 Ohm	Panasonic Electronic Components	ERJ-8GEYJ200V
R103, R104	Resistor, 10 Ohm	Panasonic Electronic Components	ERJ-3GEYJ100V
S1	Hybrid coupler	Anaren	X3C25P1_05S
Output			
C201, C202	Chip capacitor, 18 pF	ATC	ATC100A180JW150XB
C203, C207	Capacitor, 10 μ F	Taiyo Yuden	UMK325C7106MM-T
C204, C205	Chip capacitor, 18 pF	ATC	ATC100A180JW150XB
C206, C208	Capacitor, 220 μ F, 35 V	Panasonic Electronic Components	EEE-FP1V221AP

Revision History

Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2012-03-05	Advance	All	New product, proposed only.
02	2012-11-28	Advance	1,3 2	Updated package and Package Outline. Updated Pinout Diagram.
03	2014-02-12	Production	All 3 – 7	Product released to production. All information updated. Performance graphs, load pull and circuit information added.
04	2016-06-21	Production	1 2	Updated ESD rating Maximum junction temperature raised to 225°C, updated ordering info.
05	2018-07-02	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.



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

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