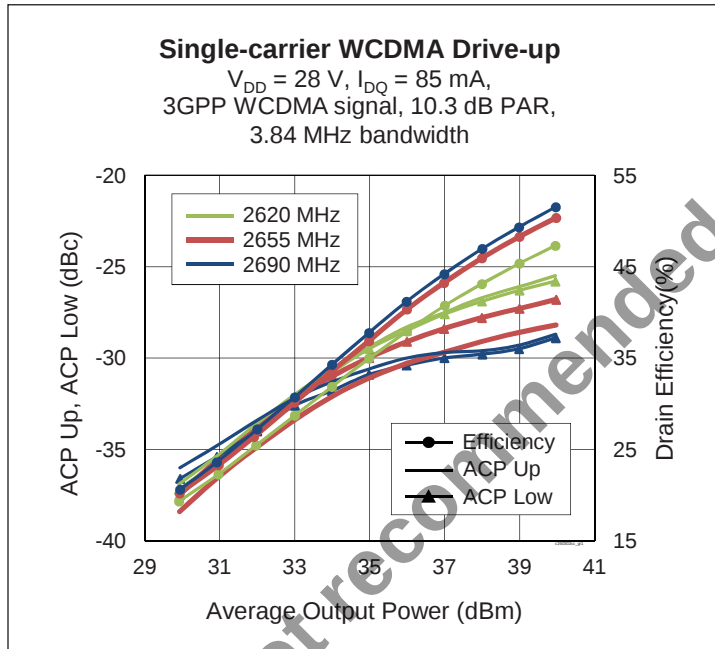
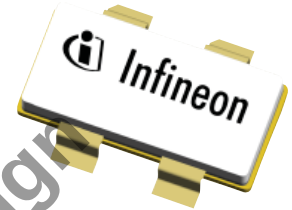


Thermally-Enhanced High Power RF LDMOS FET 30 W, 28 V, 2620 – 2690 MHz

Description

The PTAC260302SC 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 Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PTAC260302SC
Package H-37248H-4 (formed leads)



Features

- Asymmetrical design
- Input matching
- Wide video bandwidth
- Typical CW performance, 2690 MHz, 28 V (Doherty configuration)
 - Output power at $P_{3dB} = 31\text{ W}$
 - Efficiency = 56%
 - Gain = 12 dB
- Typical single-carrier WCDMA performance, 2690 MHz, 28 V (Doherty configuration)
 - Output power = 37.5 dBm avg
 - Gain = 15 dB
 - Efficiency = 45%
 - IMD = -29 dBc
- Capable of handling 10:1 VSWR at 30 V, 30 W (CW) output power
- Integrated ESD protection
- Pb-free and RoHS compliant

RF Characteristics

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

$V_{DD} = 28\text{ V}$, $V_{GS(peak)} = 1.2\text{ V}$, $I_{DQ} = 85\text{ mA}$, $P_{OUT} = 5.4\text{ W avg}$, $f = 2620, 2655, \text{ and } 2690\text{ MHz}$
WCDMA signal: 3GPP, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	14	15	—	dB
Drain Efficiency	η_D	41	43	—	%
Adjacent Channel Power Ratio	ACPR	—	-27.5	-25.5	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	(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}	—	2.7	—	V
	(peak) $V_{DS} = 28\text{ V}$, $I_{DQ} = 0\text{ A}$	V_{GS}	—	1.2	—	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA

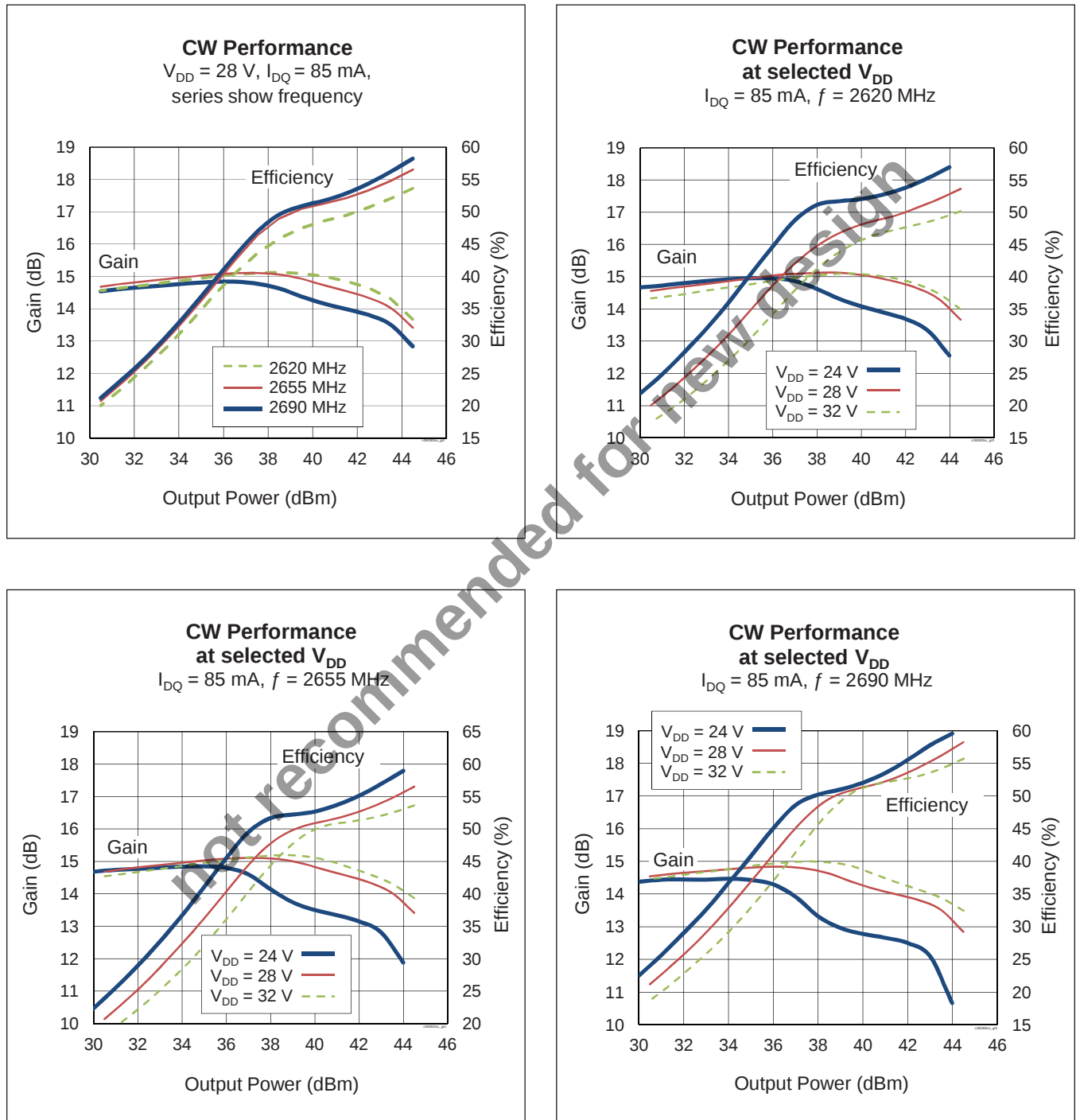
Maximum Ratings

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	200	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	−65 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} 70^{\circ}\text{C}$, 30 W CW)	$R_{\theta JC}$	1.67	$^{\circ}\text{C/W}$

Ordering Information

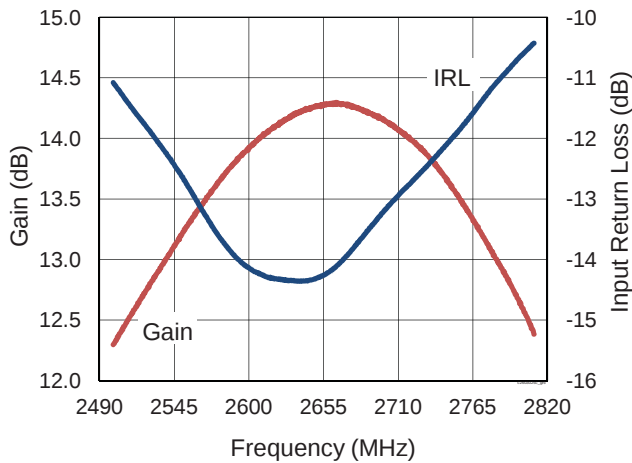
Type and Version	Order Code	Package and Description	Shipping
PTAC260302SC V1 R250	PTAC260302SCV1R250XTMA1	H-37248H-4 – Ceramic open-cavity, earless flange, formed leads	Tape & Reel, 250 pcs

Typical Performance (data taken in an Infineon gull-wing applications circuit)

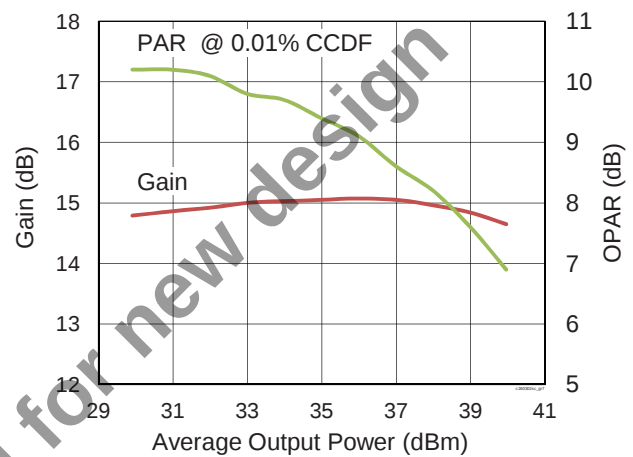


Typical Performance (cont.)

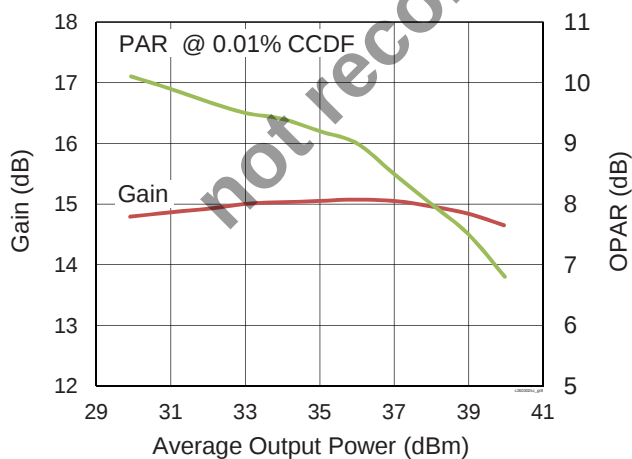
Small Signal CW Performance
 $V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$



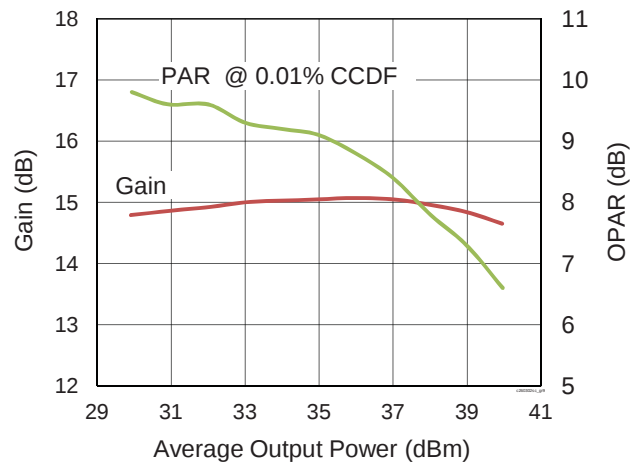
Single-carrier WCDMA Drive-up
 $V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $f = 2620\text{ MHz}$
 3GPP WCDMA signal, 3.84 MHz BW



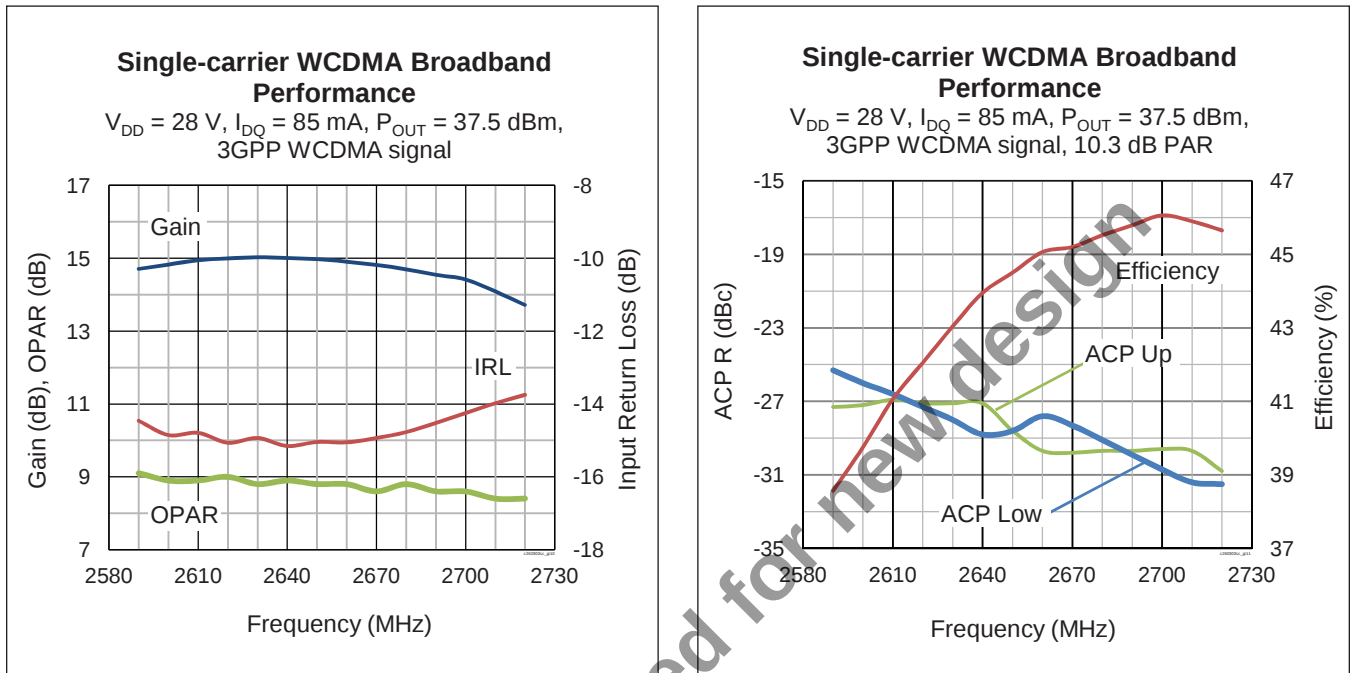
Single-carrier WCDMA Drive-up
 $V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $f = 2655\text{ MHz}$
 3GPP WCDMA signal, 3.84 MHz BW



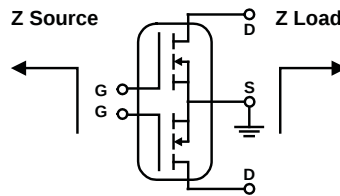
Single-carrier WCDMA Drive-up
 $V_{DD} = 28\text{ V}$, $I_{DQ} = 85\text{ mA}$, $f = 2690\text{ MHz}$
 3GPP WCDMA signal, 3.84 MHz BW



Typical Performance (cont.)



Load Pull Performance



Main Side – Pulsed CW signal: 16 μ sec, 10% duty cycle; 28 V, 85 mA											
		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	25 – j29	9.3 – j14.4	19.5	42.23	16.7	59.1	5.5 – j11.9	21.3	40.89	12.3	65.2
2655	42 – j33	12.1 – j14.1	19.2	42.30	17.0	56.7	6.8 – j12.2	20.8	41.40	13.8	64.6
2690	44 – j35	11.9 – j15.0	20.1	42.03	16.0	56.5	7.1 – j12.0	21.8	41.03	12.7	62.7

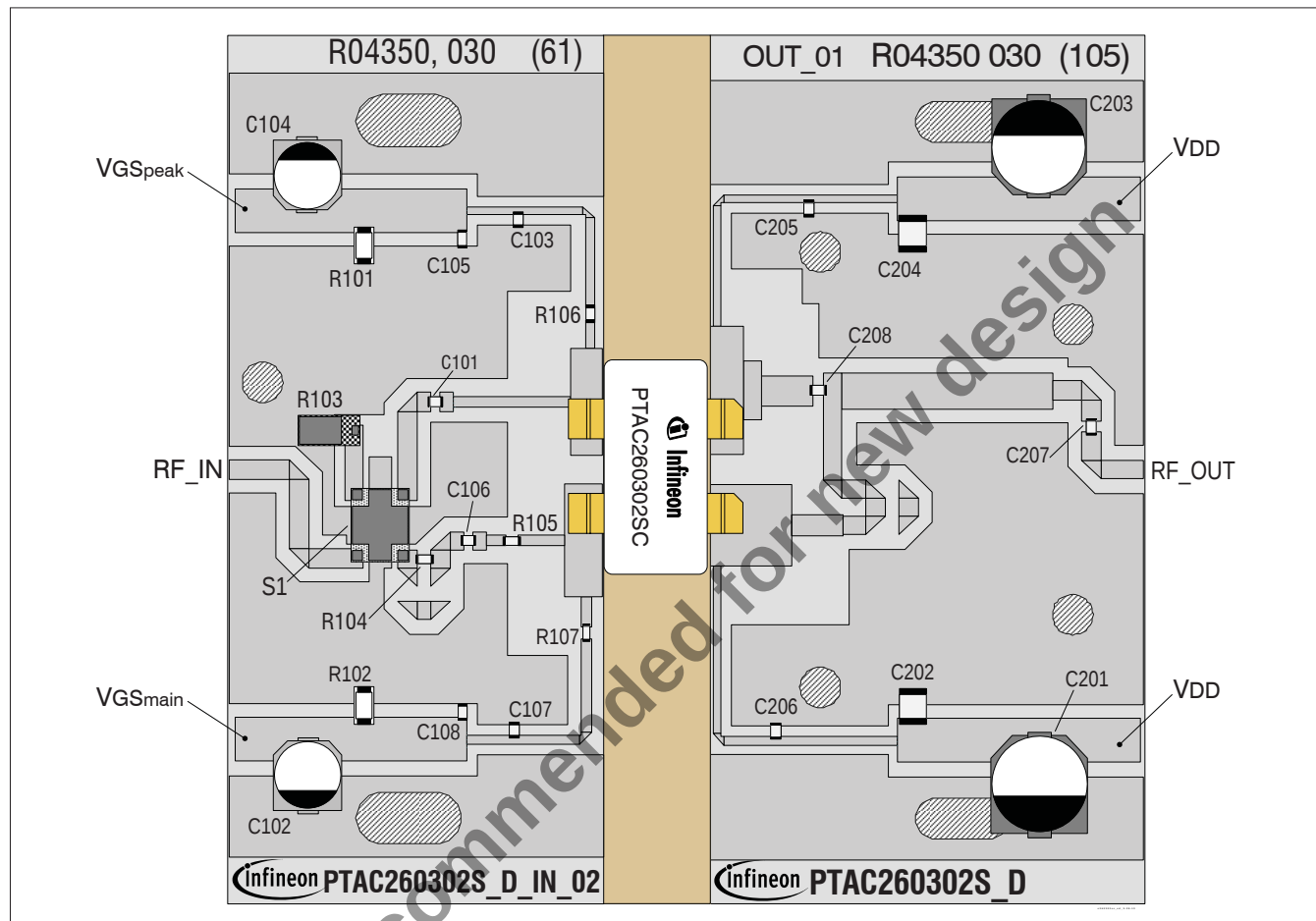
Peak Side – Pulsed CW signal: 16 μ sec, 10% duty cycle; 28 V, 115 mA											
		P _{1dB}									
		Max Output Power					Max PAE				
Freq [MHz]	Z _s Ω	Z _L Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %	Z _L Ω	Gain [dB]	P _{OUT} [dBm]	P _{OUT} [W]	PAE %
2620	36 – j41	10.5 – j17.4	19.1	42.23	21.5	55.7	6.5 – j13.7	20.8	42.02	15.9	62.5
2655	43 – j31	10.7 – j17.5	18.7	42.30	21.5	55.2	6.3 – j15.8	20.2	42.39	17.3	61.2
2690	55 – j33	11.9 – j18.9	18.9	42.03	20.6	53.0	6.9 – j16.0	20.5	42.15	16.4	59.5

Reference Circuit, tuned for 2690 MHz

DUT	PTAC260302SC
Reference Fixture Part No.	LTA/PTAC260302SC V1
PCB	Rogers 4350, 0.762 mm [.030"] thick, 2 oz. copper, $\epsilon_r = 3.66$

Find Gerber files for this test fixture on the Infineon Web site at (<http://www.infineon.com/rfpower>)

Reference Circuit (cont.)

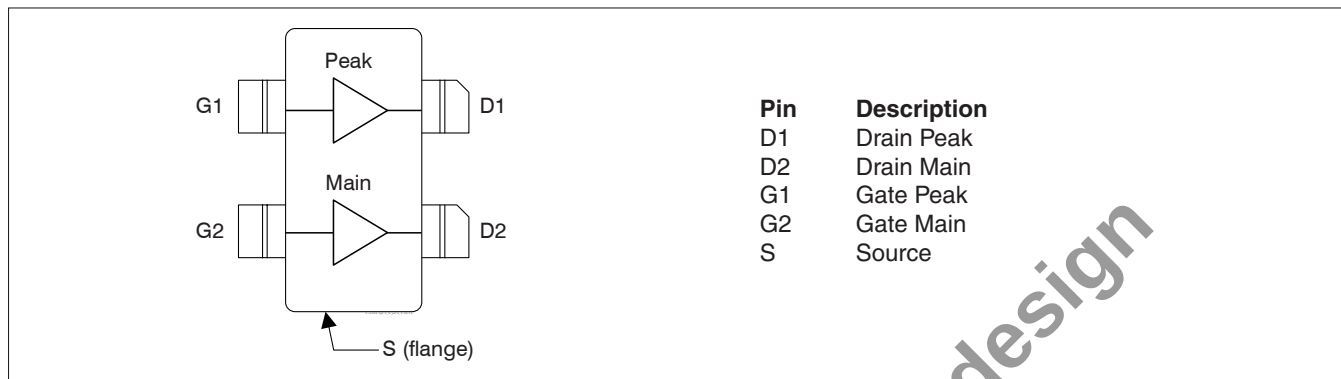


Reference circuit assembly diagram (not to scale)

Component Information

Component	Description	Suggested Manufacturer	P/N
Input			
C101, C103, C106, C107	Chip capacitor, 10 pF	ATC	ATC100A100JW150XB
C102, C104	Capacitor, 10 μ F, 50 V pF	Panasonic Electronic Components	EEV-HD1H100P
C105, C108	Chip capacitor, 1 μ F	Murata Electronics	GRM21BR71H105KA12L
R102	Resistor, 1 k Ohm	Panasonic Electronic Components	ERJ-8GEYJ102V
R103	Resistor, 50 Ohm	Anaren	C16A50Z4
R104, R105, R106, R107	Resistor, 10 Ohm	Panasonic Electronic Components	ERJ-3GEYJ100V
S1	Hybrid Coupler	Anaren	X3C25P1_05S
Output			
C201, C203	Capacitor, 100 μ F, 35 V pF	Panasonic Electronic Components	EEE-FP1V101AP
C202, C204	Capacitor, 10 pF	Taiyo Yuden	UMK325C7106MM-T
C205, C206, C207, C208	Chip capacitor, 10 pF	ATC	ATC100A100JW150XB

Pinout Diagram (top view)



Lead connections for PTAC260302SC

not recommended for new design

Package Outline Specifications

Package H-37248H-4 (formed leads)

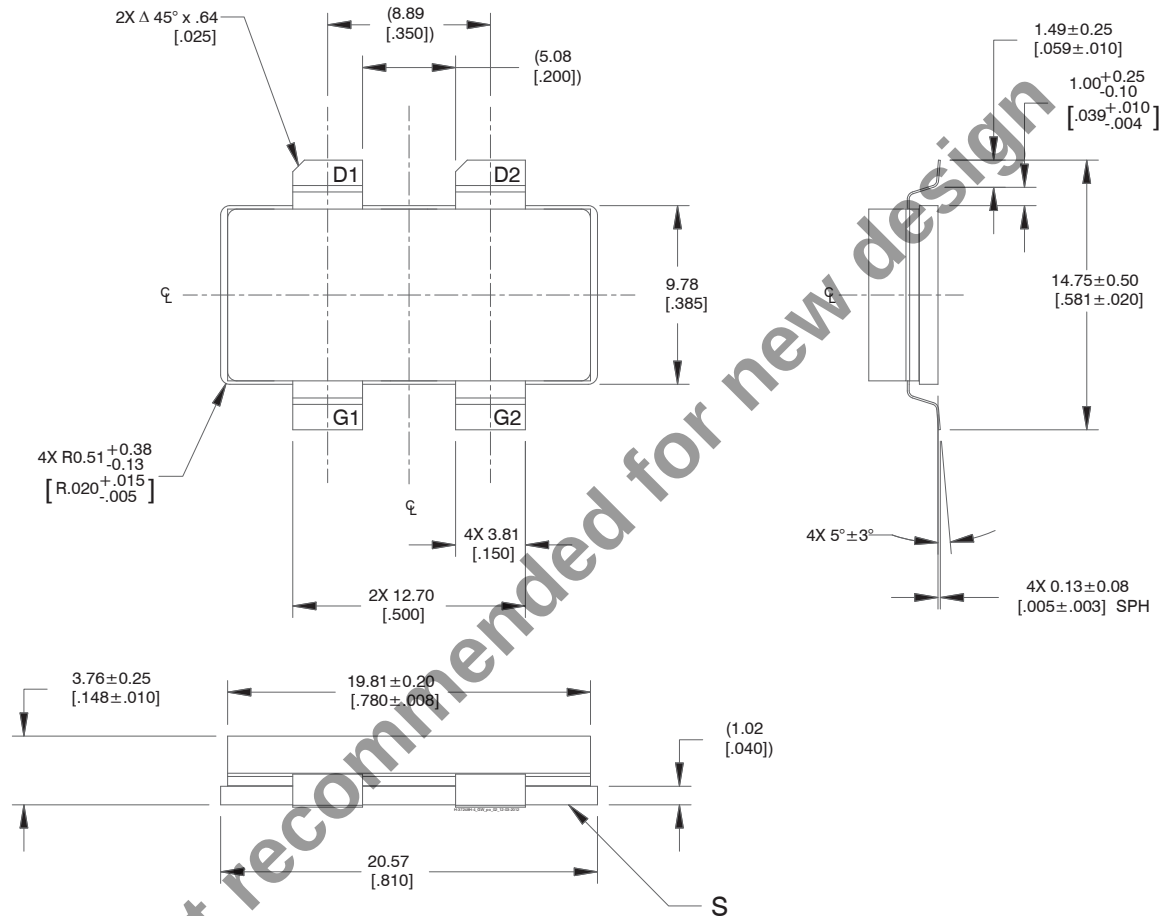


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
3. All tolerances ± 0.127 [.005] unless specified otherwise.
4. Pins: D1, D2 – drains; G1, G2 – gates; S – source.
5. Lead thickness: $0.10 + 0.051/-0.025$ mm [.004 +0.002/-0.001 inch].
6. Gold plating thickness: 1.14 ± 0.38 micron [45 $\pm$ 15 microinch].

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

Revision History: 2017-07-18

Data Sheet

Previous Version: 2013-08-28, Data Sheet

Page	Subjects (major changes since last revision)
All	Not recommended for new design

We Listen to Your Comments

Any information within this document that you feel is wrong, unclear or missing at all?
 Your feedback will help us to continuously improve the quality of this document.
 Please send your proposal (including a reference to this document) to:

highpowerRF@infineon.com

To request other information, contact us at:
 +1 877 465 3667 (1-877-GO-LDMOS) USA
 or +1 408 776 0600 International



Edition 2014*- 4*. 5

Published by
 Infineon Technologies AG
 85579 Neubiberg, Germany

© 2012 Infineon Technologies AG
 All Rights Reserved.

Legal Disclaimer

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics. With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com/rfpower).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.

Mouser Electronics

Authorized Distributor

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

[Infineon:](#)

[PTAC260302SCV1R250XTMA1](#)