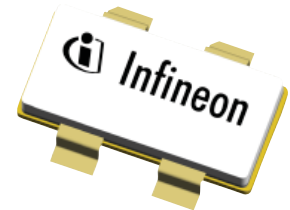


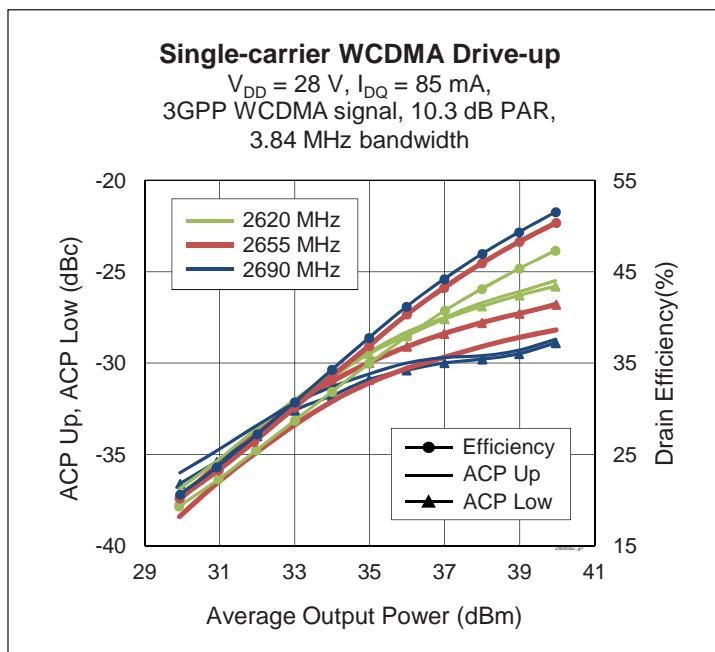
## Thermally-Enhanced High Power RF LDMOS FET 30 W, 28 V, 2620 – 2690 MHz

### 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	$\eta_D$	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	$\mu\text{A}$
	$V_{DS} = 63\text{ V}, V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10	$\mu\text{A}$
On-State Resistance	(main) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.8	—	$\Omega$
	(peak) $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.6	—	$\Omega$
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	$\mu\text{A}$

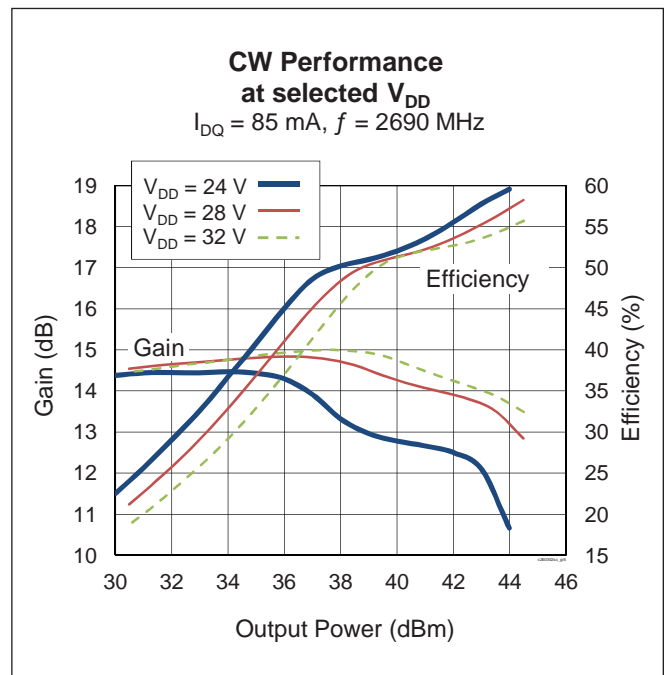
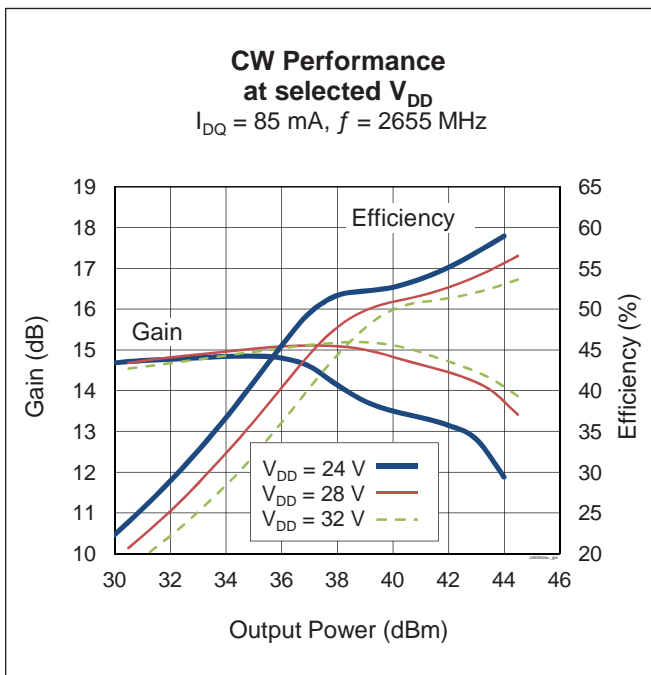
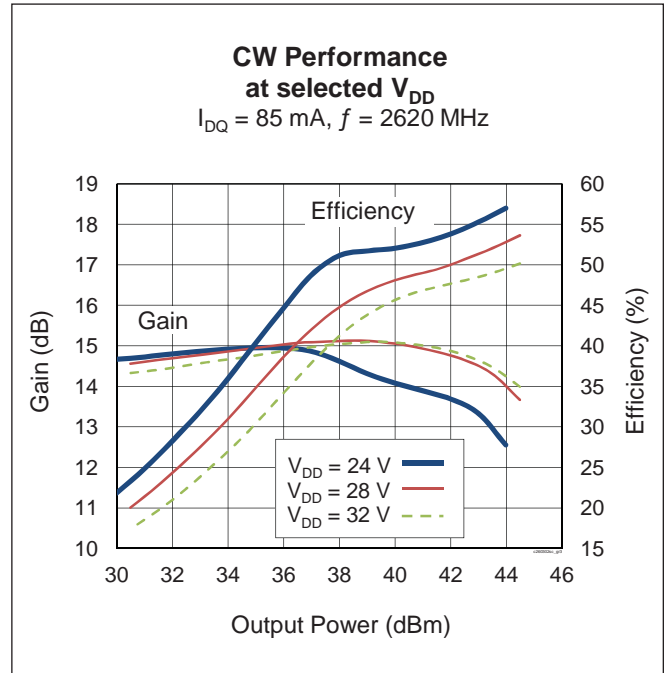
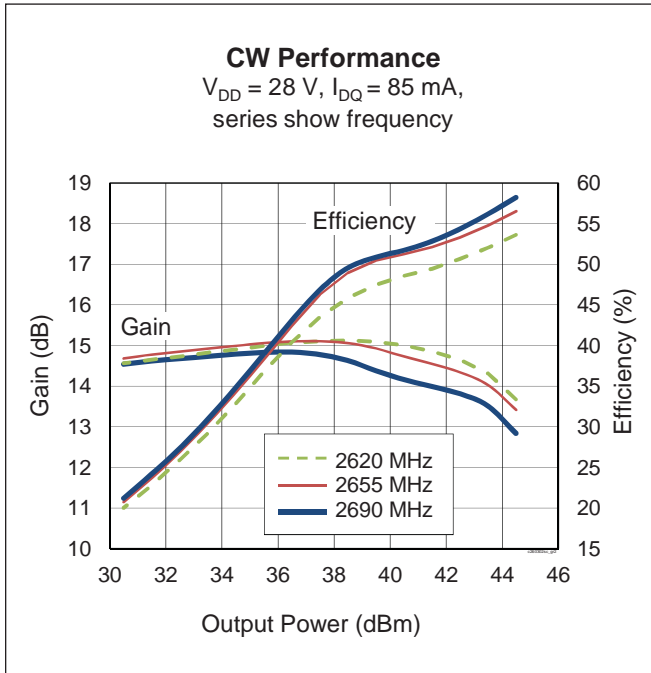
**Maximum Ratings**

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

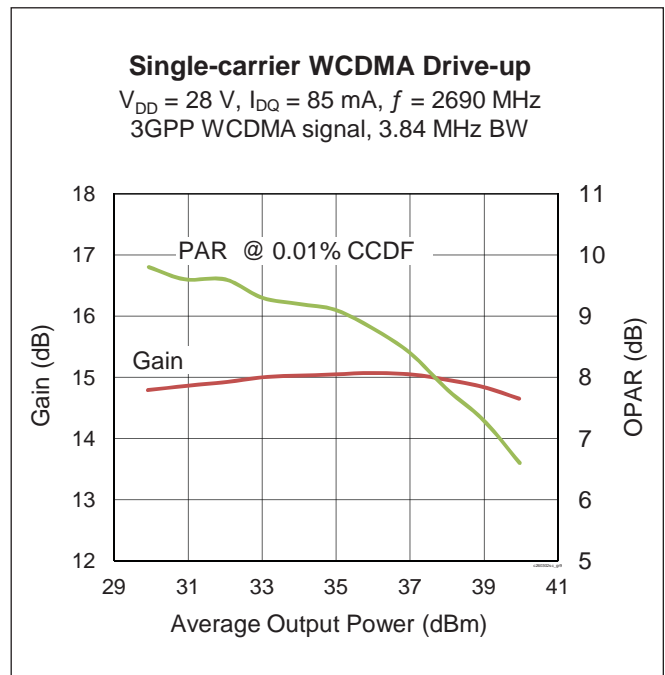
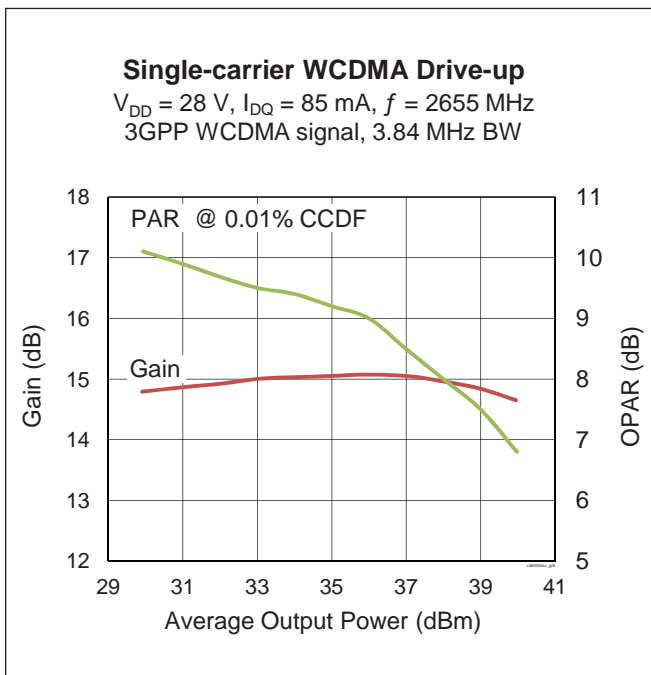
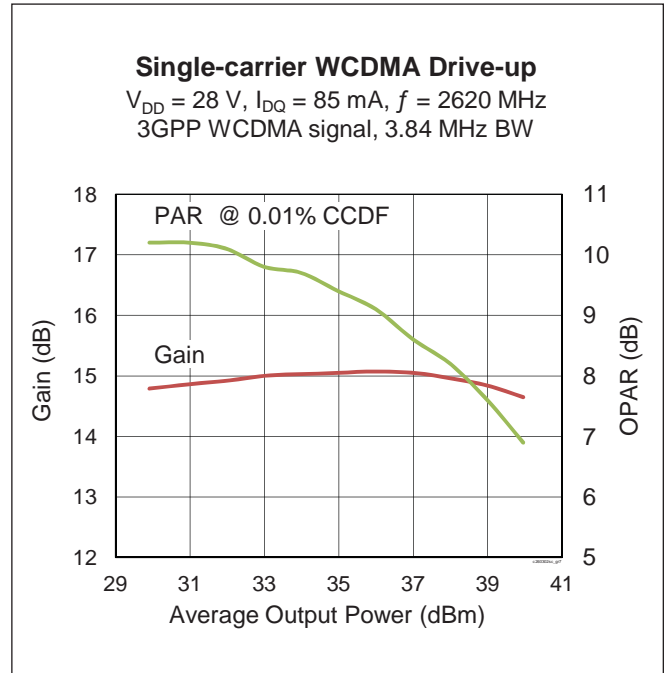
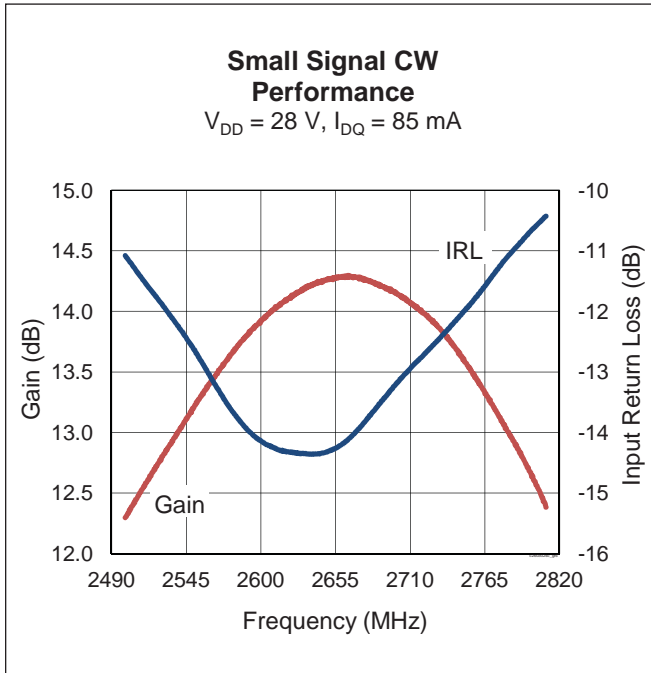
**Ordering Information**

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

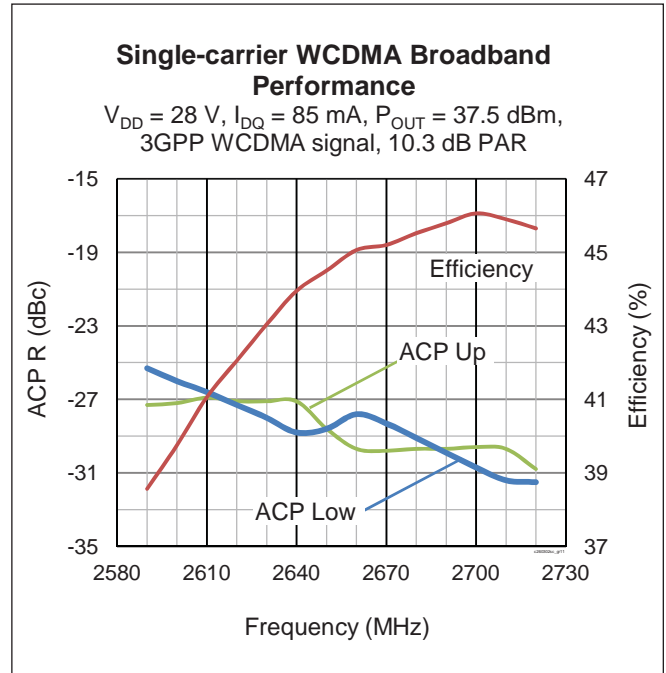
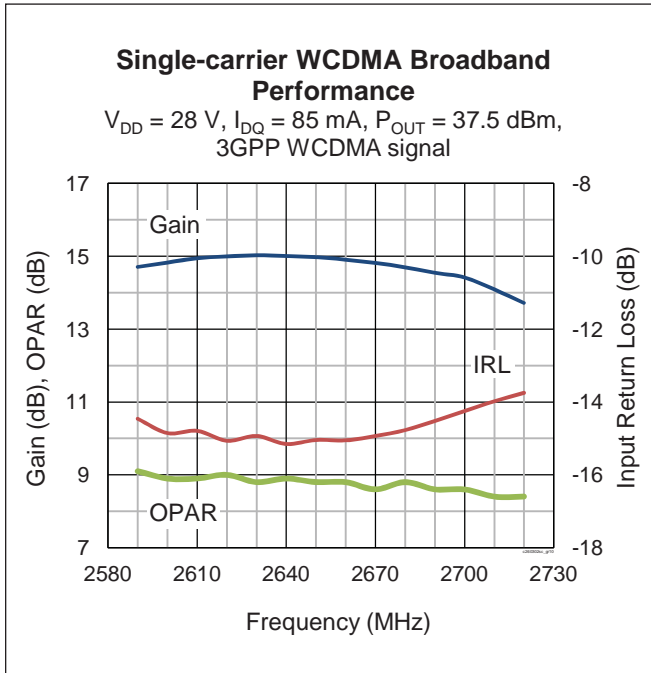
**Typical Performance** (data taken in an Infineon gull-wing applications circuit)



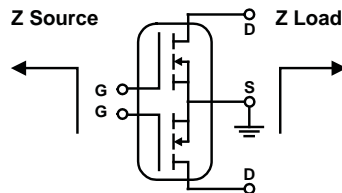
Typical Performance (cont.)



Typical Performance (cont.)



## Load Pull Performance



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

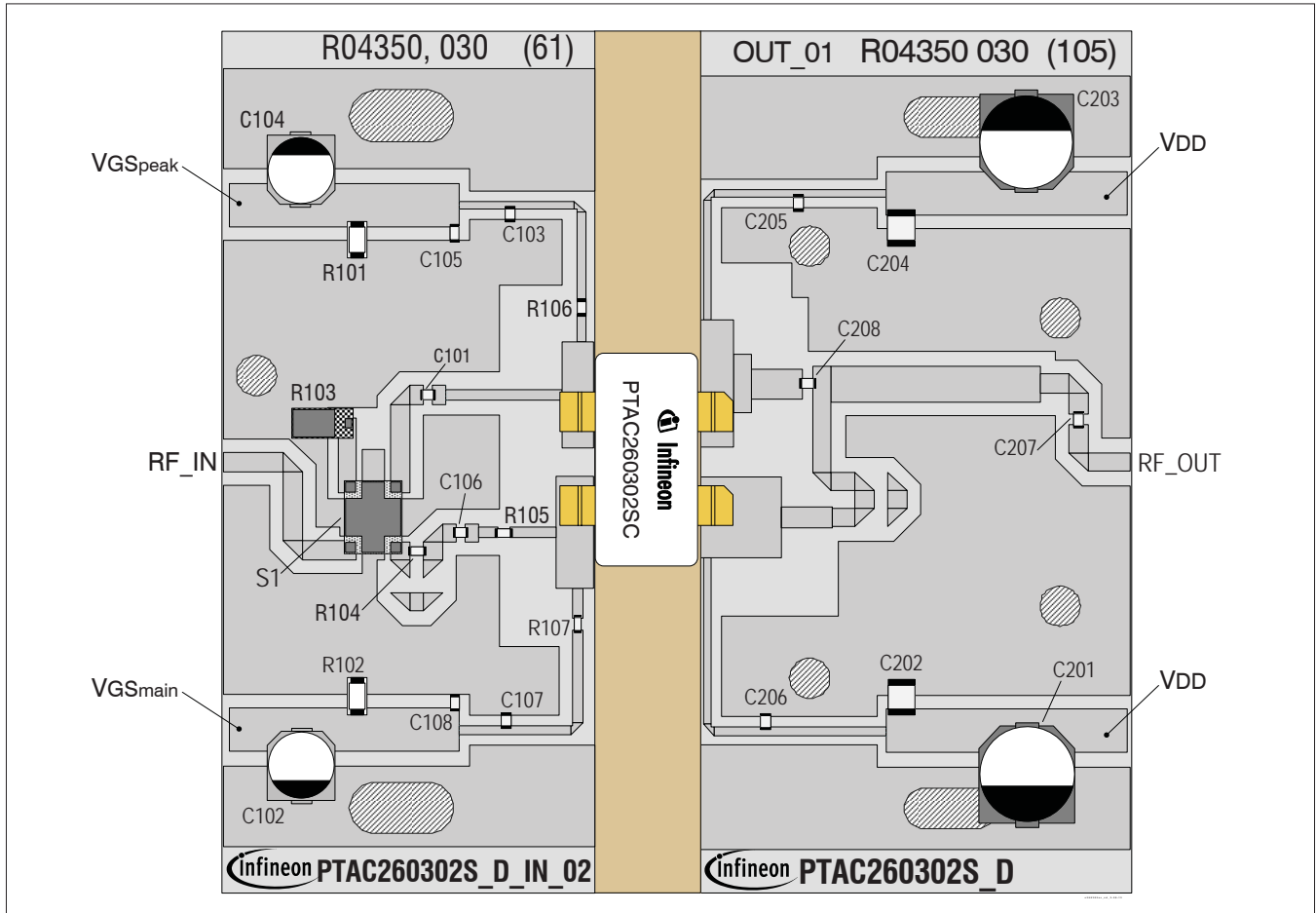
Peak Side – Pulsed CW signal: 16 $\mu$ sec, 10% duty cycle; 28 V, 115 mA												
		P <sub>1dB</sub>										
		Max Output Power					Max PAE					
Freq [MHz]	Z <sub>s</sub> $\Omega$	Z <sub>l</sub> $\Omega$	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE %	Z <sub>l</sub> $\Omega$	Gain [dB]	P <sub>OUT</sub> [dBm]	P <sub>OUT</sub> [W]	PAE %	
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.)

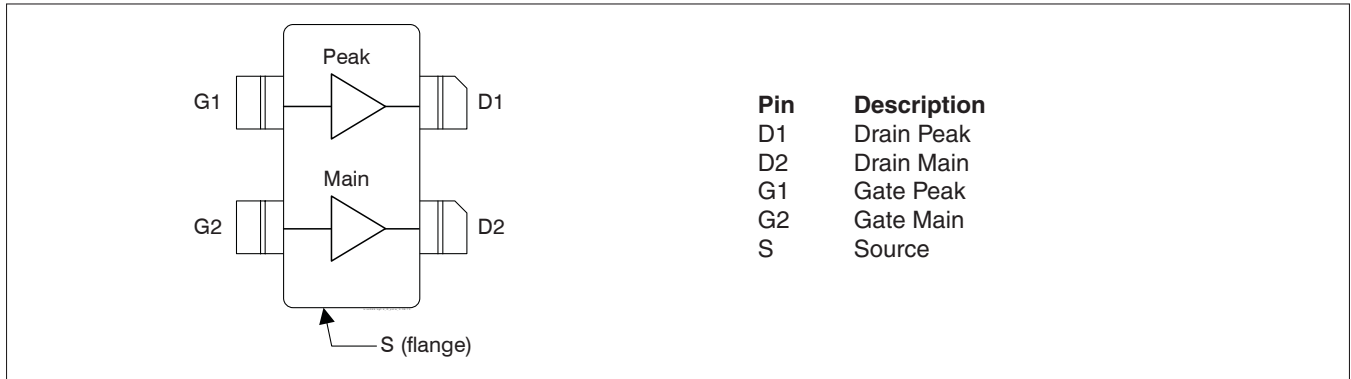


Reference circuit assembly diagram (not to scale)

Component Information

Component	Description	Suggested Manufacturer	P/N
<b>Input</b>			
C101, C103, C106, C107	Chip capacitor, 10 pF	ATC	ATC100A100JW150XB
C102, C104	Capacitor, 10 $\mu$ F, 50 V pF	Panasonic Electronic Components	EEV-HD1H100P
C105, C108	Chip capacitor, 1 $\mu$ 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
<b>Output</b>			
C201, C203	Capacitor, 100 $\mu$ 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

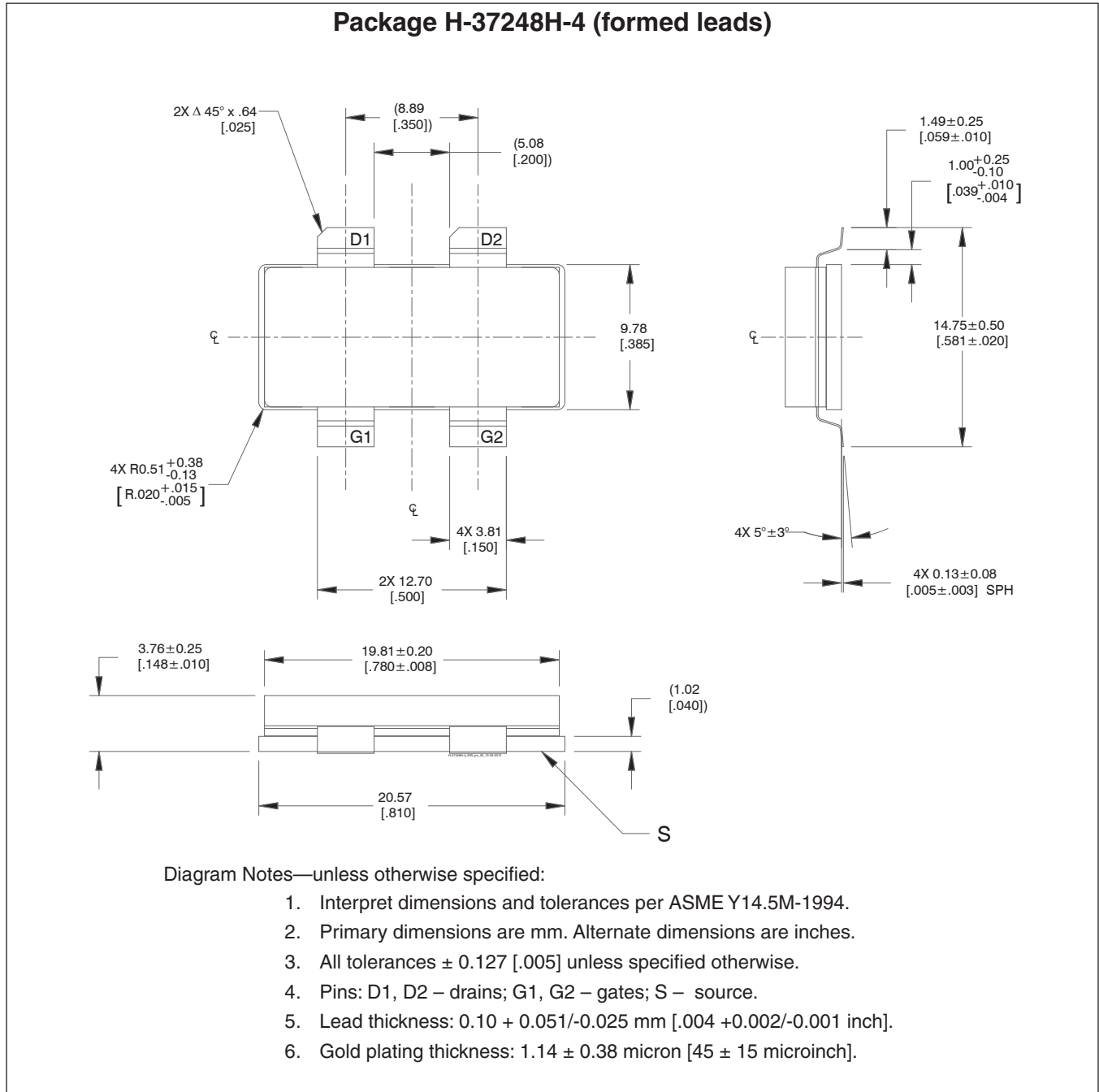
**Pinout Diagram** (top view)



Lead connections for PTAC260302SC



Package Outline Specifications



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

Revision History: 2013-08-28

Data Sheet

Previous Version: 2012-04-08, Data Sheet

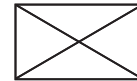
Page	Subjects (major changes since last revision)
2	Product Type updated.

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