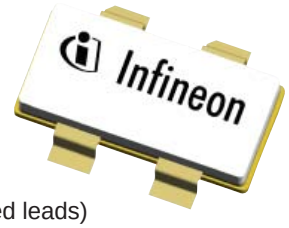
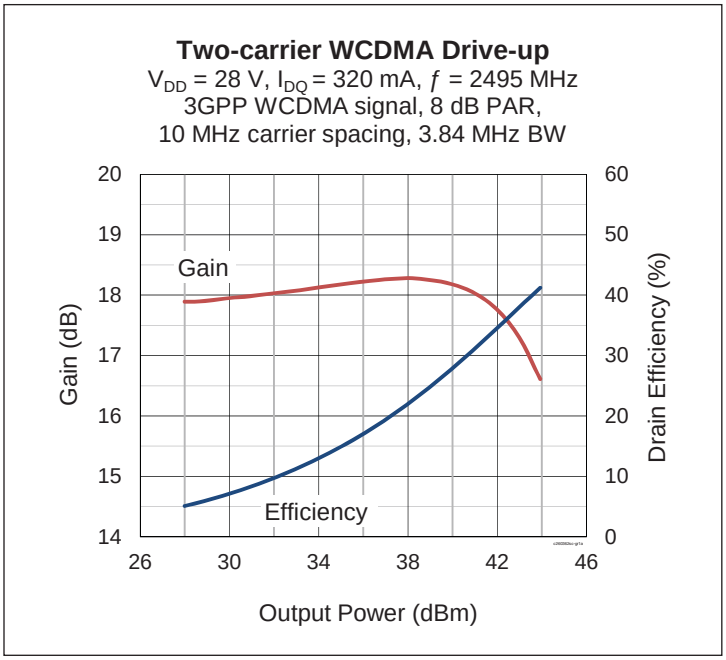
Thermally-Enhanced High Power RF LDMOS FET
32 W, 28 V, 2496 – 2690 MHz

Description

The PTFC260362SC is a 32-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 2496 to 2690 MHz frequency band. Features include input and output matching, high gain and a thermally-enhanced package with earless flange. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTFC260362SC
Package H-37248H-4 (formed leads)



Features

- Input matching
- Typical pulsed CW performance, 2690 MHz, 28 V (10 µs pulse width, 10% duty cycle, class AB test)
  - Output power at P_{1dB} = 33 W
  - Efficiency = 52%
  - Gain = 17.8 dB
- Typical single-carrier WCDMA performance, 2690 MHz, 28 V, 10 dB PAR
  - Output power = 8 W avg
  - Gain = 18.6 dB
  - Efficiency = 30%
  - ACPR = –35 dBc
- Capable of handling 10:1 VSWR at 30 V, 32 W (CW) output power
- Integrated ESD protection: Human Body Model Class 1B (per JESD22-A114)
- Pb-free and RoHS compliant

RF Characteristics

Two-carrier WCDMA Specifications (device with flat leads tested in Infineon production test fixture)

V_{DD} = 28 V, I_{DQ} = 300 mA, P_{OUT} = 8 W avg, f_1 = 2680, f_2 = 2690
WCDMA signal: 3GPP, channel bandwidth = 3.84 MHz, peak/average = 8 dB @ 0.01% CCDF probability

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	17.5	18.5	—	dB
Drain Efficiency	η_D	31	32	—	%
Intermodulation Distortion	IMD	—	–34	–31	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 V, I_{DS} = 10 mA	$V_{(BR)DSS}$	65	—	—	V
Drain Leakage Current	V_{DS} = 28 V, V_{GS} = 0 V	I_{DSS}	—	—	1	µA
	V_{DS} = 63 V, V_{GS} = 0 V	I_{DSS}	—	—	10	µA
Gate Leakage Current	V_{GS} = 10 V, V_{DS} = 0 V	I_{GSS}	—	—	1	µA
On-State Resistance	V_{GS} = 10 V, V_{DS} = 0.1 V	$R_{DS(on)}$	—	0.6	—	Ω
Operating Gate Voltage	V_{DS} = 28 V, I_{DQ} = 300 mA	V_{GS}	2.1	2.7	3.3	V

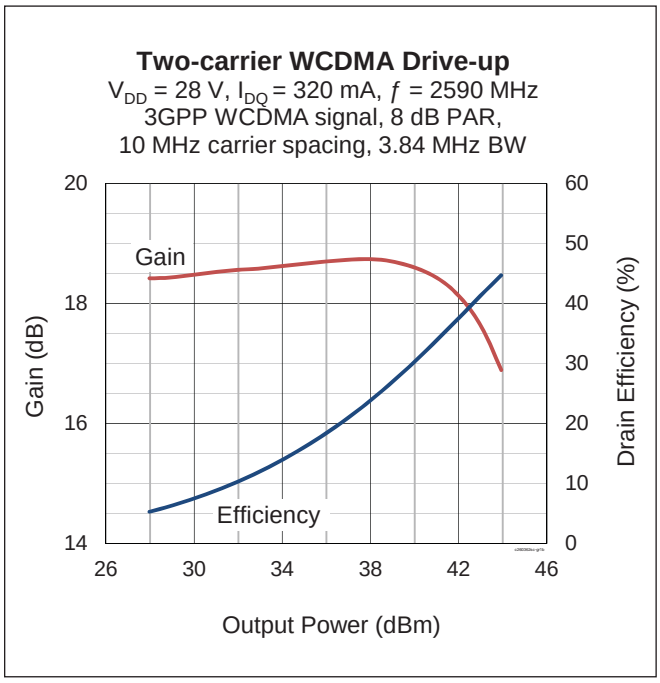
Maximum Ratings

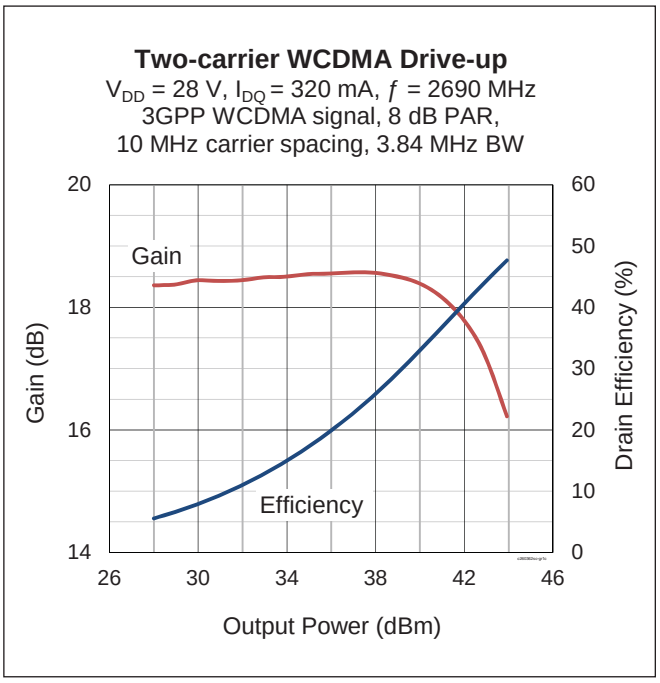
Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	–6 to +10	V
Operating Voltage	V_{DD}	0 to +32	V
Junction Temperature	T_J	225	°C
Storage Temperature Range	T_{STG}	–65 to +150	°C
Thermal Resistance (T_{CASE} 70°C, 30 W CW)	$R_{\theta JC}$	2.51	°C/W

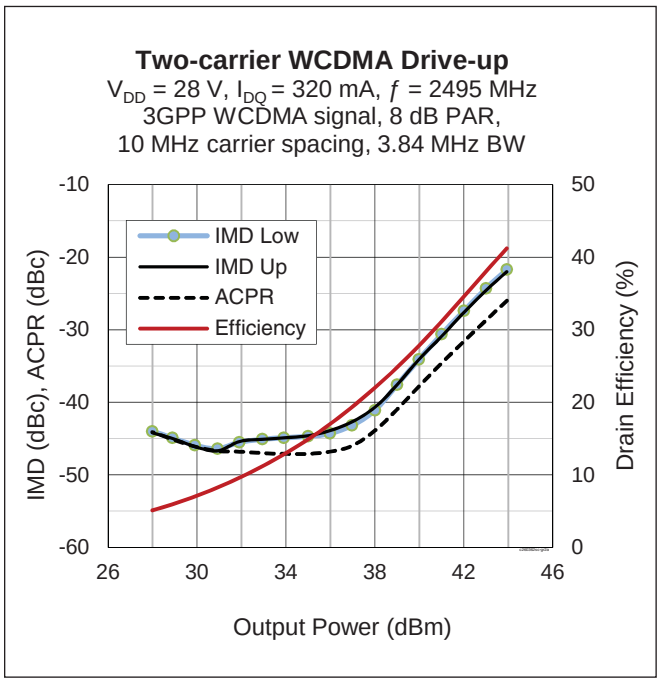
Ordering Information

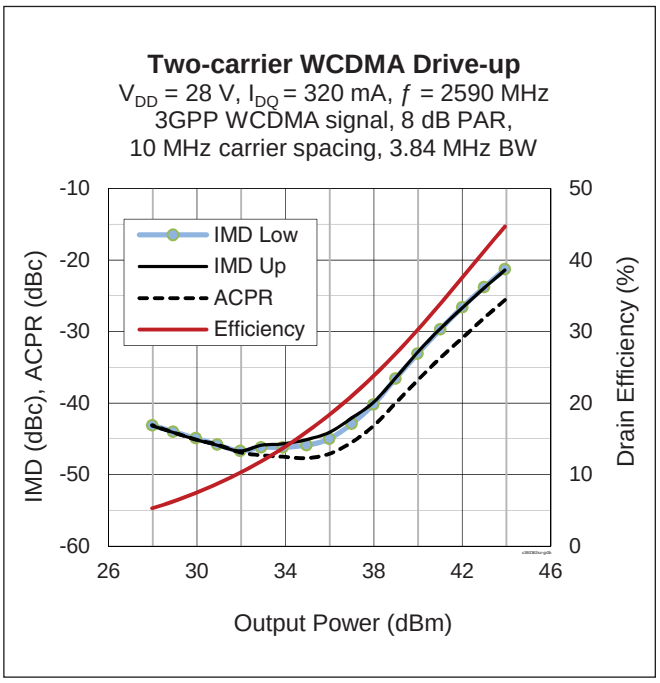
Type and Version	Order Code	Package and Description	Shipping
PTFC260362SC V1 R250	PTFC260362SCV1R250XTMA1	H-37248H-4 – Ceramic open-cavity, earless flange, formed leads	Tape & Reel, 250 pcs

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





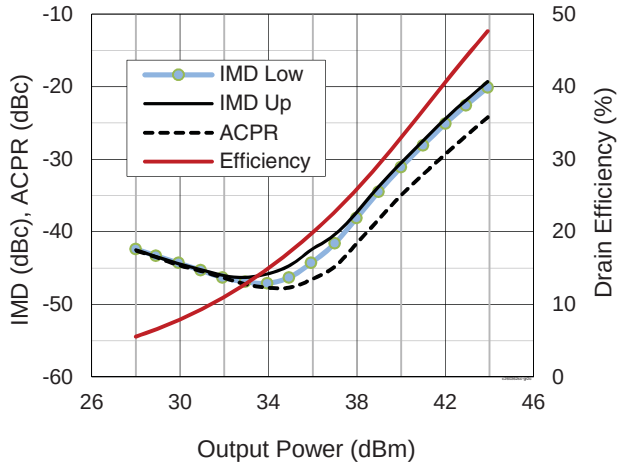




Typical Performance (cont.)

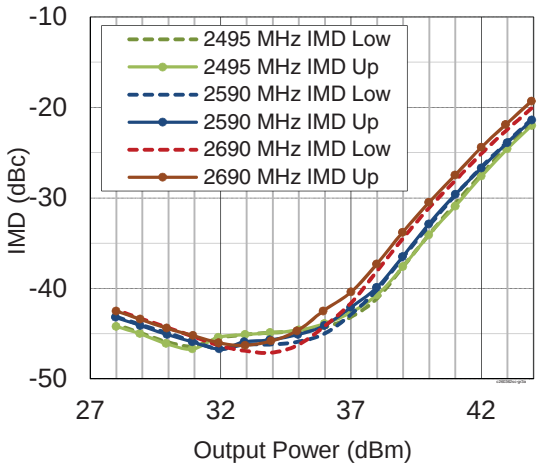
Two-carrier WCDMA Drive-up

V_{DD} = 28 V, I_{DQ} = 320 mA, f = 2690 MHz,
3GPP WCDMA signal, 8 dB PAR,
10 MHz carrier spacing, 3.84 MHz



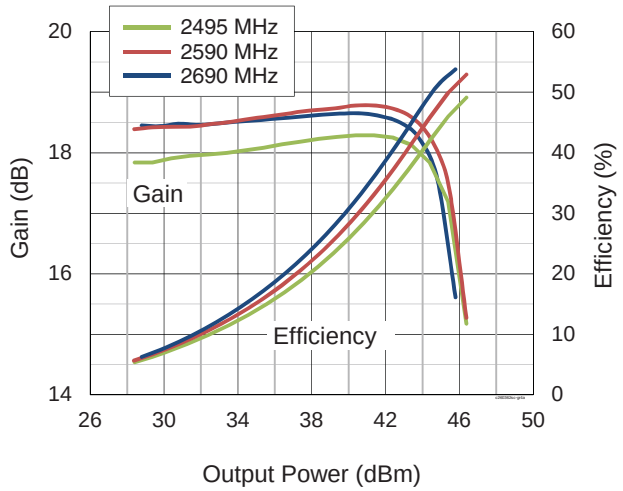
Two-carrier WCDMA Drive-up

V_{DD} = 28 V, I_{DQ} = 320 mA,
3GPP WCDMA signal, 8 dB PAR,
10 MHz carrier spacing, 3.84 MHz BW



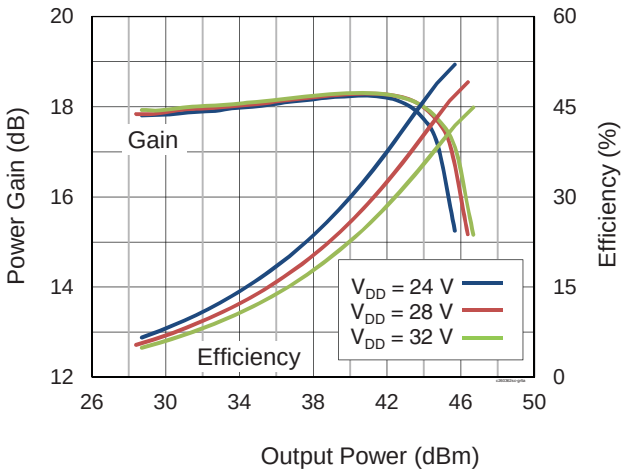
CW Performance

V_{DD} = 28 V, I_{DQ} = 320 mA

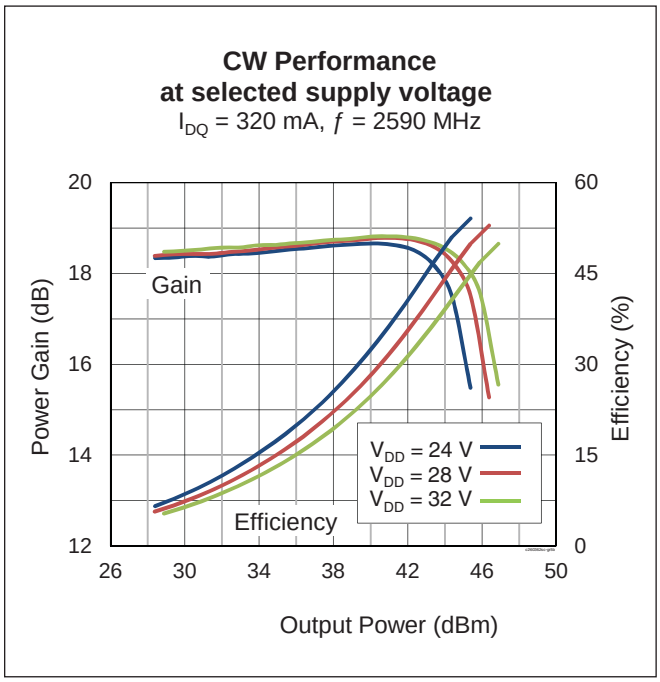


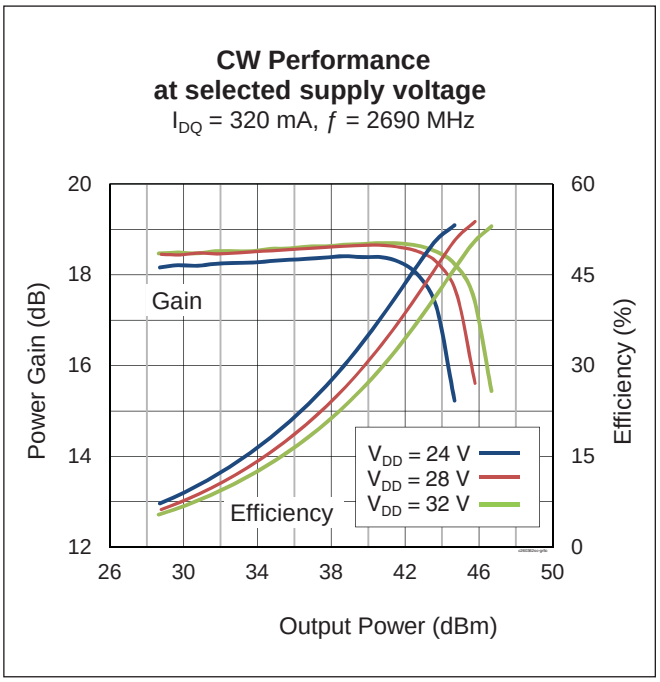
CW Performance
at selected supply voltage

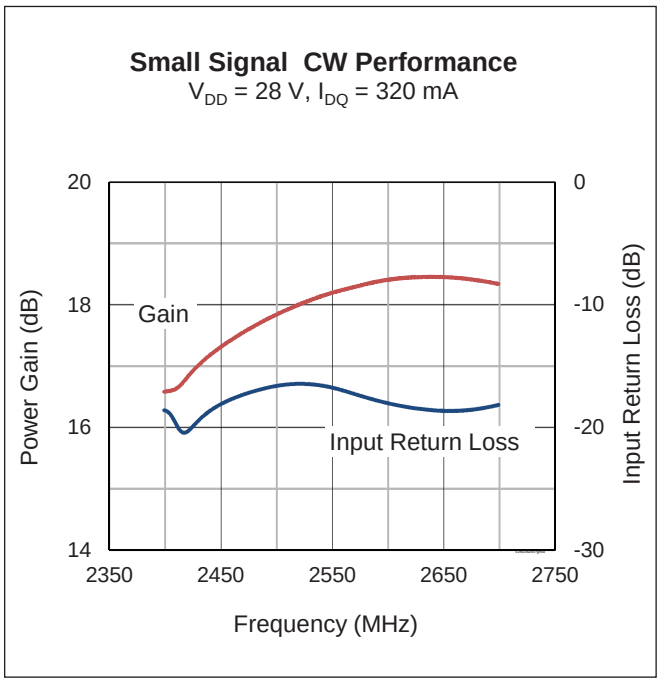
I_{DQ} = 320 mA, f = 2495 MHz



Typical Performance (cont.)

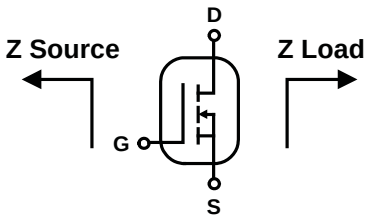






Broadband Circuit Impedance

Frequency [MHz]	Z Source [Ω]	Z Load [Ω]
2400	33.7 – 26.8	15.4 – 18.1
2450	31.8 – 27.1	14.5 – 17.6
2500	30.1 – 27.1	13.7 – 17.1
2550	28.4 – 26.9	13.1 – 16.6
2600	26.7 – 27.0	12.3 – 16.2
2650	25.3 – 26.6	11.8 – 15.8
2700	23.8 – 26.2	11.3 – 15.3
2750	22.3 – 26.0	10.7 – 15.0
2800	21.1 – 25.6	10.3 – 14.7

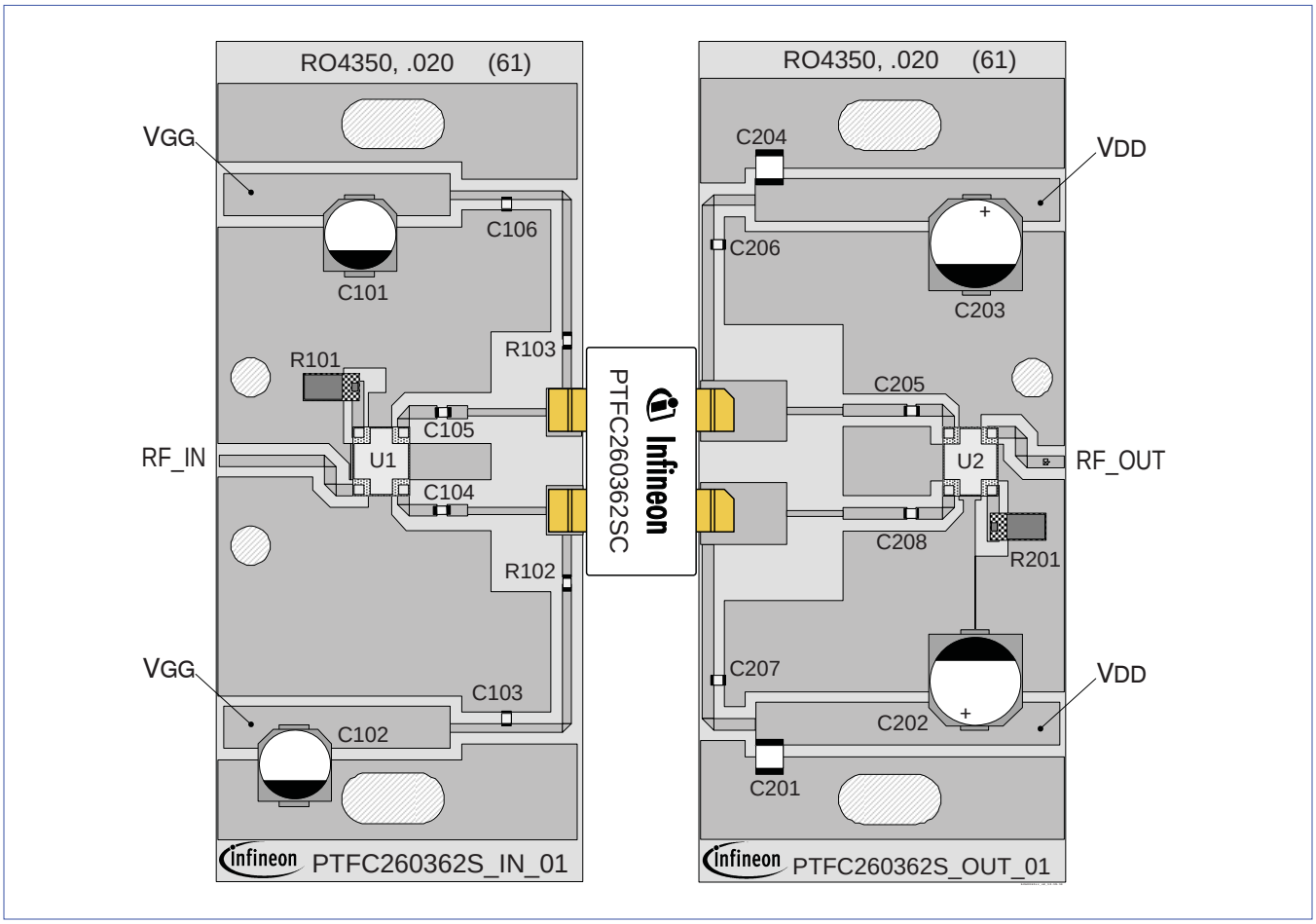


Reference Circuit, tuned for 2690 MHz

DUT	PTFC260362SC
Reference Fixture Part No.	LTN/PTFC260362SC V1
PCB	Rogers 4350, 0.508 mm [.020"] thick, ε_r = 3.66 , 2 oz. copper
Find Gerber files for this test fixture on the Infineon Web site at **(http://www.infineon.com/rfpower)**	

See next page for reference circuit information

Reference Circuit (cont.)

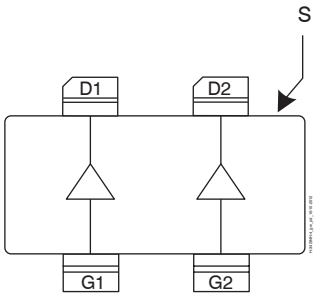


Reference circuit assembly diagram (not to scale)

Reference Circuit Assembly Information

Component	Description	Manufacturer	P/N
Input			
C101, C102	Capacitor, 10 µF, 50 V	Panasonic Electronic Components	EEE-HB1H100AP
C103, C104, C105, C106	Chip capacitor, 18 pF	ATC	ATC800A180JT250
R101	Termination resistor, 50 Ω	Aneren	C16A50Z4
R102, R103	Resistor, 10 Ω	Panasonic – ECG	ERJ-3GEYJ100V
U1	RF directional coupler	Anaren	XC2650P-03S
Output			
C201, C204	Capacitor, 10 µF	Taiyo Yuden	UMK325C7106MM-T
C202	Capacitor, 100 µF	Panasonic Electronic Components	EEE-FP1V101AP
C203	Capacitor, 100 µF, 35 V	Panasonic Electronic Components	EEE-FP1V101AP
C205, C206, C207, C208	Chip capacitor, 18 pF	ATC	ATC800A180JT250T
R201	Resistor, 50 Ω	Anaren	C16A50Z4
U2	RF hybrid coupler	Anaren	XC2650P-03S

Pinout Diagram (top view)



Pin	Description
D1, D2	Drain
G1, G2	Gate
S	Source (flange)

Lead connections for PTFC260362SC

See next page for package mechanical specifications

Package Outline Specifications

Package H-37248H-4 (formed leads)

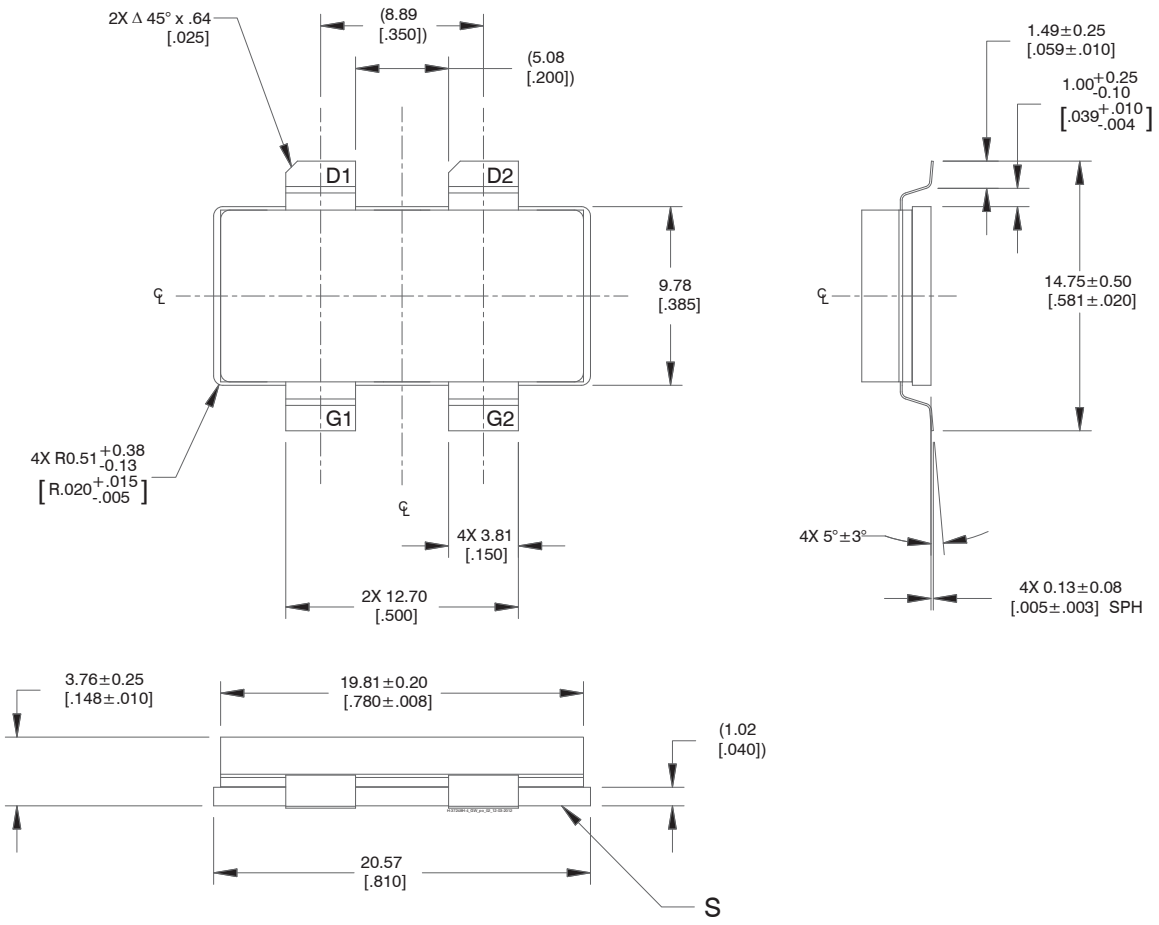


Diagram Notes—unless otherwise specified:

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].
4. Pins: D1, D2 – drains; G1, G2 – gates; S – source (flange).
5. Lead thickness: 0.10 + 0.051/-0.025 [.004 +0.002/-0.001].
6. Gold plating thickness: 1.14 ± 0.38 micron [45 ± 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

Revision	Date	Data Sheet	Page	Subjects (major changes in comparison with previous revision)
01	2012-04-08	Advance	All	Proposed specifications for new product development.
02	2013-07-24	Production	All	Data Sheet reflects released product specification.
03	2014-06-26	Production	2	V_{GS} conditions. Maximum junction temperature raised to 225 °C.

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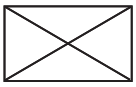

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