

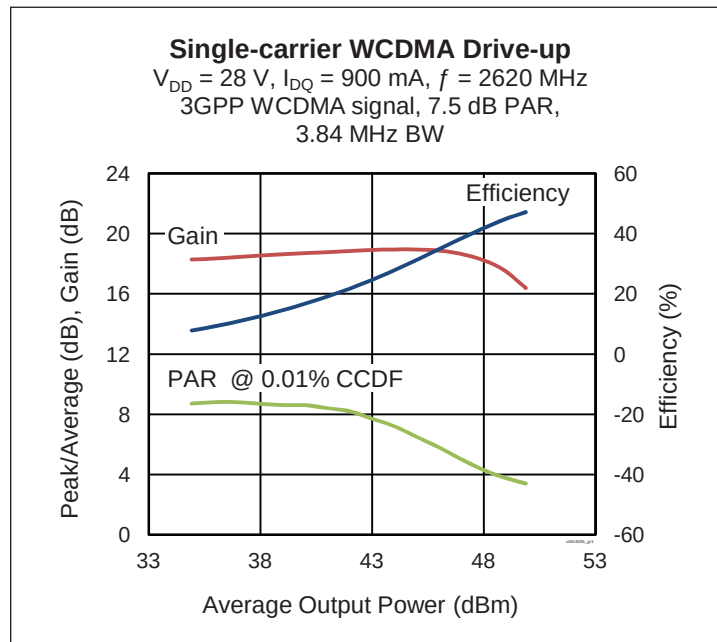
Thermally-Enhanced High Power RF LDMOS FET 140 W, 28 V, 2620 – 2690 MHz

Description

The PTFC261402FC is a 140-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 2620 to 2690 MHz frequency band. Features include input and output 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.



PTFC261402FC
Package H-37248-4



Features

- Broadband internal matching
- Wide video bandwidth
- Typical pulsed CW performance, 2655 MHz, 28 V (combined outputs)
 - Output power at $P_{1dB} = 140\text{ W}$
 - Efficiency = 50%
 - Gain = 16.5 dB
- Typical single-carrier WCDMA performance, 2655 MHz, 28 V
 - Output power = 46 dBm avg
 - Gain = 17.5 dB
 - Efficiency = 30.5%
- Capable of handling 10:1 VSWR @ 28 V, 140 W (CW) output power
- Integrated ESD protection
- Low thermal resistance
- Pb-free and RoHS compliant

RF Characteristics

Single-carrier WCDMA Specifications (combined outputs)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 900\text{ mA}$, $P_{OUT} = 28\text{ W}$ avg, $f = 2655\text{ MHz}$, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	17	18	—	dB
Drain Efficiency	η_D	23.5	25	—	%
Adjacent Channel Power Ratio	ACPR	—	-34	-31	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
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.1	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}$, $I_{DQ} = 900\text{ mA}$	V_{GS}	—	2.5	—	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA

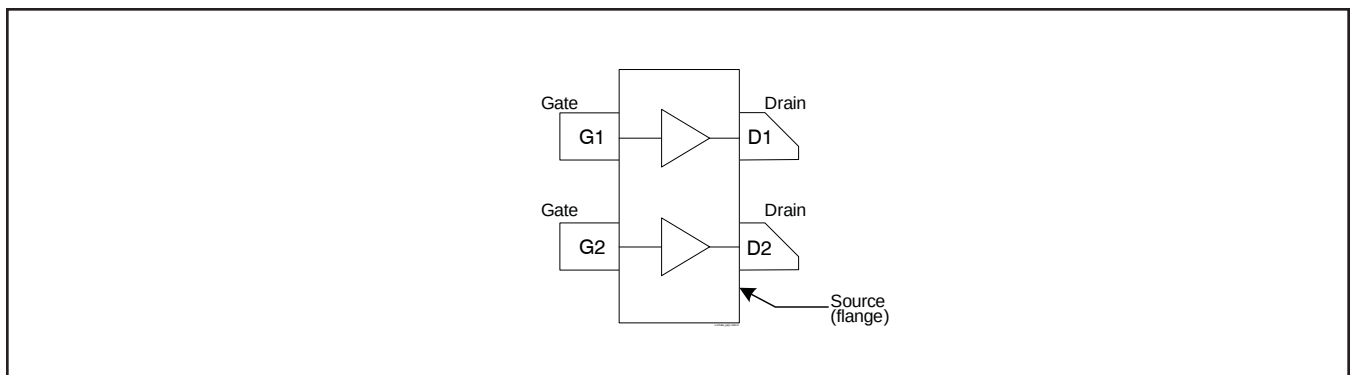
Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	−6 to +10	V
Junction Temperature	T_J	200	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	−65 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$, 140 W CW)	$R_{\theta JC}$	0.30	$^{\circ}\text{C/W}$

Ordering Information

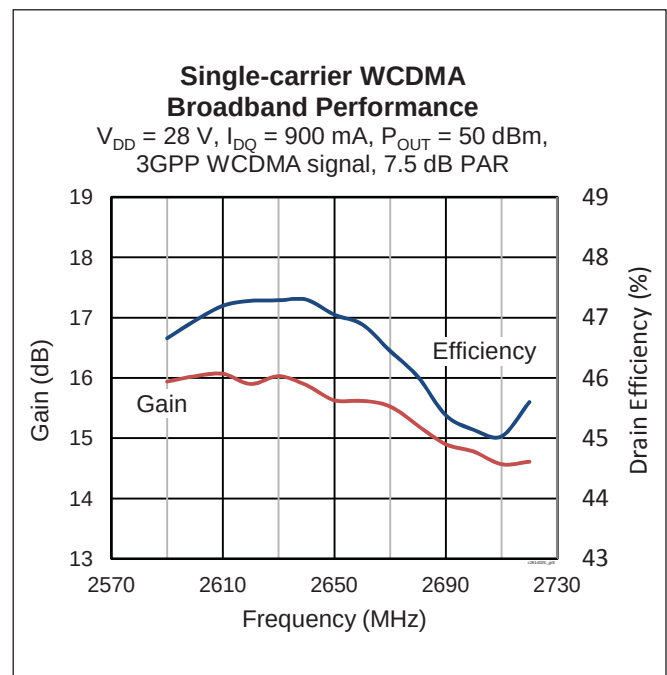
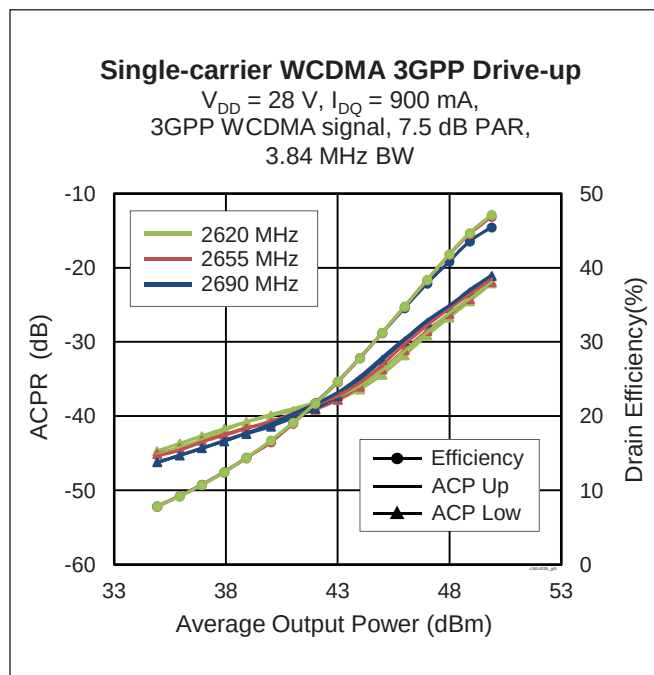
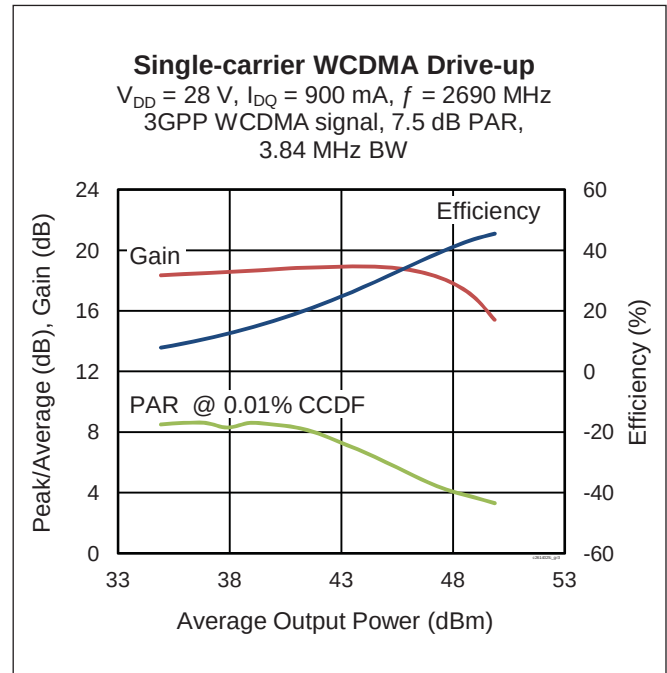
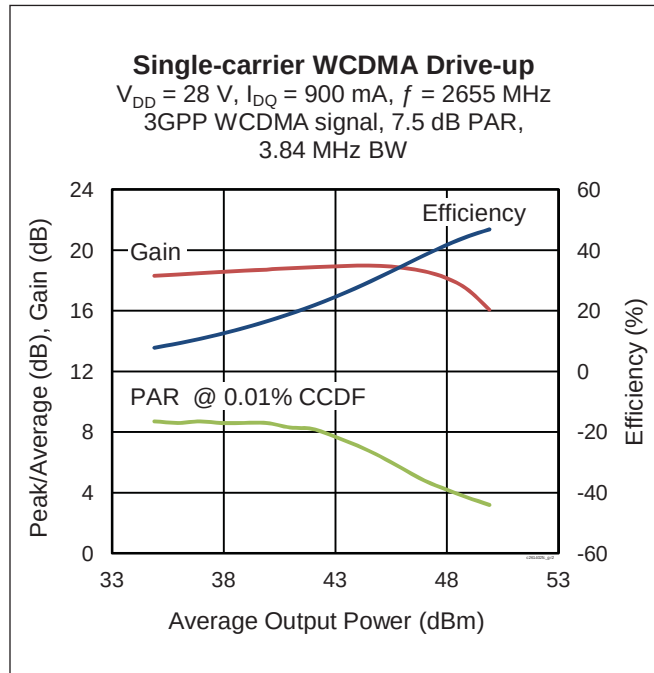
Type and Version	Order Code	Package and Description	Shipping
PTFC261402FC V1	PTFC261402FCV1XWSA1	Thermally-enhanced earless flange, push-pull	Tray
PTFC261402FC V1 R250	PTFC261402FCV1R250XTMA1	Thermally-enhanced earless flange, push-pull	Tape & Reel, 250 pcs

Pinout Diagram

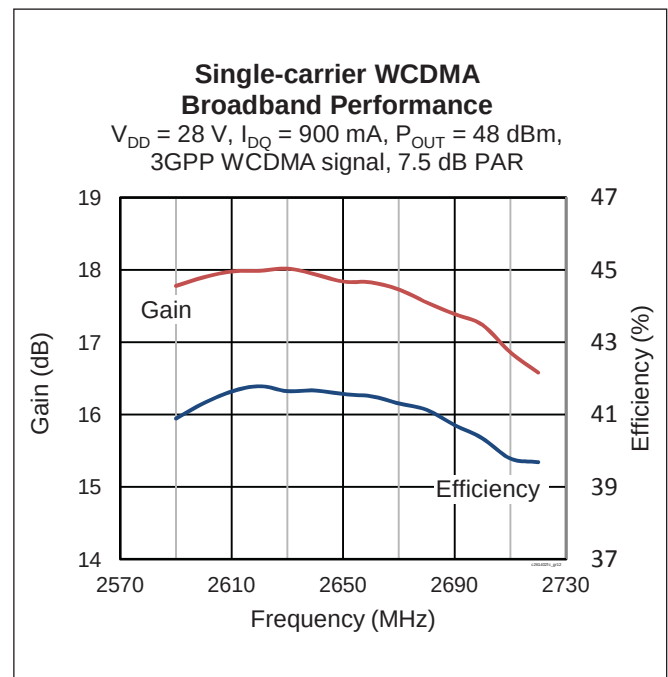
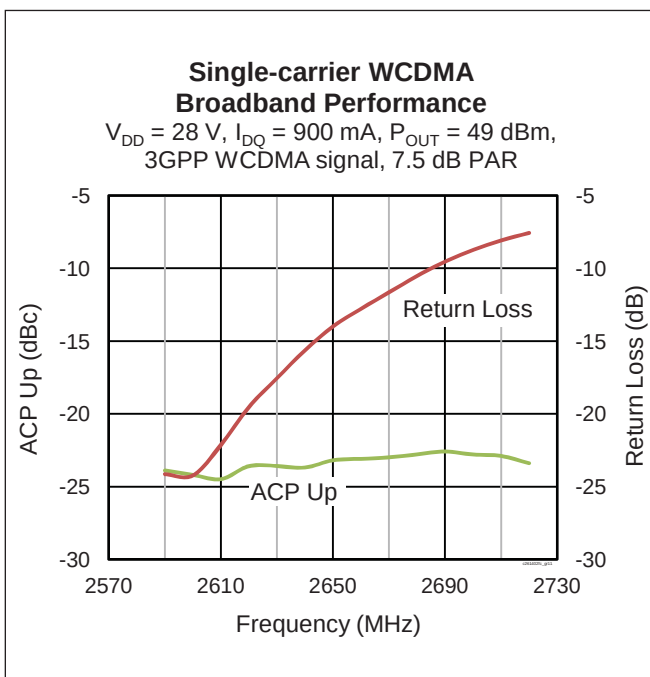
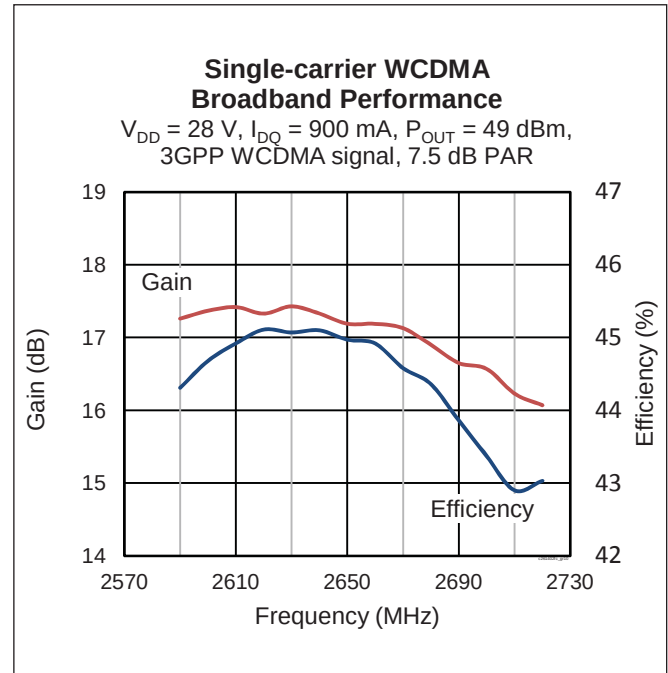
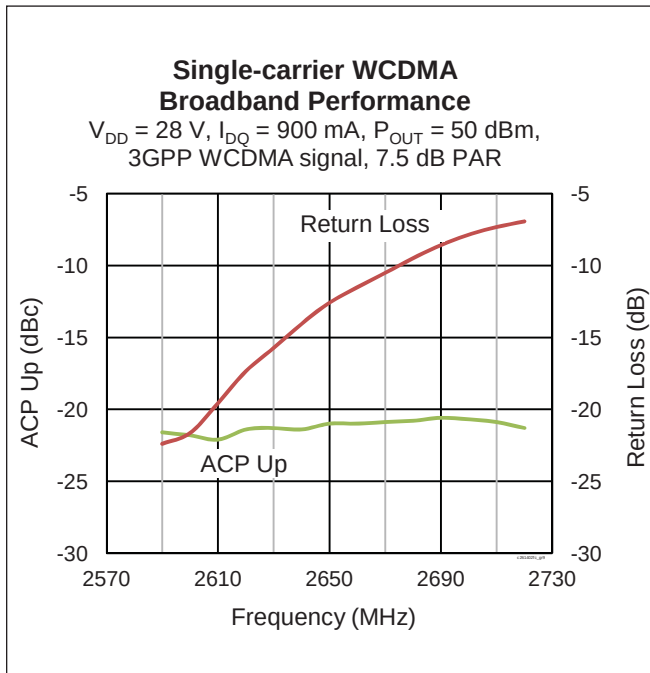


Lead connections for PTFC261402FC

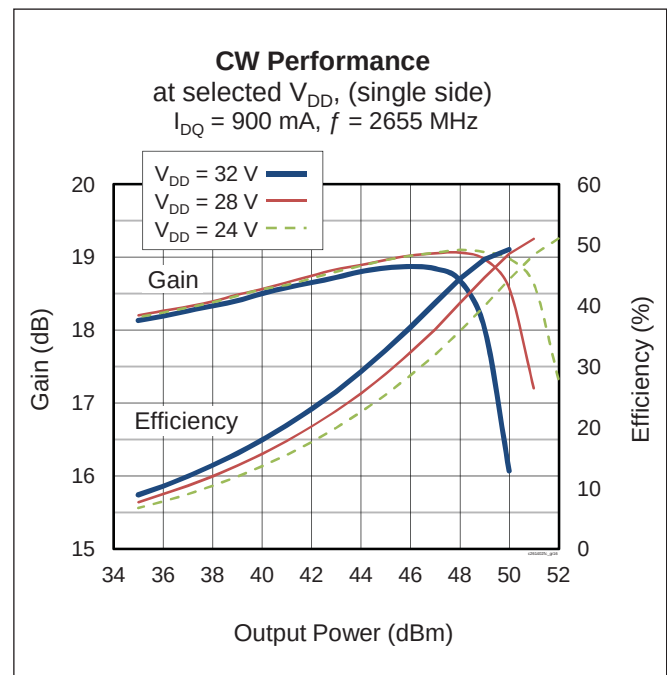
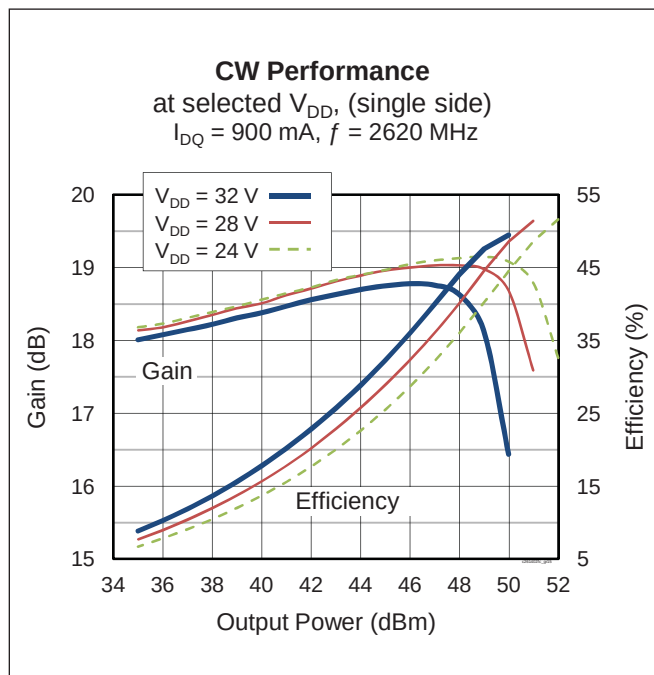
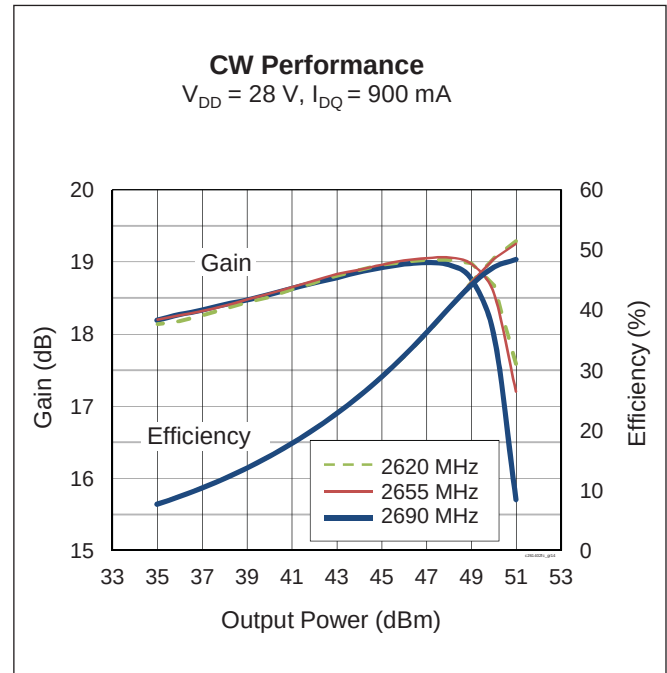
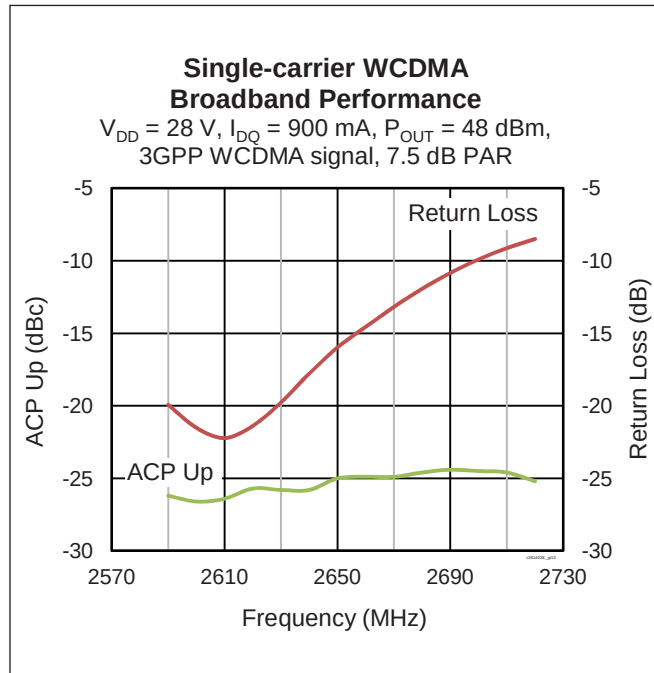
Typical Performance (data taken in a production test fixture)



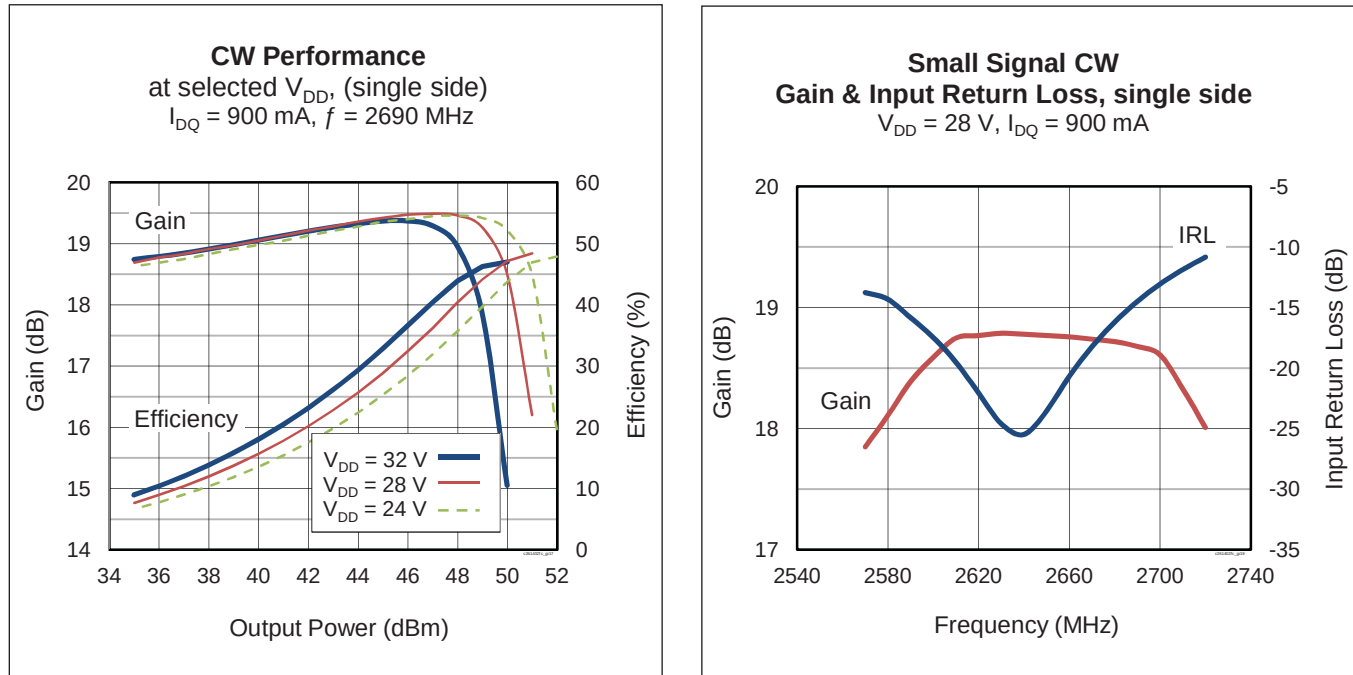
Typical Performance (cont.)



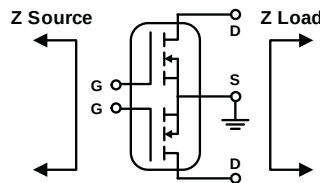
Typical Performance (cont.)



Typical Performance (cont.)



Load Pull Performance

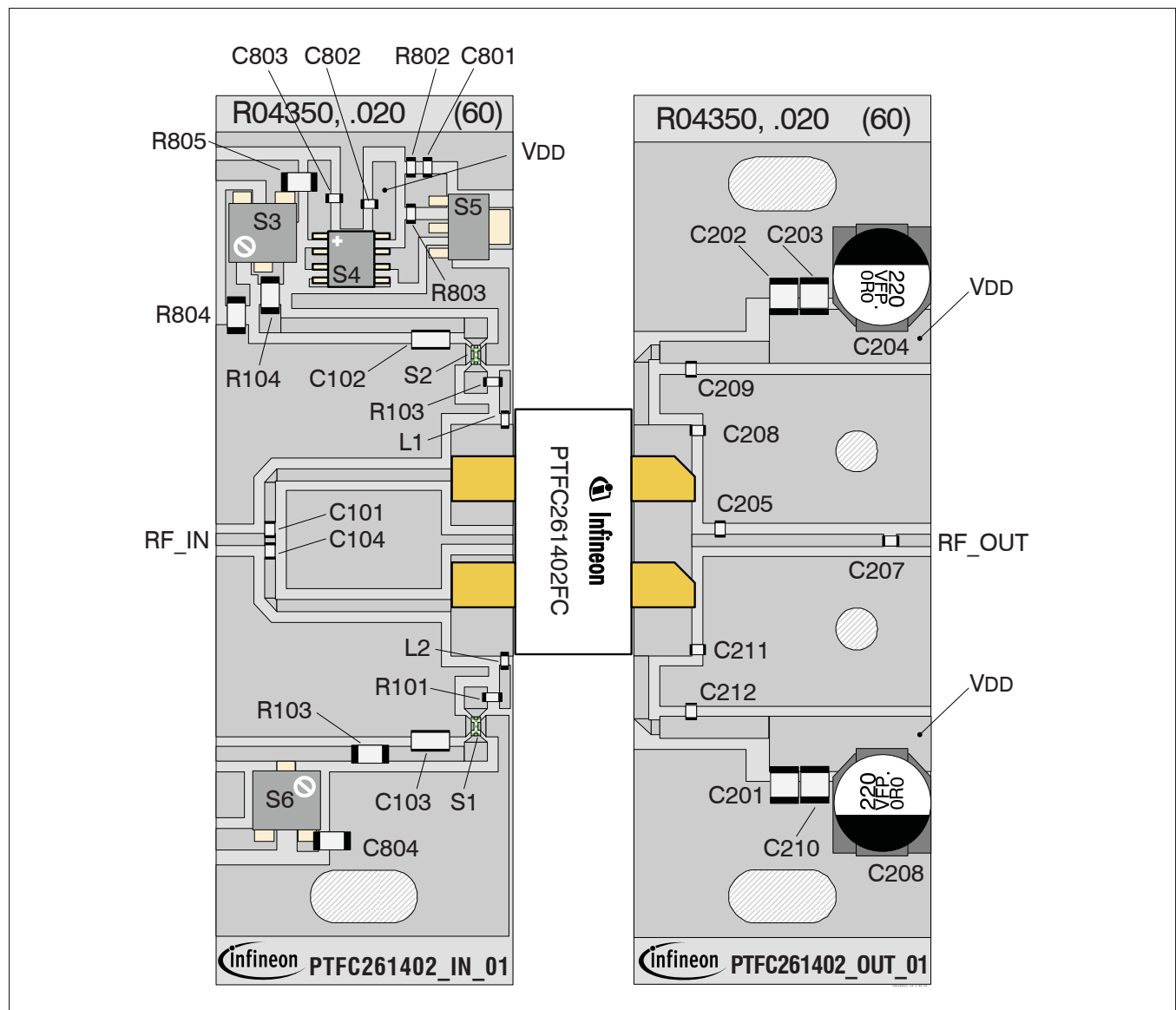


Single Side Load Pull Performance – Pulsed CW signal: 16 μsec , 10% duty cycle; 28 V, 450 mA

		$P_{1\text{dB}}$									
		Max Output Power					Max PAE				
Freq [MHz]	$Z_s \Omega$	$Z_l \Omega$	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	PAE %	$Z_l \Omega$	Gain [dB]	P_{OUT} [dBm]	P_{OUT} [W]	PAE %
2620	$12.1 - j1.0$	$2.0 - j8.8$	15.8	50.01	100	53.9	$3.8 - j7.4$	18	48.39	69	60.2
2655	$15.7 - j0.2$	$2.0 - j9.0$	15.7	49.98	99	53.2	$3.5 - j7.7$	17.9	48.50	71	59.5
2690	$17.8 - j12.4$	$2.0 - j9.2$	15.7	49.79	95	51.3	$3.6 - j7.8$	18.1	48.38	69	58.8

Reference Circuit

DUT	PTFC261402FC
Test Fixture Part No.	LTN/PTFC261402FC
PCB	Rogers 4350, 0.508 mm [.020"] 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)	



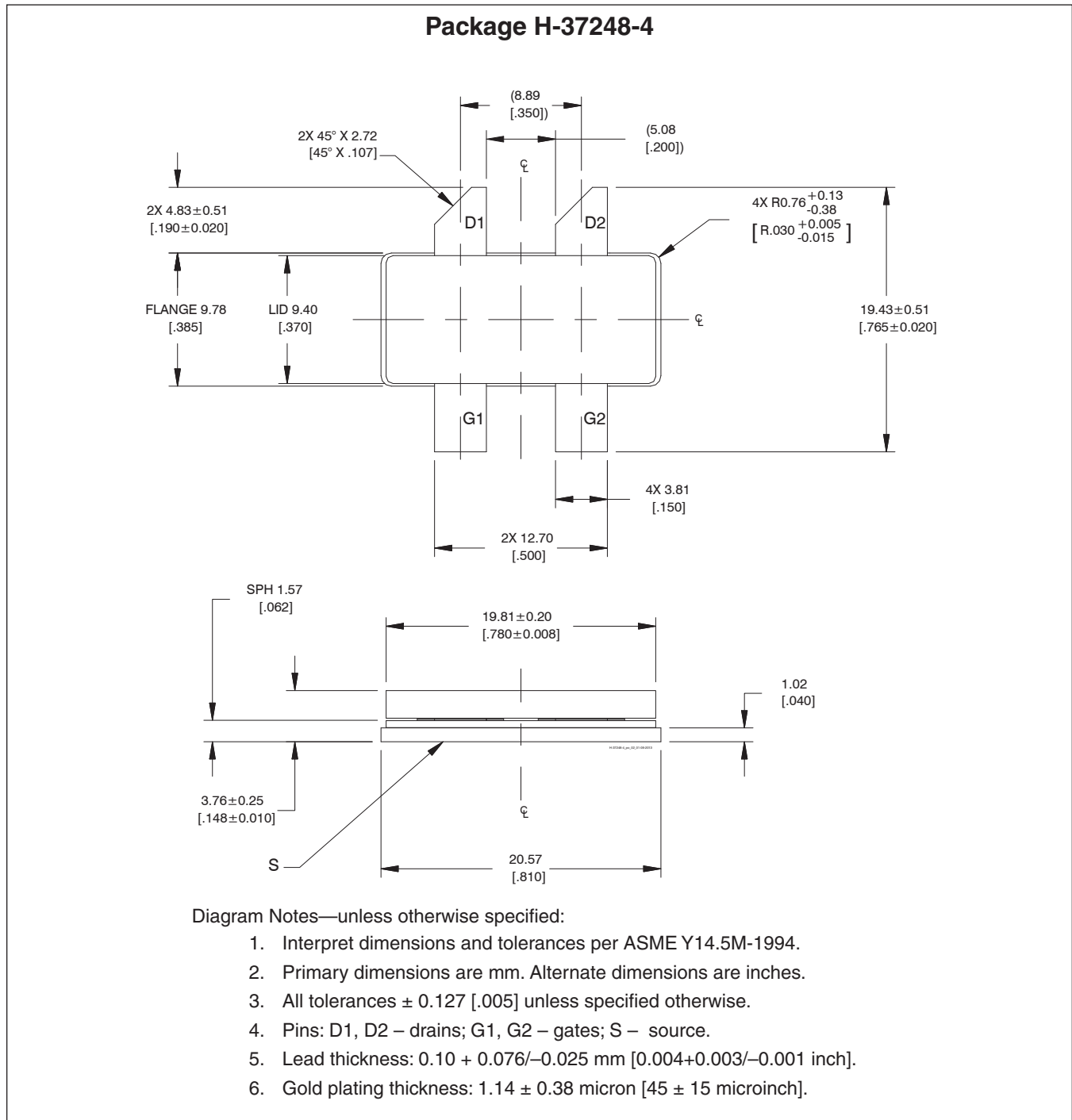
Reference circuit assembly diagram (not to scale)

Reference Circuit (cont.)

Components Information

Component	Description	Suggested Supplier	P/N
Input			
C101, C104	Chip capacitor, 10 pF	ATC	ATC800A100JT
C102, C103	Capacitor, 10 μ F	Digi-Key	490-4393-2-ND
C801, C802, C803	Capacitor, 1 nF	Digi-Key	PCC1772CT-ND
L1, L2	Chip inductor, 47 nH	Coilcraft	0603HP-47NXJLU
R101, R102	Resistor, 10 W	Digi-Key	P10GCT-ND
R103, R104	Resistor, 10 W	Digi-Key	P10ECT-ND
R801, R804	Resistor, 1k W	Digi-Key	P1.0KECT-ND
R802	Resistor, 1.3k W	Digi-Key	P1.3KGCT-ND
R803	Resistor, 1.2k W	Digi-Key	P1.2KGCT-ND
S1, S2	High frequency EMI filter, 1 μ F	Digi-Key	490-6974-1-ND
S3	Potentiometer, 2k W	Digi-Key	3224W-202ECT-ND
S4	Voltage Regulator	National Semiconductor	LM7805
S5	Transistor	Infineon Technologies	BCP56
Output			
C201, C202, C203, C210	Capacitor, 10 μ F	Digi-Key	587-1818-2-ND
C204, C208	Electrolytic capacitor, 220 μ F	Digi-Key	PCE4444TR-ND
C205, C206	Chip capacitor, 1 pF	ATC	ATC800A1R2BT
C206, C211	Chip capacitor, 2 pF	ATC	ATC800A1R6BT
C207	Chip capacitor, 8 pF	ATC	ATC800A8R2CT
C209, C212	Chip capacitor, 10 pF	ATC	ATC800A100JT

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: 2013-02-04

Data Sheet

Previous Version: 2012-06-01, Advance Specification

Page	Subjects (major changes since last revision)
all	Data sheet now reflects production-released Product.

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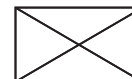
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