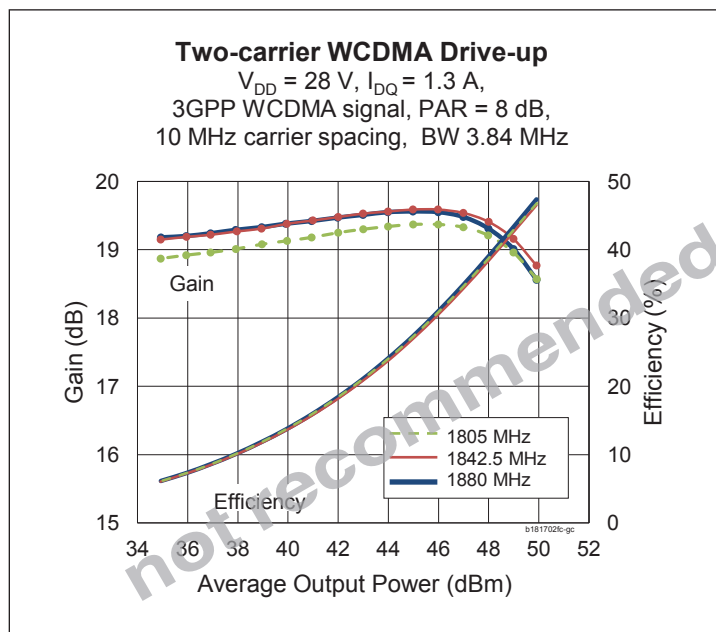
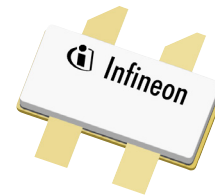


Thermally-Enhanced High Power RF LDMOS FET 170 W, 28 V, 1805 – 1880 MHz

Description

The PTFB181702FC is a 170-watt LDMOS FET intended for use in multi-standard cellular power amplifier applications. Features include input and output matching, high gain and thermally-enhanced package with earless flanges. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PTFB181702FC
Package H-37248-4



Features

- Broadband internal matching
- Typical CW performance, 1842 MHz, 28 V
 - Output power at $P_{1dB} = 180\text{ W}$
 - Efficiency = 58%
 - Gain = 18.5 dB
- Capable of handling 10:1 VSWR @28 V, 170 W (CW) output power
- Integrated ESD protection
- Low thermal resistance
- Pb-free and RoHS compliant

RF Characteristics

Two-carrier WCDMA Specifications (tested in Infineon test fixture)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1300\text{ mA}$, $P_{OUT} = 30\text{ W avg}$, $f_1 = 1870\text{ MHz}$, $f_2 = 1880\text{ MHz}$, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 8 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Linear Gain	G_{ps}	18	19	—	dB
Drain Efficiency	η_D	24	26	—	%
Intermodulation Distortion	IMD	—	-35	-33	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	$V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.11	—	Ω
Operating Gate Voltage	$V_{DS} = 28\text{ V}, I_{DQ} = 650\text{ mA}$	V_{GS}	2.5	3.0	3.5	V
Gate Leakage Current	$V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1	μA

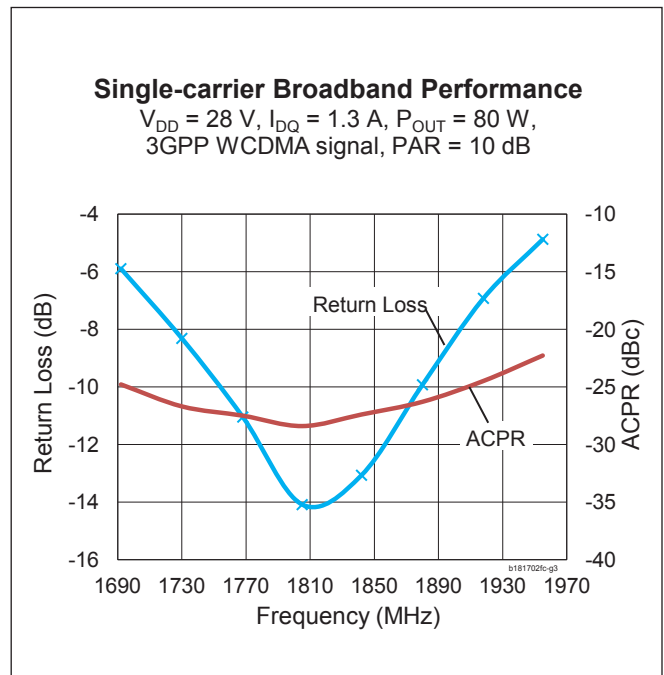
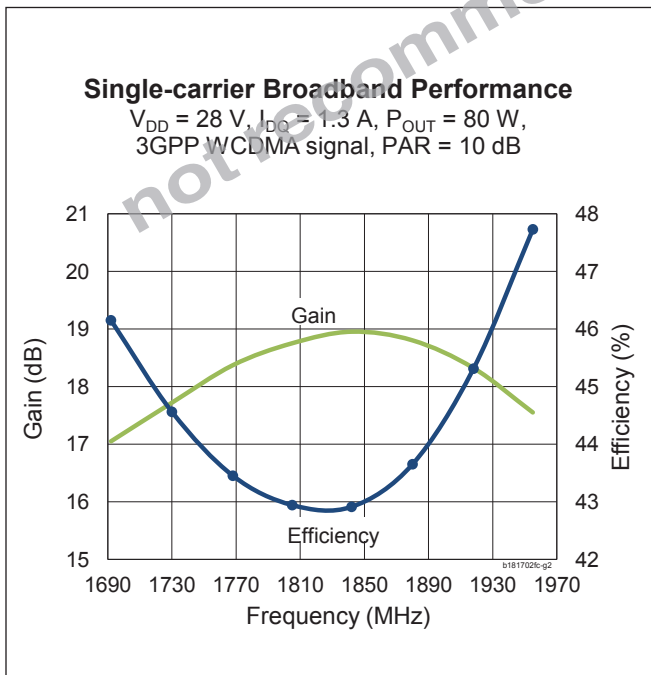
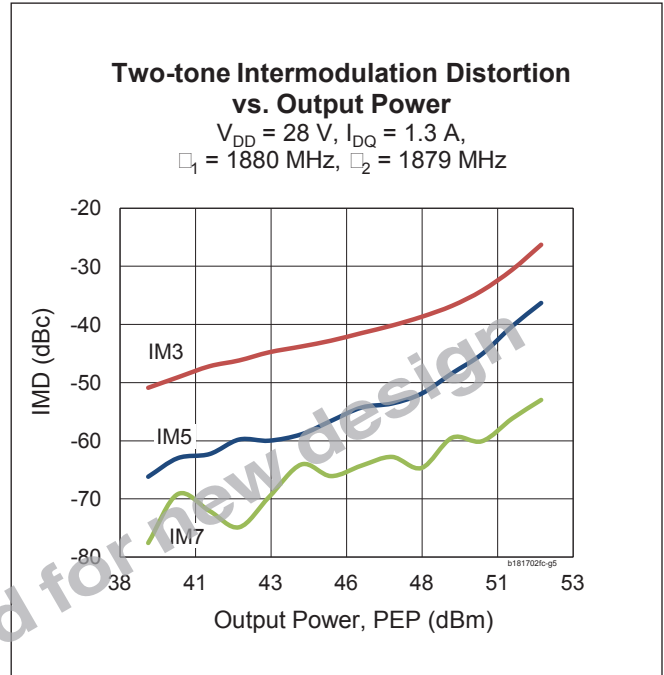
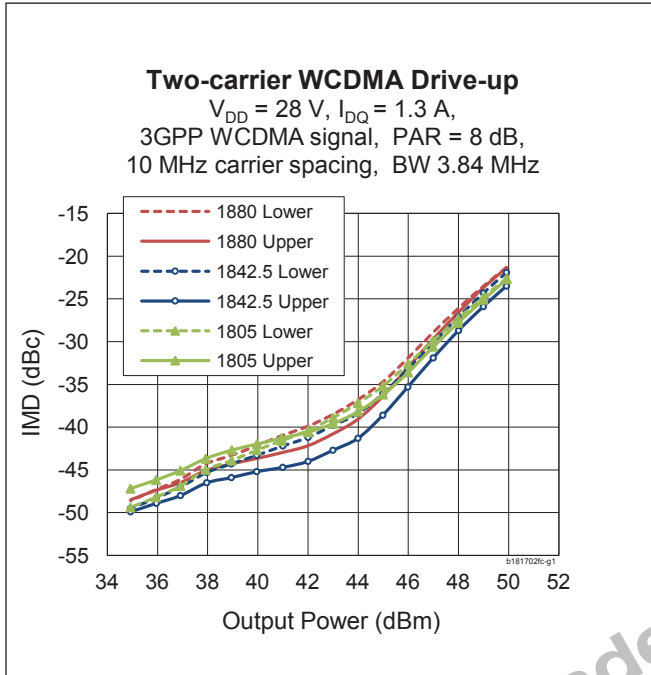
Maximum Ratings

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}	-40 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}, 170\text{ W CW}$)	$R_{\theta JC}$	0.27	$^{\circ}\text{C/W}$

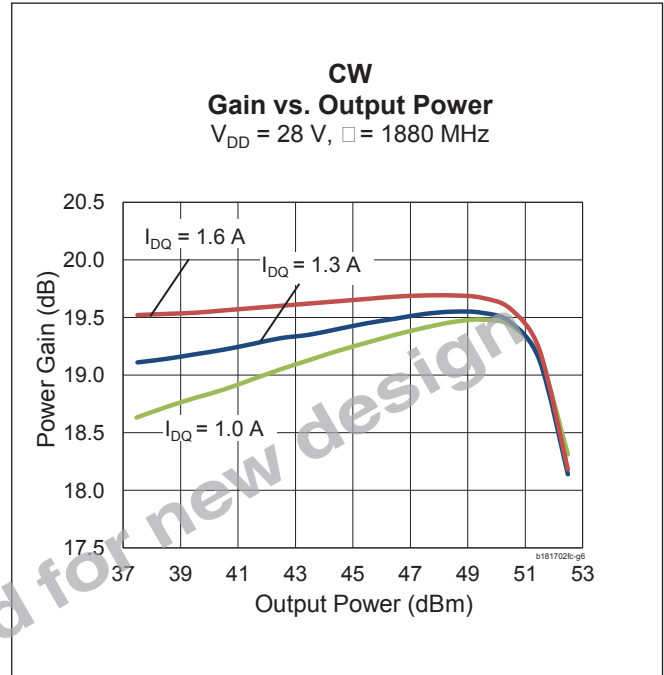
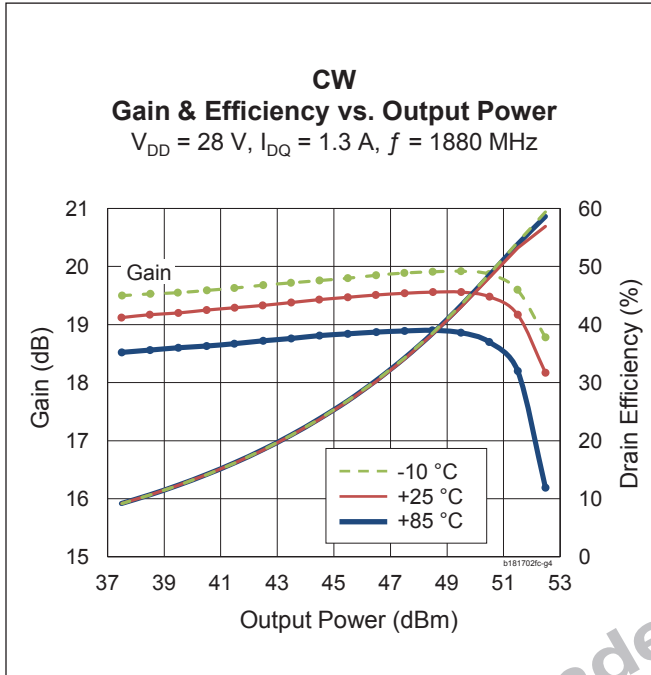
Ordering Information

Type and Version	Order Code	Package Description	Shipping
PTFB181702FC V1 R0	PTFB181702FCV1R0XTMA1	H-37248-4, earless flange	Tape & Reel, 50 pcs
PTFB181702FC V1 R250	PTFB181702FCV1R250XTMA1	H-37248-4, earless flange	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)

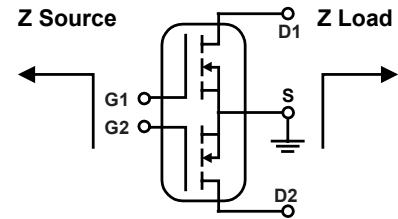


Typical Performance (cont.)

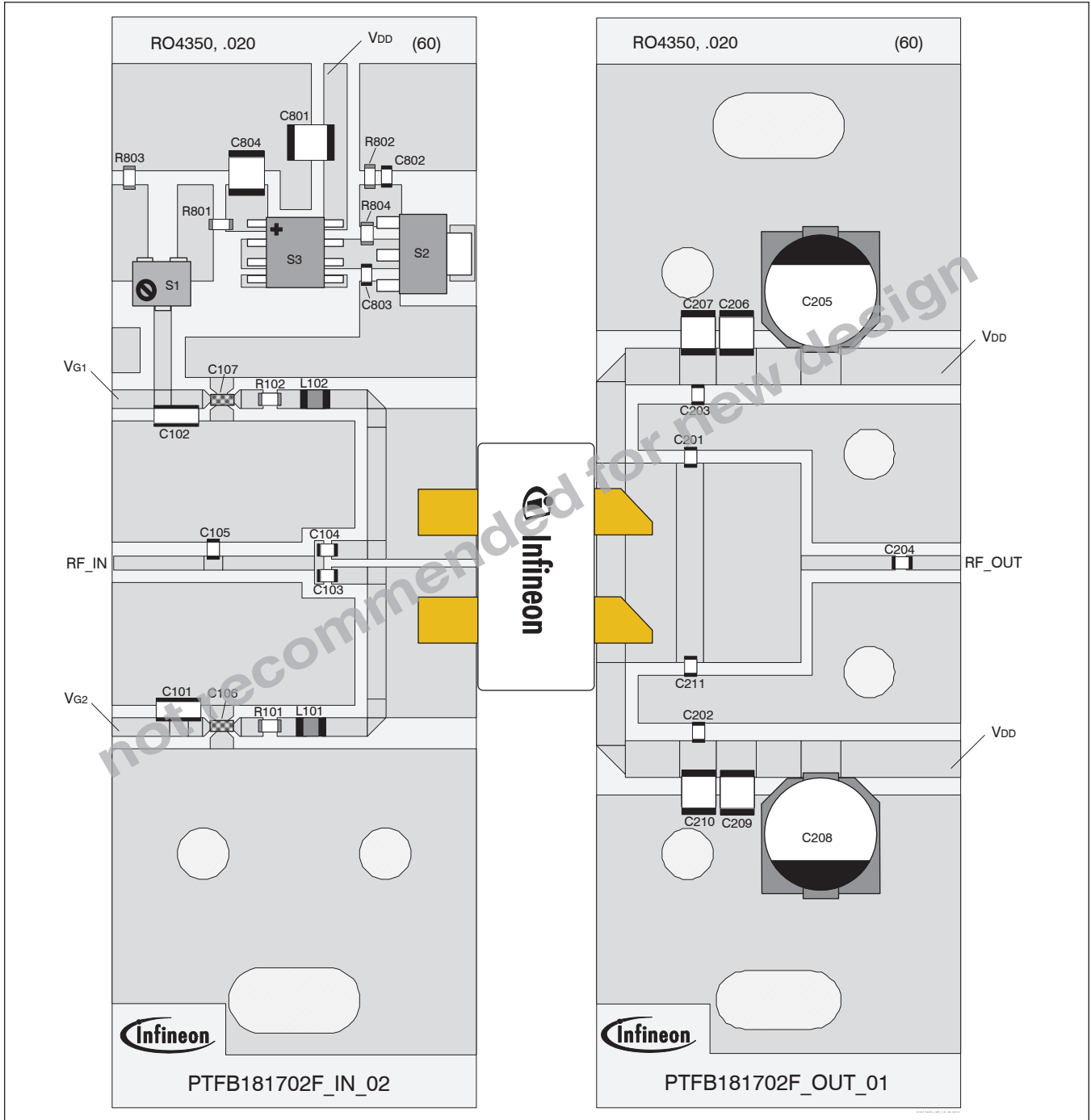


Broadband Circuit Impedance

Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1805	2.99	-6.14	1.87	-4.46
1825	2.99	-6.08	1.52	-4.50
1845	3.00	-6.03	1.35	-4.34
1865	3.00	-5.97	1.25	-4.19
1880	3.00	-5.94	1.20	-4.08



Reference Circuit



Reference circuit assembly diagram (not to scale)*

Reference Circuit (cont.)

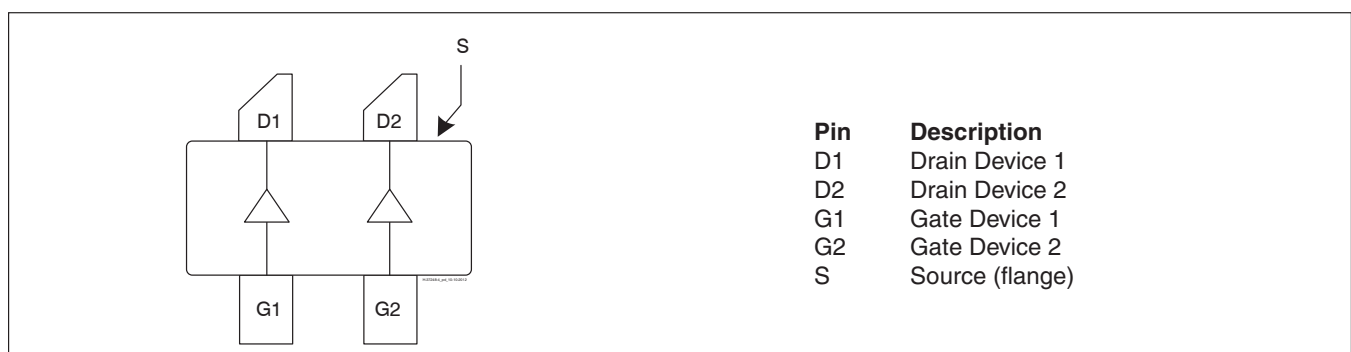
Reference Circuit Assembly

DUT	PTFB181702FC
Test Fixture Part No.	LTN/PTFB181702FC
PCB	Rogers 4350, 0.508 mm [0.020"] 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/rtpower	

Components Information

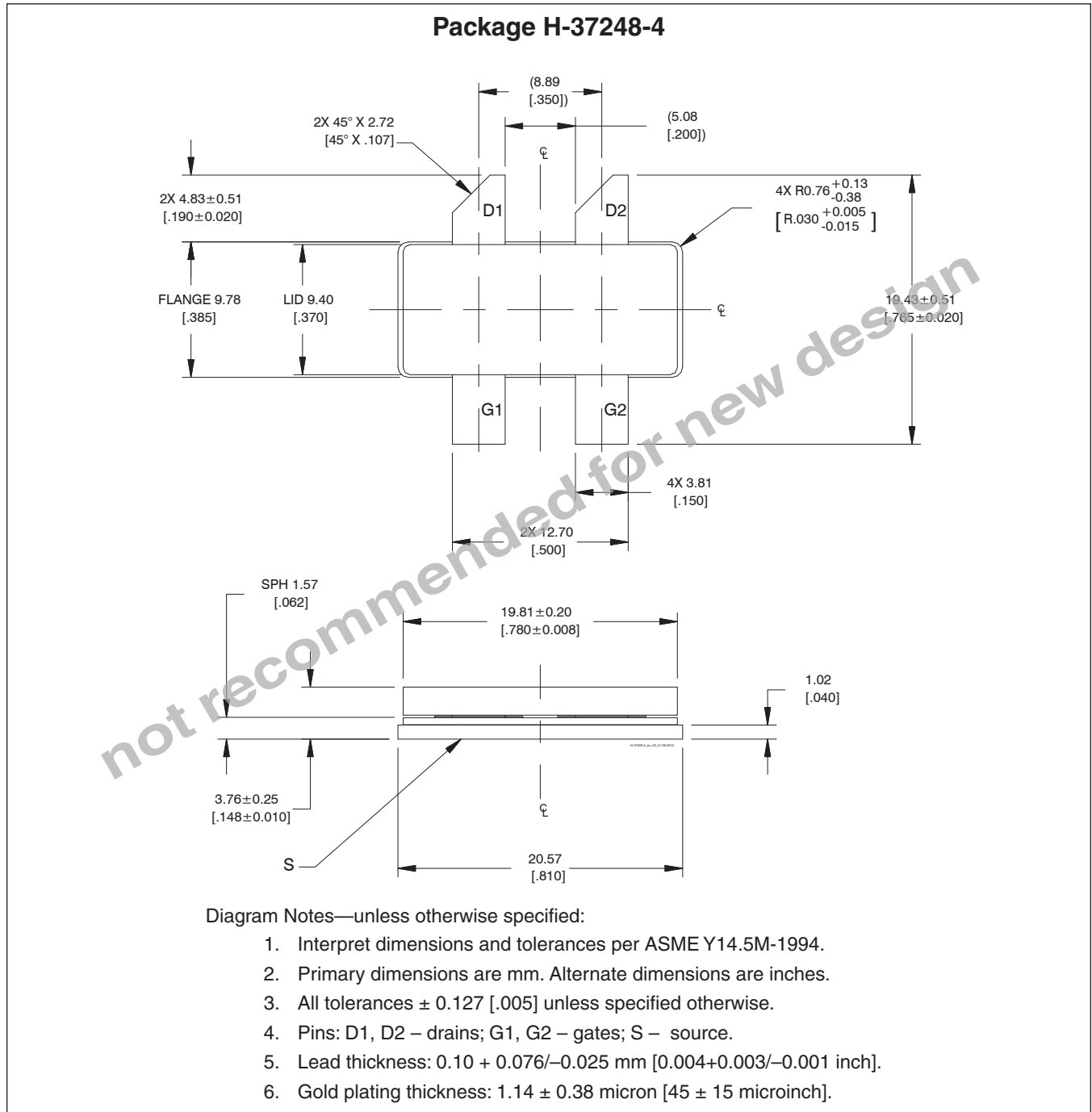
Component	Description	Suggested Supplier	P/N
Input			
C101, C102	Capacitor, 10 μ F	Digi-Key	490-4393-2-ND
C103, C104	Capacitor, 18 pF	ATC	ATC800A180JT250XT
C105	Capacitor, 1.5 pF	ATC	ATC800A1R5BT250XT
C106, C107	EMI Suppression Capacitor	Digi-Key	NFM18PS105R0J3D-ND
C801, C804	Capacitor, 10 μ F	Digi-Key	587-1818-2-ND
C802	Chip capacitor, 1000 pF	Digi-Key	PCC1772CT-ND
C803	Capacitor, 1 μ F	Digi-Key	490-4736-2-ND
L101, L102	Inductor, 27.3 nH	Coilcraft	0908SQ-27NGLB
R101, R102, R803	Resistor, 10 ohm	Digi-Key	P10GTR-ND
R801	Resistor, 100 ohm	Digi-Key	P100GTR-ND
R802	Resistor, 1300 ohm	Digi-Key	P1.3KGTR-ND
R804	Resistor, 1200 ohm	Digi-Key	P1.2KGTR-ND
S1	Potentiometer, 2k Ω	Digi-Key	3224W-202ECT-ND
S2	Transistor	Digi-Key	BCP56-ND
S3	Voltage Regulator	Digi-Key	LM7805
Output			
C201, C211	Chip capacitor, 1.2 pF	ATC	ATC800A1R2BT250XT
C202, C203, C204	Chip capacitor, 18 pF	ATC	ATC800A180JT250XT
C205, C208	Capacitor, 220 μ F	Digi-Key	PCE4444TR-ND
C206, C207, C209, C210	Capacitor, 10 μ F	Digi-Key	587-1818-2-ND

Pinout Diagram (top view)



Lead connections for PTFB181702FC

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

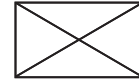
Revision	Date	Data Sheet Type	Page	Subjects (major changes since last revision)
01	2012-05-29	Advance	All	Data Sheet reflects advance specification for product development
02	2012-10-15	Advance	All	Data sheet reflects released product specifications
02.1	2016-06-10	Production	2, 7	Updated ordering code to R0, revised package outline-minor changes
03	2018-02-21	Production	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 2018-02-21

Published by
Infineon Technologies AG
81726 Munich, 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.