

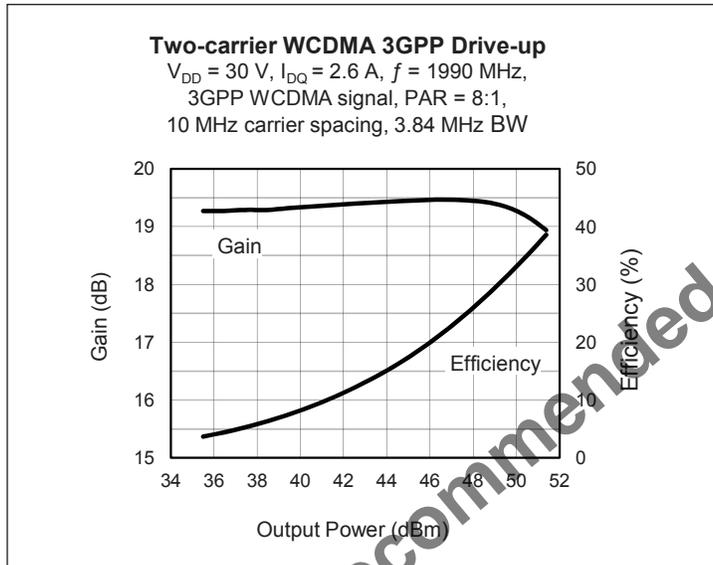
Thermally-Enhanced High Power RF LDMOS FET 340 W, 30 V, 1930 – 1990 MHz

Description

The PTFB193408SV is a 340-watt symmetrical push-pull LDMOS FET intended for use in multi-standard cellular power amplifier applications in the 1930 to 1990 MHz frequency band. Features include input and output matching, high gain and thermally-enhanced packages. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTFB193408SV
Package H-34275G-6/2



Features

- Broadband internal matching, input and output
- Wide video bandwidth
- Typical single-carrier WCDMA performance, 1990 MHz, 30 V
 - Output power = 100 W
 - Efficiency = 33%
 - Gain = 19.0 dB
 - PAR = 7.5 dB @ 0.01% CCDF
 - ACPR @ 5 MHz = -35 dBc
- Increased negative gate-source voltage range for improved performance in Doherty amplifiers
- Capable of handling 10:1 VSWR at 30 V, 340 W (CW) output power
- Integrated ESD protection
- Excellent thermal stability
- RoHS-compliant

RF Characteristics

Single-carrier WCDMA Measurements (tested in Infineon test fixture)

$V_{DD} = 30\text{ V}$, $I_{DQ} = 2.65\text{ A}$, $P_{OUT} = 80\text{ W}$ average, $f = 1990\text{ MHz}$

WCDMA signal: 3GPP, 3.84 MHz channel bandwidth, with 10 dB peak/average @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	18	19	—	dB
Drain Efficiency	η_D	29	31	—	%
Adjacent Channel Power Ratio	ACPR	—	-32	-30	dBc

(table continued next page)

All published data at $T_{CASE} = 25^\circ\text{C}$ unless otherwise indicated

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics (cont.)

Two-carrier WCDMA Characteristics (not subject to production test—verified by design/characterization in Infineon test fixture)

 $V_{DD} = 30\text{ V}$, $I_{DQ} = 2.6\text{ A}$, $P_{OUT} = 80\text{ W}$ average, $f_1 = 1980\text{ MHz}$, $f_2 = 1990\text{ MHz}$,
WCDMA signal: 3GPP, 3.84 MHz channel bandwidth, 8.0 dB peak/average @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	19.5	—	dB
Drain Efficiency	η_D	—	29	—	%
Intermodulation Distortion	IMD	—	-33	—	dBc

Two-tone Characteristics (not subject to production test—verified by design/characterization in Infineon test fixture)

 $V_{DD} = 30\text{ V}$, $I_{DQ} = 2.6\text{ A}$, $P_{OUT} = 265\text{ W PEP}$, $f = 1990\text{ MHz}$, tone spacing = 1 MHz

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	19.5	—	dB
Drain Efficiency	η_D	—	36	—	%
Intermodulation Distortion	IMD	—	-30	—	dBc

DC Characteristics (both sides)

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	$V_{DS} = 30\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	μA
	$V_{DS} = 63\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10.0	μA
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.05	—	Ω
Operating Gate Voltage	$V_{DS} = 30\text{ V}$, $I_{DQ} = 2.6\text{ A}$	V_{GS}	2.3	2.8	3.3	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1.0	μA

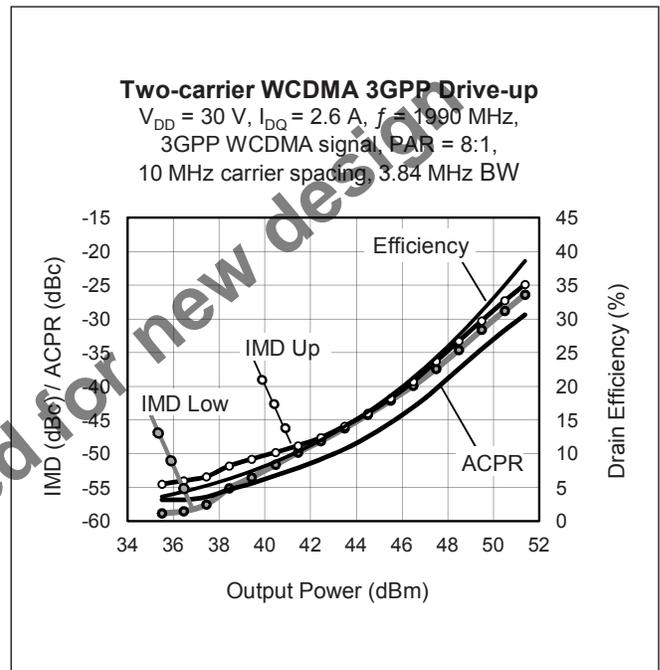
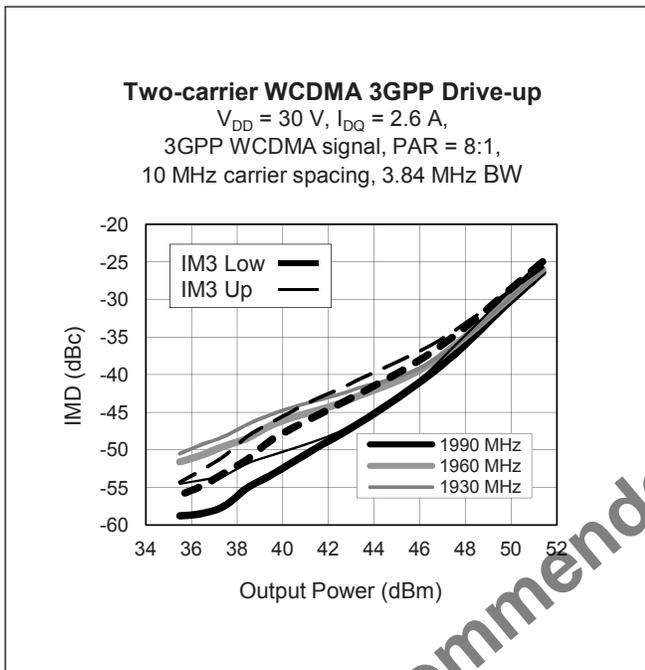
Maximum Ratings

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 ($T_{CASE} = 70^{\circ}\text{C}$, 300 W CW)	$R_{\theta JC}$	0.2	$^{\circ}\text{C/W}$

Ordering Information

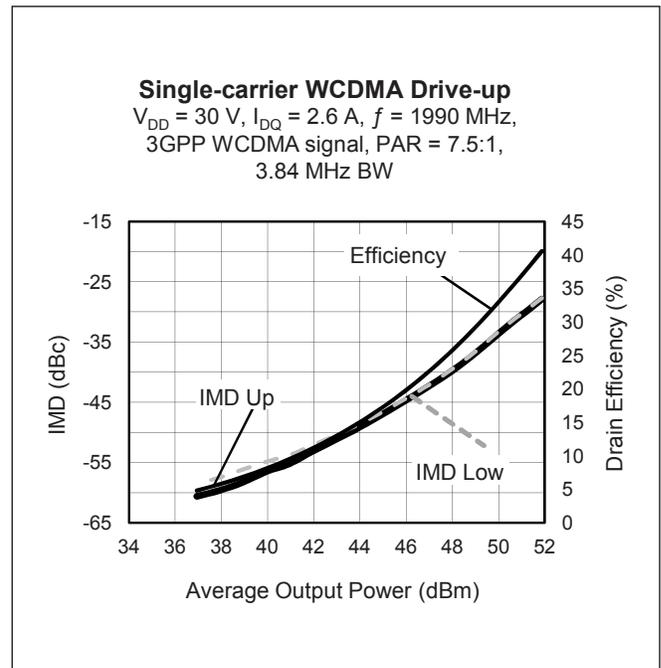
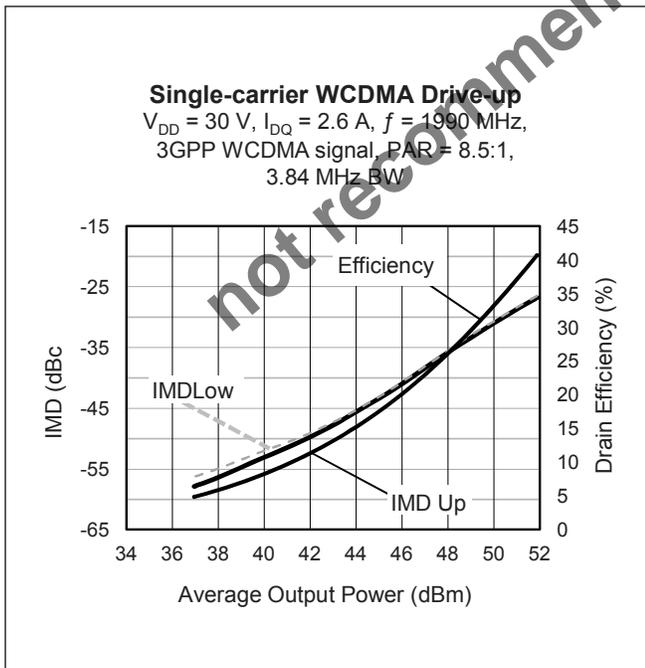
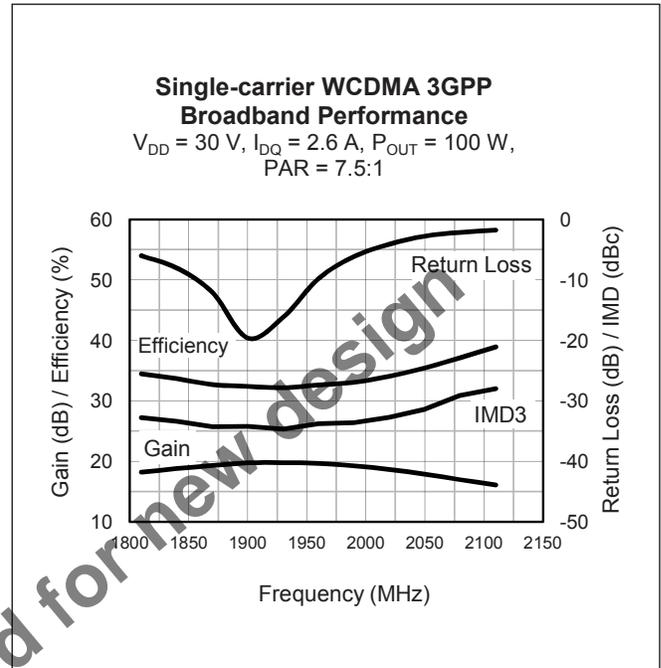
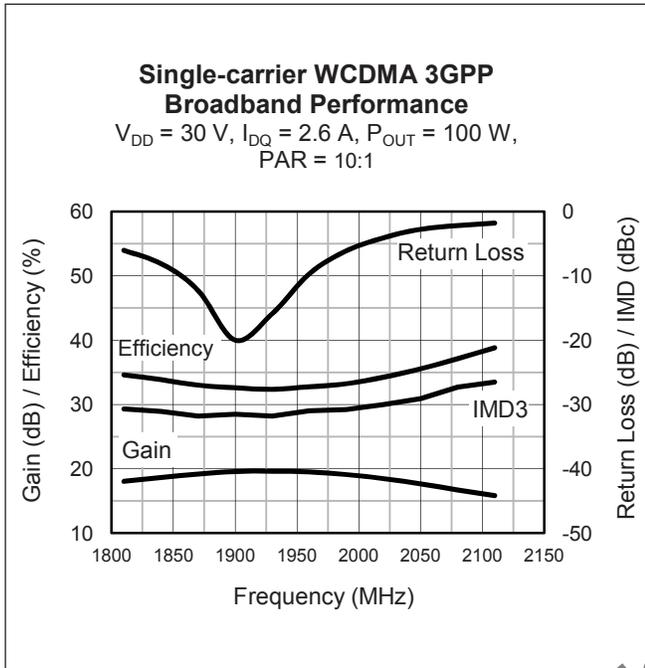
Type and Version	Order Code	Package and Description	Shipping
PTFB 193408SV V1 R250	PTFB193408SVV1R250XTMA1	H-34275G-6/2, ceramic open-cavity, formed leads, earless	Tape & Reel, 250 pcs

Typical Performance (data taken in a production test fixture)

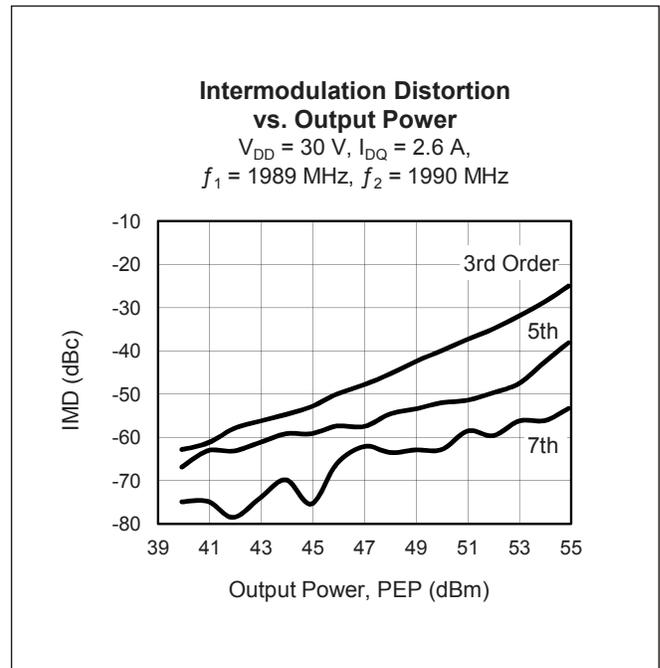
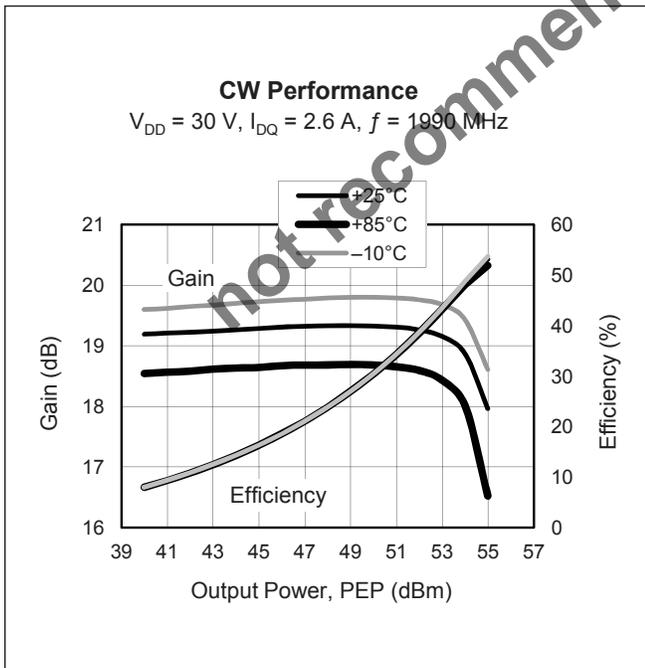
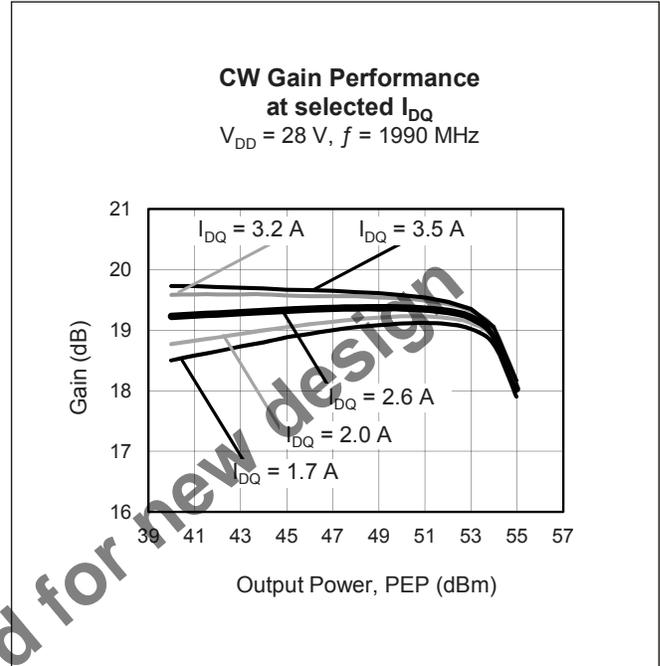
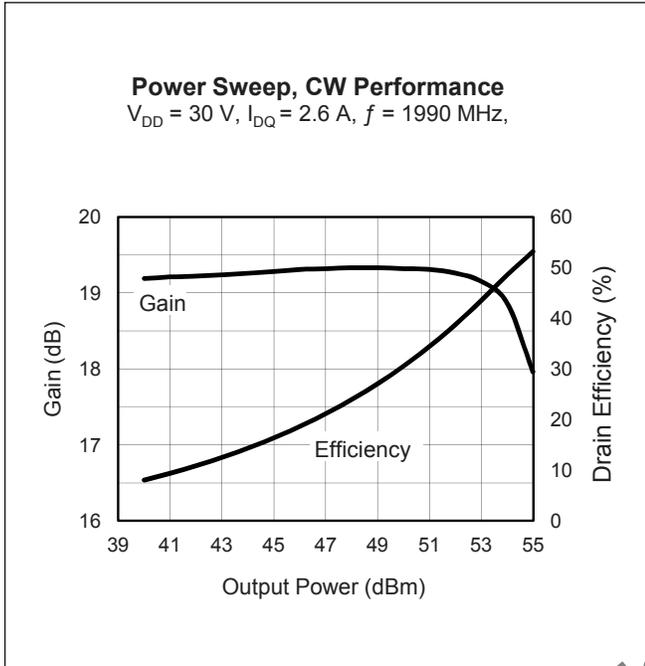


not recommended for new designs

Typical Performance (cont.)

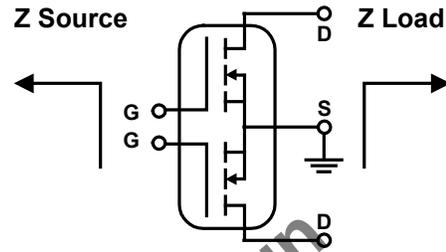


Typical Performance (cont.)

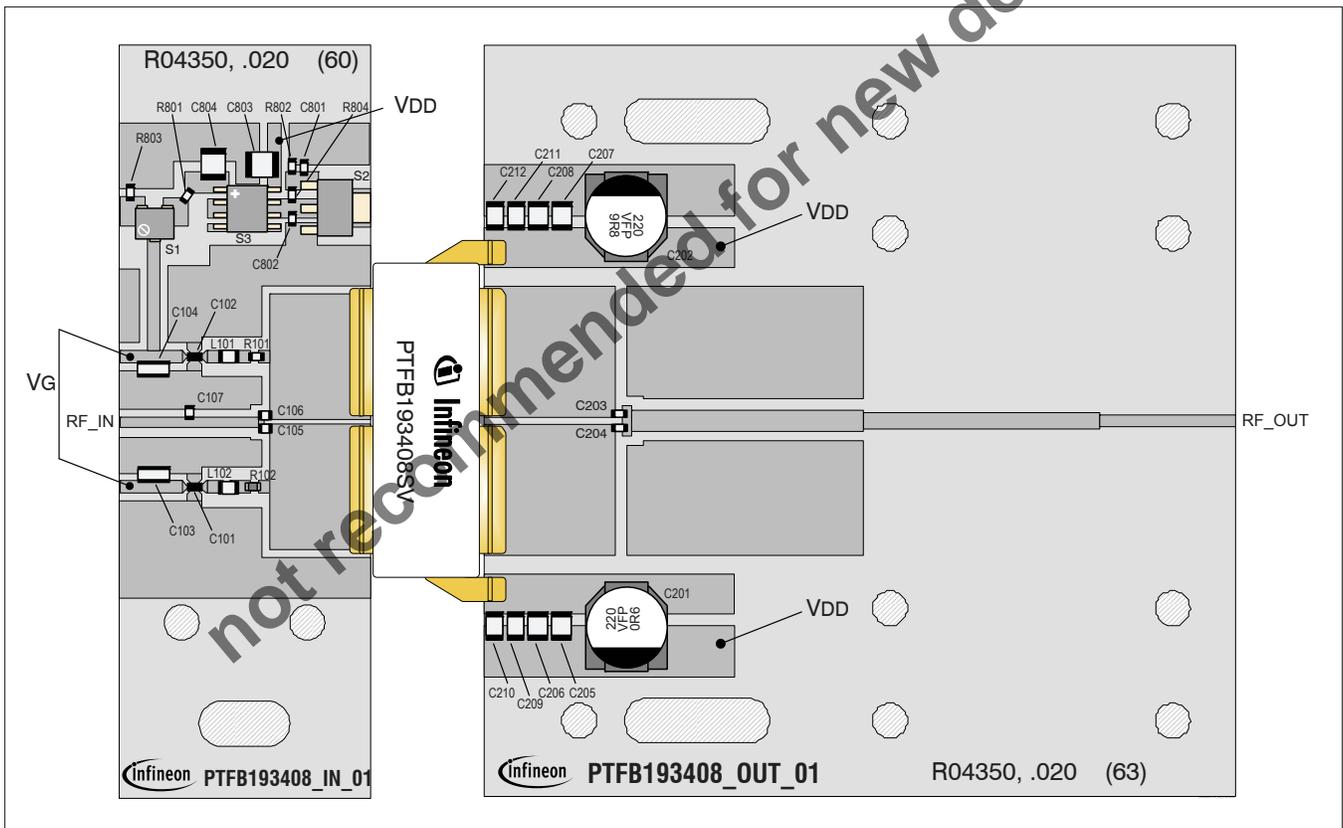


Broadband Circuit Impedance (combined leads)

Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1900	1.10	-3.23	0.55	-2.09
1930	1.11	-3.16	0.54	-2.01
1960	1.11	-3.09	0.53	-1.93
1990	1.12	-3.03	0.53	-1.86
2020	1.12	-2.97	0.52	-1.78



Reference Circuit



Reference circuit assembly diagram (not to scale)

Reference Circuit Assembly

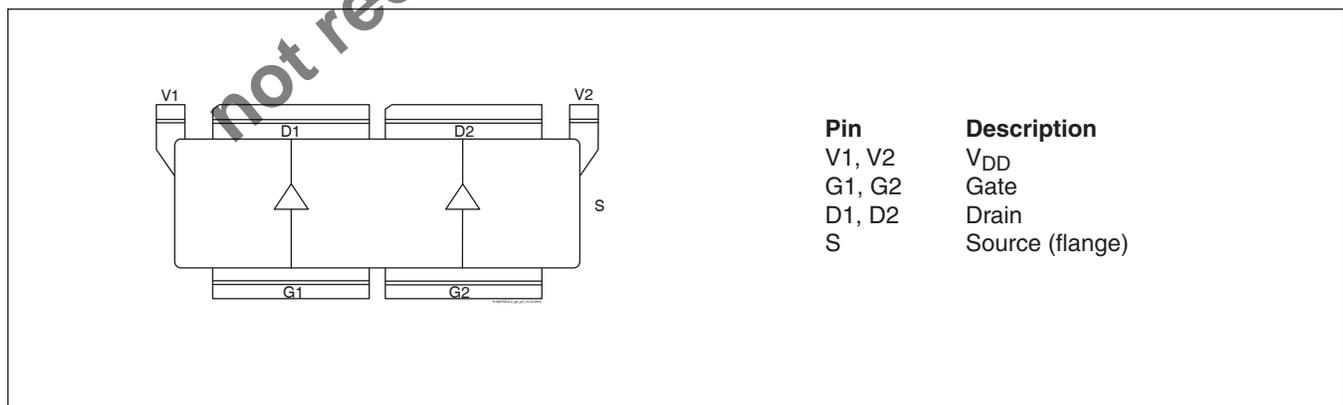
DUT	PTFB193408SV V1
Test Fixture Part No.	LTN/PTFB193408SV
PCB	Rogers 4350, 0.508 mm [.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$
Find Gerber files for this test fixture on the Infineon Web site at http://www.infineon.com/rfpower	

Reference Circuit (cont.)

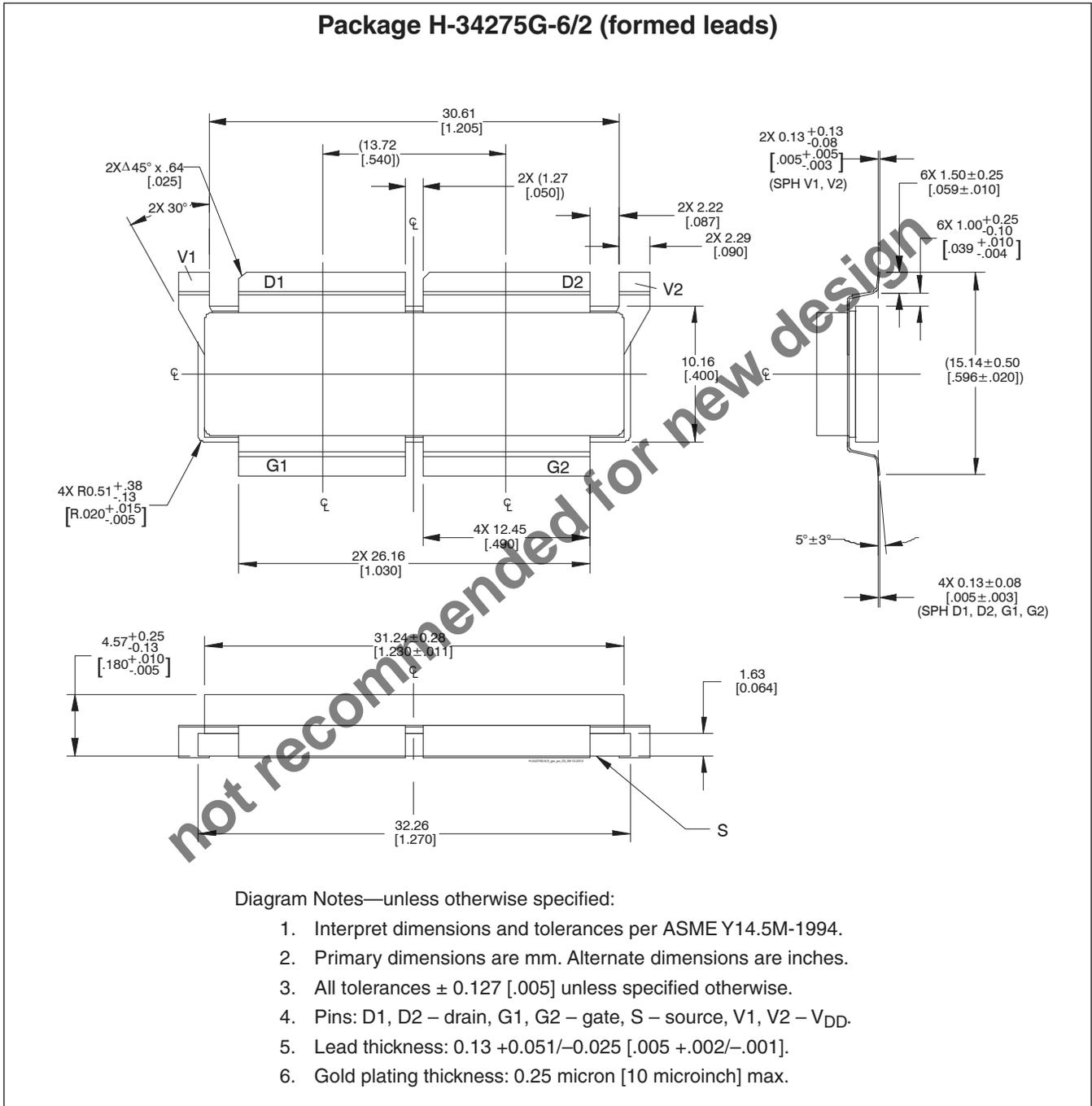
Component Information

Component	Description	Suggested Supplier	P/N
Input			
C101, C102	Chip capacitor, 1 μ F	Digi-Key	NFM18PS105R0J3D-ND
C103, C104	Capacitor, 10 μ F	Digi-Key	490-4393-2-ND
C105, C106	Capacitor, 18 pF	ATC	800A180JT
C107	Chip capacitor, 1.5 pF	ATC	ATC100A1R5BW150XB
C801	Chip capacitor, 1,000 pF	Digi-Key	PCC1772CT-ND
C802	Capacitor, 1 μ F	Digi-Key	490-4736-2-ND
C803, C804	Capacitor, 10 μ F	Digi-Key	587-1818-2-ND
L101, L102	Inductor, 22 nH	ATC	0805WL220JT
R101, R102, R803	Resistor, 10 Ω	Digi-Key	P10GTR-ND
R801	Resistor, 100 Ω	Digi-Key	P100GTR-ND
R802	Resistor, 1,300 Ω	Digi-Key	P1.3KGTR-ND
R804	Resistor, 1,200 Ω	Digi-Key	P1.2KGTR-ND
S1	Potentiometer, 2k Ω	Digi-Key	3224W-202ECT-ND
S2	Transistor	Infineon Technologies	BCP56-ND
S3	Voltage Regulator	Digi-Key	LM780L05ACM-ND
Output			
C201, C202	Capacitor, 220 μ F	Digi-Key	PCE4444TR-ND
C203, C204	Capacitor, 18 pF	ATC	800A180JT
C205, C206, C207, C208	Capacitor, 4.7 μ F	Digi-Key	490-1864-2-ND
C209, C210, C211, C212	Capacitor, 10 μ F	Digi-Key	587-1818-2-ND

Pinout Diagram



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: 2015-10-01

Data Sheet

Previous Version: 2012-11-30, Data Sheet, Rev. 02.1

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

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