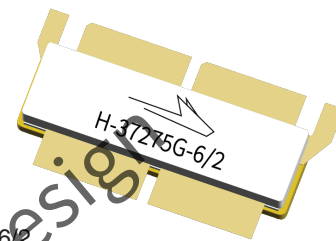


PTFC262808FV

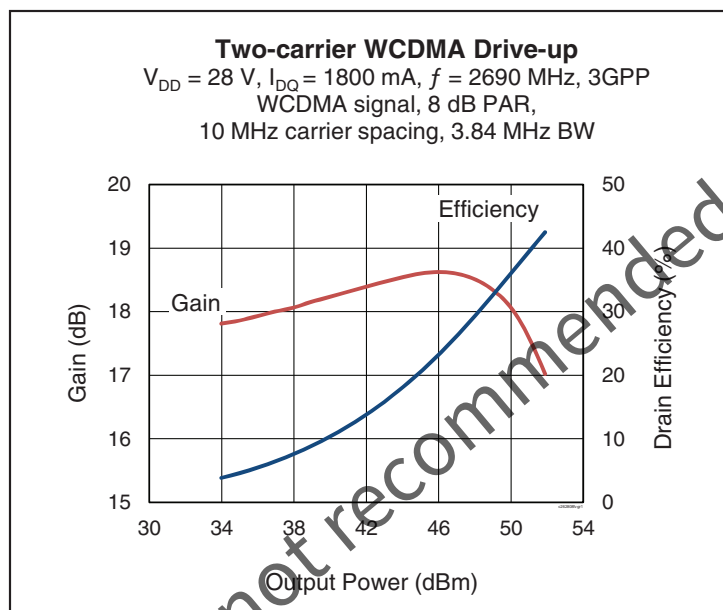
Thermally-Enhanced High Power RF LDMOS FET 280 W, 28 V, 2620 – 2690 MHz

Description

The PTFC262808FV is a 280-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. Manufactured with Wolfspeed's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.



PTFC262808FV
Package H-37275G-6/2



Features

- Broadband internal matching
- Typical 1-carrier WCDMA performance, 2655 MHz, 28 V, 10 dB PAR
 - Output power at $P_{1dB} = 56\text{ W avg.}$
 - Efficiency = 24%
 - Gain = 18 dB
 - ACPR = -33 dBc @ 3.84 MHz
- Integrated ESD protection: Human Body Model, Class 1C (per JESD22-A114)
- Low thermal resistance
- RoHS-compliant
- Capable of handling 10:1 VSWR at 28 V, 280 W (CW) output power

RF Characteristics

Single-carrier WCDMA Specifications (tested in Wolfspeed production test fixture)

$V_{DD} = 28\text{ V}$, $I_{DQ} = 1800\text{ mA}$, $P_{OUT} = 56\text{ W}$ average, $f = 2655\text{ MHz}$, 3GPP WCDMA signal, channel bandwidth = 3.84 MHz, peak/average = 10 dB @ 0.01% CCDF

| Characteristic | Symbol | Min | Typ | Max | Unit |
|------------------------------|----------|------|------|-----|------|
| Gain | G_{ps} | 16.5 | 18.0 | — | dB |
| Drain Efficiency | η_D | 22 | 24 | — | % |
| Adjacent Channel Power Ratio | ACPR | — | -33 | -30 | dBc |

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

DC Characteristics (single 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} | — | — | 1.0 | μA |
| | $V_{DS} = 63\text{ V}, V_{GS} = 0\text{ V}$ | I_{DSS} | — | — | 10.0 | μA |
| Gate Leakage Current | $V_{GS} = 10\text{ V}, V_{DS} = 0\text{ V}$ | I_{GSS} | — | — | 1 | μA |
| On-State Resistance | $V_{GS} = 10\text{ V}, V_{DS} = 0.1\text{ V}$ | $R_{DS(on)}$ | — | 0.05 | — | Ω |
| Operating Gate Voltage | $V_{DS} = 28\text{ V}, I_{DQ} = 1800\text{ mA}$ | V_{GS} | — | 2.6 | — | V |

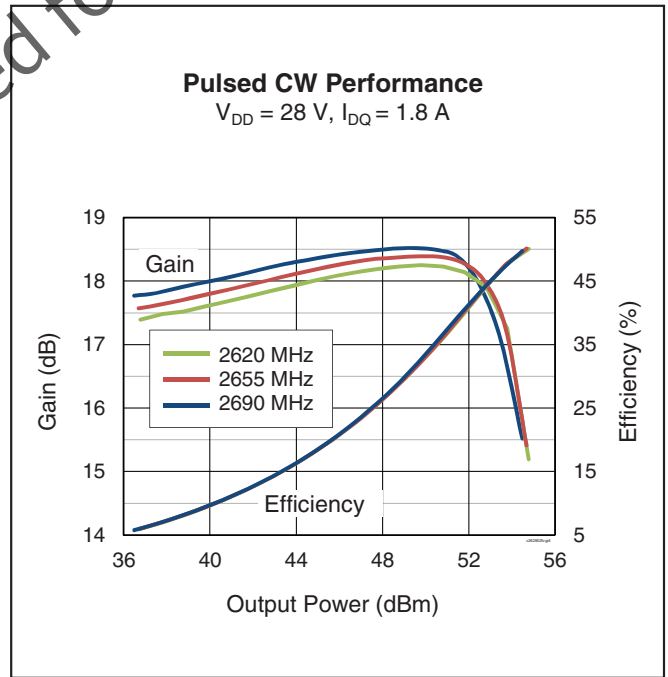
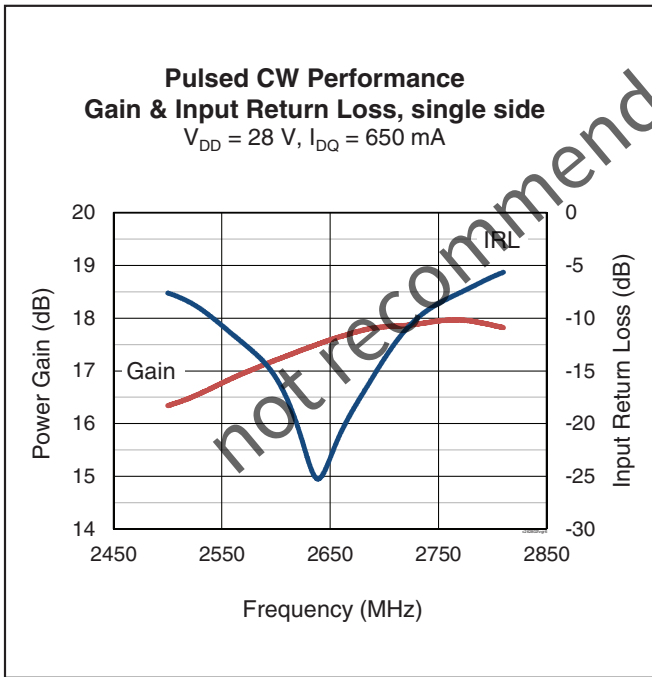
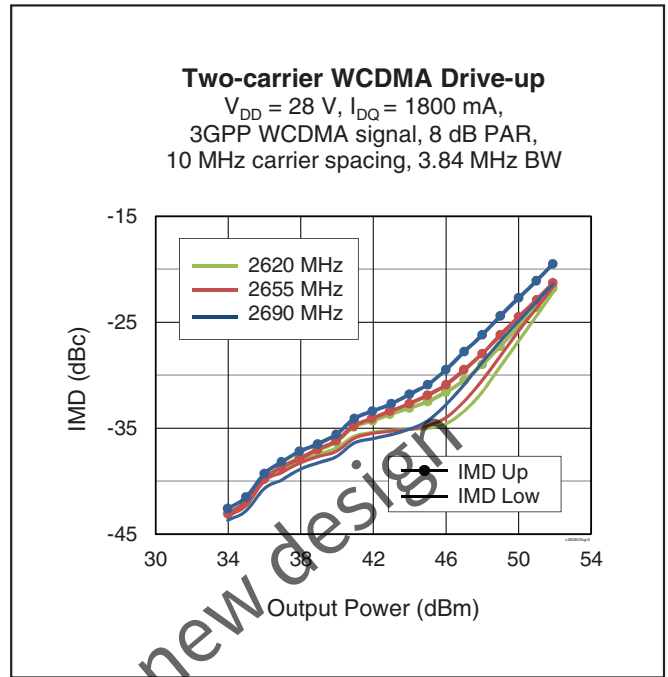
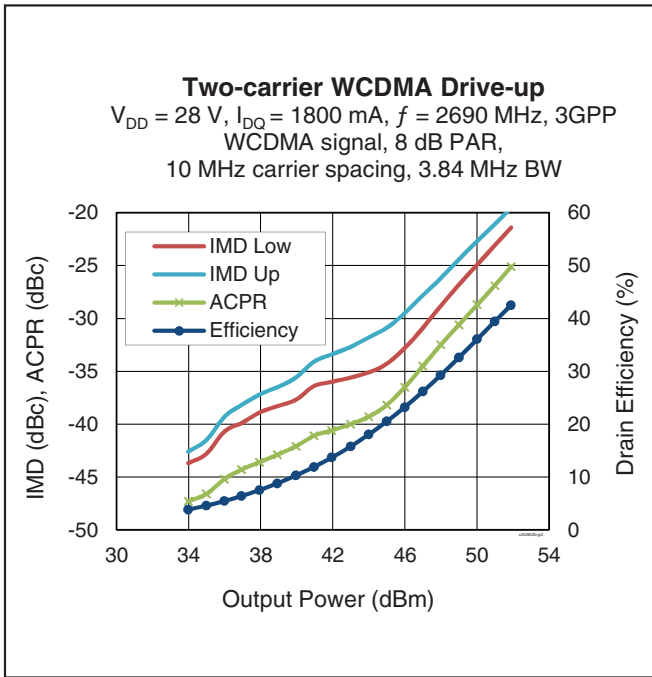
Maximum Ratings

| 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 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{STG} | -65 to +150 | $^{\circ}\text{C}$ |
| Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}, 200\text{ W CW}$) | $R_{\theta JC}$ | 0.20 | $^{\circ}\text{C/W}$ |

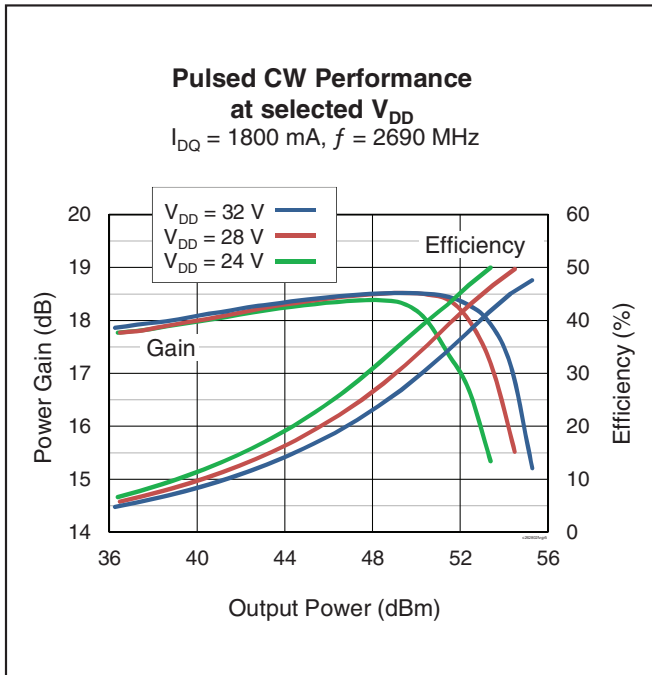
Ordering Information

| Type and Version | Order Code | Package and Description | Shipping |
|----------------------|----------------------|--|----------------------|
| PTFC262808FV V1 R0 | PTFC262808FV-V1-R0 | H-37275G-6/2, ceramic open-cavity, earless | Tape & Reel, 50 pcs |
| PTFC262808FV V1 R250 | PTFC262808FV-V1-R250 | H-37275G-6/2, ceramic open-cavity, earless | Tape & Reel, 250 pcs |

Typical Performance (data taken in Wolfspeed production test fixture)

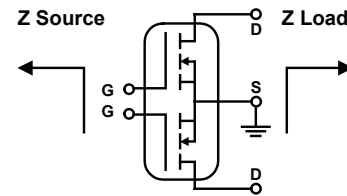


Typical Performance (cont.)



Broadband Circuit Impedance

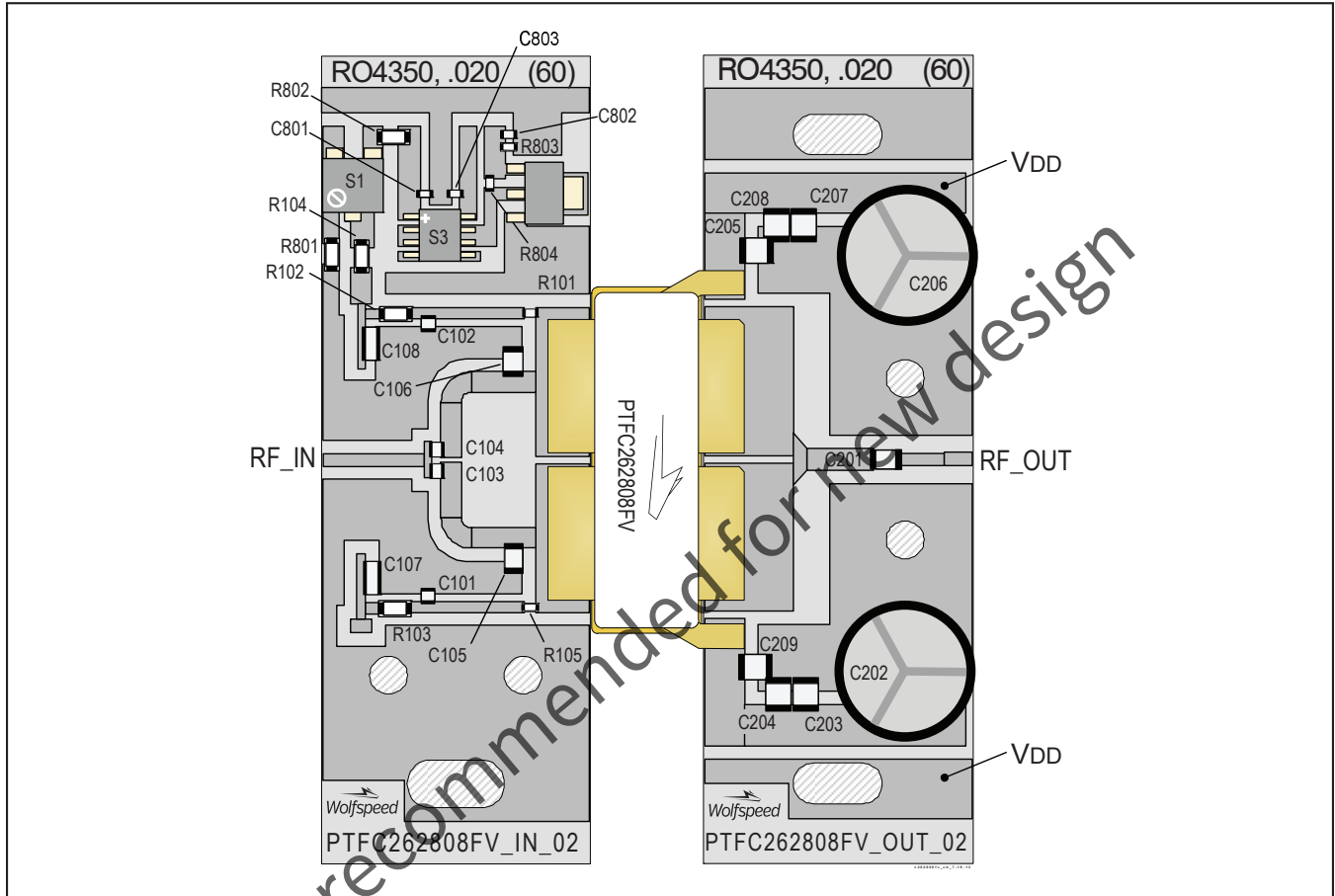
| Frequency MHz | Z Source Ω | | Z Load Ω | |
|------------------|-------------------|-------|-----------------|-------|
| | R | jX | R | jX |
| 2620 | 2.88 | -1.58 | 0.55 | -2.45 |
| 2655 | 2.99 | -1.55 | 0.53 | -2.39 |
| 2690 | 3.10 | -1.52 | 0.52 | -2.33 |



not recommended for new design

Reference Circuit, tuned for 2620 – 2690 MHz

| | |
|---|--|
| DUT | PTFC262808FV |
| Test Fixture Part No. | LTN/PTFC262808FV V1 |
| PCB | Rogers 4350, 0.508 mm [.020"] thick, 2 oz. copper, $\epsilon_r = 3.66$ |
| Find Gerber files for this test fixture on the Wolfspeed Web site at (www.wolfspeed.com/RF) | |



Reference circuit assembly diagram (not to scale)

Component Information

| Component | Description | Suggested Manufacturer | P/N |
|------------------|--------------------------|----------------------------------|--------------------|
| Input | | | |
| C101, C102 | Chip capacitor, 10 pF | ATC | ATC100A100JW500XB |
| C103, C104 | Chip capacitor, 18 pF | ATC | ATC100A180JW150XB |
| C105, C106 | Chip capacitor, 0.4 pF | ATC | ATC100B0R4CW500XB |
| C107, C108 | Capacitor, 10 μ F | Murata Electronics North America | LLL31BC70G106MA01L |
| C801, C802, C803 | Chip capacitor, 1,000 pF | Panasonic | ECJ-1VB1H102K |
| R101, R102 | Resistor, 10 Ω | Panasonic Electronic Components | ERJ-3GEYJ100V |

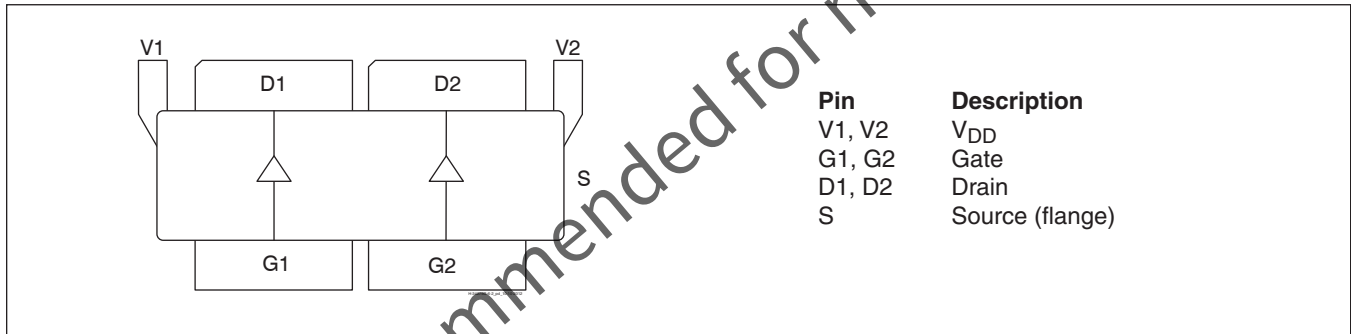
(table cont. next page)

Reference Circuit (cont.)

Component Information (cont.)

| Component | Description | Suggested Manufacturer | P/N |
|------------------------------------|-------------------------|------------------------------------|-------------------|
| Input (cont.) | | | |
| R102, R103, R104, R801, R802 | Resistor, 10 Ω | Panasonic Electronic Components | ERJ-8GEYJ100V |
| R803 | Resistor, 1.3k Ω | Panasonic Electronic Components | ERJ-3GEYJ132V |
| R804 | Resistor, 1.2k Ω | Panasonic Electronic Components | ERJ-3GEYJ122V |
| S1 | Potentiometer, 2k Ω | Bourns Inc. | 3224W-1-202E |
| S2 | Transistor | Infineon Technologies | BCP56-10 |
| S3 | Voltage regulator | Fairchild Semiconductor | LM7805 |
| Output | | | |
| C201 | Chip capacitor, 18 pF | ATC | ATC100B180KW500XB |
| C202, C206 | Capacitor, 470 μF, 50 V | Cornell Dubilier Electronics (CDE) | SEK471M050ST |
| C203, C204, C205, C207, C208, C209 | Capacitor, 10 μF | Taiyo Yuden | UMK925C7106MM-T |

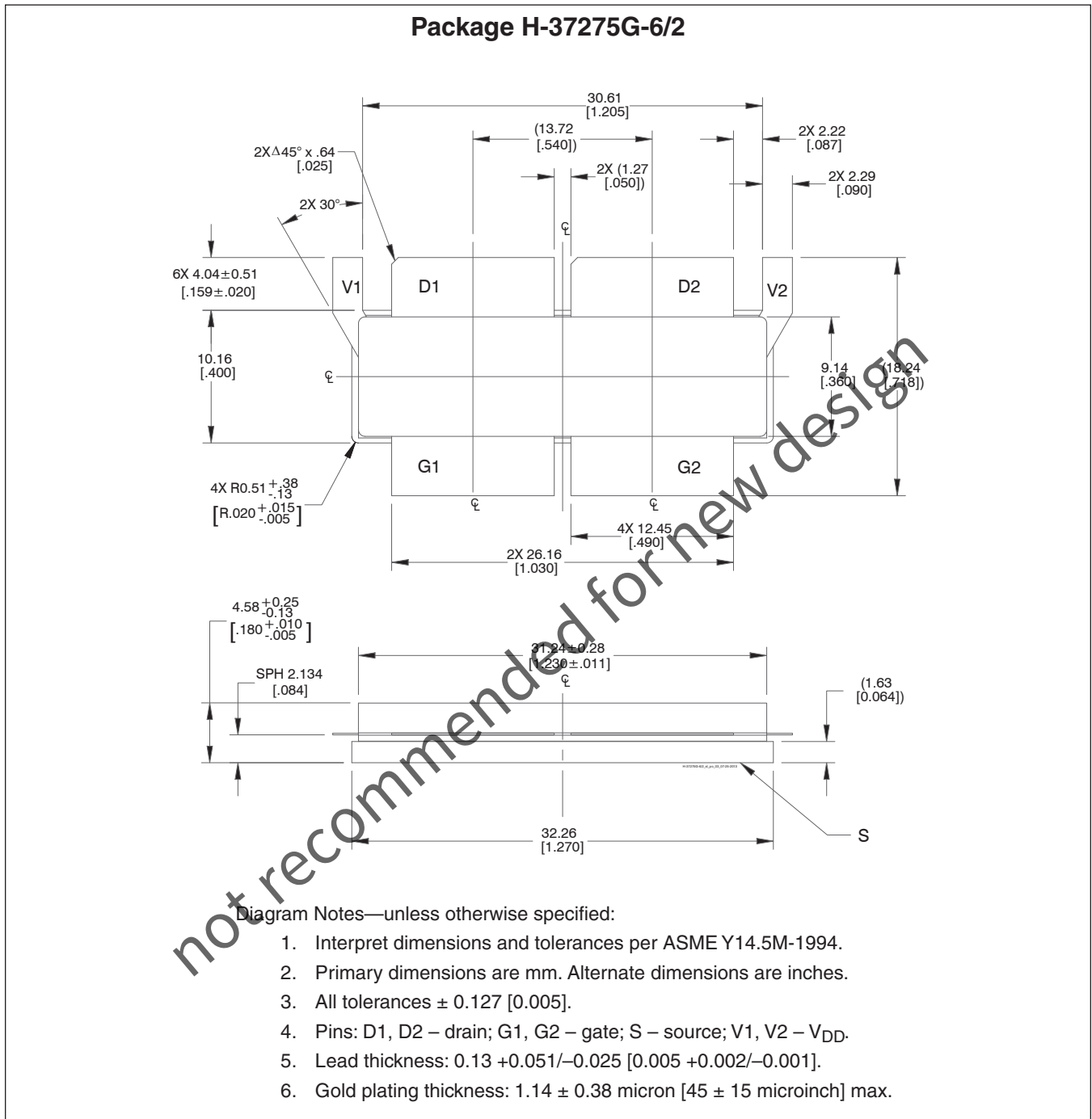
Pinout Diagram (top view)



Lead connections for PTFC262808FV

not recommended for new designs

Package Outline Specifications



Revision History

| Revision | Date | Data Sheet Type | Page | Subjects (major changes since last revision) |
|----------|------------|-----------------|------|---|
| 01 | 2012-09-14 | Advance | All | New product, proposed only. |
| 02 | 2013-07-24 | Data Sheet | All | Product released to production. All information updated. |
| 02.1 | 2013-08-02 | Data Sheet | 2 | Order Code for Tape and Reel corrected. |
| 02.2 | 2013-08-06 | Data Sheet | 2 | Order Code for Tray corrected. |
| 03 | 2016-06-22 | Data Sheet | 2 | Operating Gate Voltage conditions corrected, maximum junction temperature raised to 225 °C, update ordering information |
| 04 | 2018-07-03 | Production | All | Converted to Wolfspeed Data Sheet. Not recommended for new design |

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Notes

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