Preliminary PTFA092211EL
PTFA092211FL

green Product

Thermally-Enhanced High Power RF LDMOS FETs
220 W, 920 – 960 MHz

Description

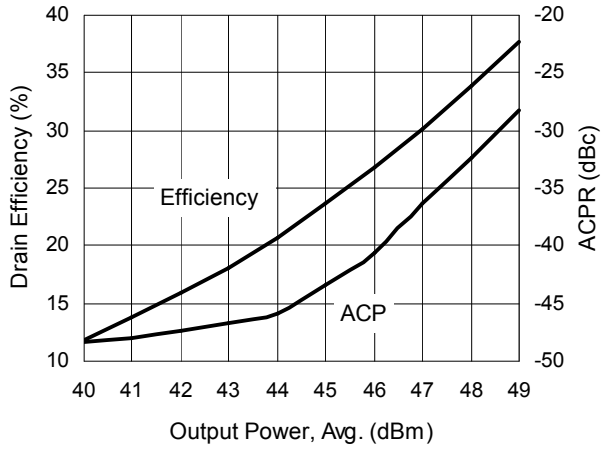
The PTFA092211EL and PTFA092211FL are 220-watt, internally-matched LDMOS FETs intended for EDGE and WCDMA applications in the 920 to 960 MHz band. Manufactured with Infineon's advanced LDMOS process, these devices provide excellent thermal performance and superior reliability.

PTFA092211EL*
Package H-33288-2

PTFA092211FL*
Package H-34288-2

Two-carrier WCDMA Performance

V_{DD} = 30 V, I_{DQ} = 1.5 A, f = 940 MHz, 3GPP WCDMA signal, PAR = 6.5 dB, 5 MHz carrier spacing



Features

- Broadband internal matching
- Typical two-carrier WCDMA performance at 940 MHz, 30 V
  - Average output power = 50 W
  - Linear Gain = 18.0 dB
  - Efficiency = 30%
  - Intermodulation distortion = –37 dBc
- Typical CW performance, 960 MHz, 30 V
  - Output power at P–1dB = 250 W
  - Gain = 17.0 dB
  - Efficiency = 59%
- Integrated ESD protection: Human Body Model, Class 2 (minimum)
- Excellent thermal stability, low HCI drift
- Capable of handling 10:1 VSWR @ 30 V, 220 W (CW) output power
- Pb-free, RoHS-compliant and thermally-enhanced packages

RF Characteristics

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

V_{DD} = 30 V, I_{DQ} = 1850 mA, P_{OUT} = 50 W average
f_1 = 937.5 MHz, f_2 = 942.5 MHz, 3GPP signal, channel bandwidth = 3.84 MHz, peak/average = 6.5 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Intermodulation Distortion	IMD	—	–37	—	dBc
Gain	G_{ps}	—	18.0	—	dB
Drain Efficiency	η_D	—	30	—	%

All published data at T_{CASE} = 25 °C unless otherwise indicated

**See Infineon distributor for future availability.*

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics (cont.)

Two-tone Measurements (tested in Infineon test fixture)

V_{DD} = 30 V, I_{DQ} = 1850 mA, P_{OUT} = 220 W PEP, f = 940 MHz, tone spacing = 1 MHz

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	—	18.0	—	dB
Drain Efficiency	η_D	—	44	—	%
Intermodulation Distortion	IMD	—	–29	—	dBc

DC Characteristics

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}	—	—	1.0	µA
	V_{DS} = 63 V, V_{GS} = 0 V	I_{DSS}	—	—	10.0	µA
On-State Resistance	V_{GS} = 10 V, V_{DS} = 0.1 V	$R_{DS(on)}$	—	0.04	—	Ω
Operating Gate Voltage	V_{DS} = 30 V, I_{DQ} = 1850 mA	V_{GS}	2.0	2.5	3.0	V
Gate Leakage Current	V_{GS} = 10 V, V_{DS} = 0 V	I_{GSS}	—	—	1.0	µA

Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	65	V
Gate-Source Voltage	V_{GS}	–0.5 to +12	V
Junction Temperature	T_J	200	°C
Total Device Dissipation	P_D	700	W
Above 25 °C derate by		4.0	W/°C
Storage Temperature Range	T_{STG}	–40 to +150	°C
Thermal Resistance (T_{CASE} = 70 °C, 220 W CW)	$R_{\theta JC}$	0.25	°C/W

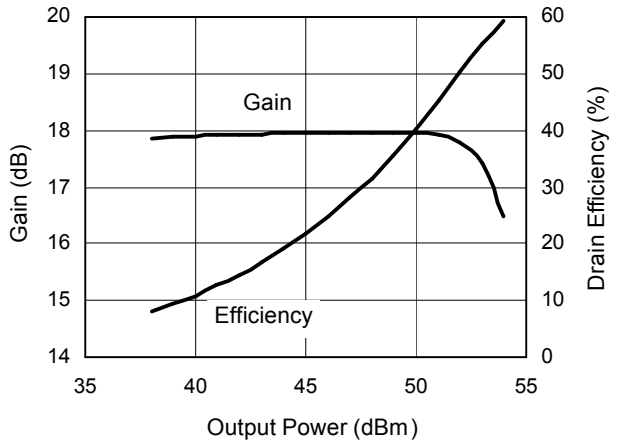
Ordering Information

Type and Version	Package Type	Package Description	Shipping	Marking
PTFA092211EL* V4	H-33288-2	Thermally-enhanced slotted flange, single-ended	Tray	PTFA092211EL
PTFA092211FL* V4	H-34288-2	Thermally-enhanced earless flange, single-ended	Tray	PTFA092211FL

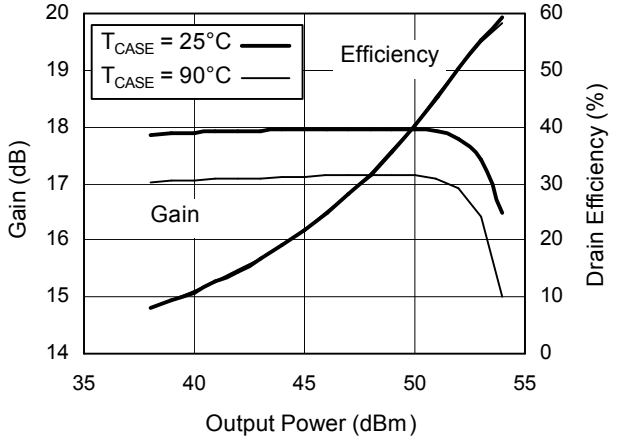
**See Infineon distributor for future availability.*

Typical Performance (data taken in a production test fixture)

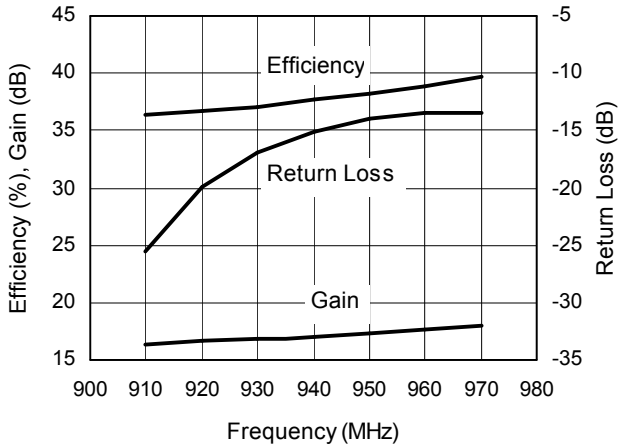
CW Performance
Gain & Efficiency vs. Output Power
V_{DD} = 30 V, I_{DQ} = 1.80 A, f = 940 MHz



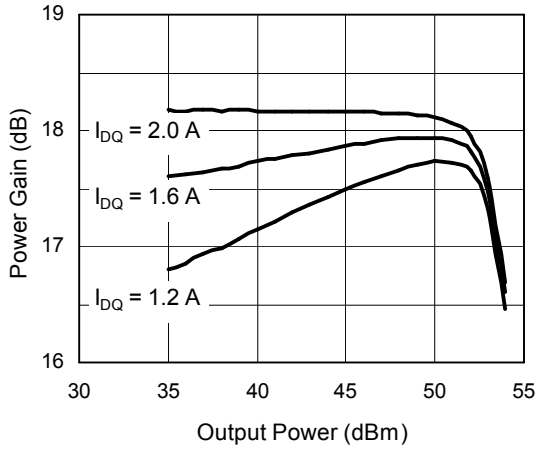
CW Performance
Gain & Efficiency vs. Output Power
V_{DD} = 30 V, I_{DQ} = 1.8 A, f = 940 MHz



Two-tone Broadband Performance
Gain, Efficiency & Return Loss vs. Frequency
V_{DD} = 30 V, I_{DQ} = 1.80 A, P_{OUT} = 110 W



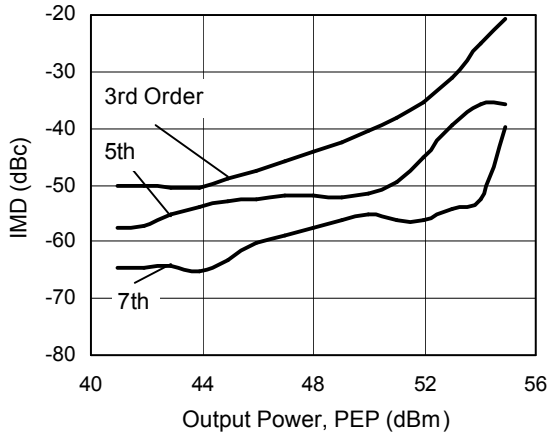
Power Sweep, CW
V_{DD} = 30 V, f = 940 MHz



Typical Performance (cont.)

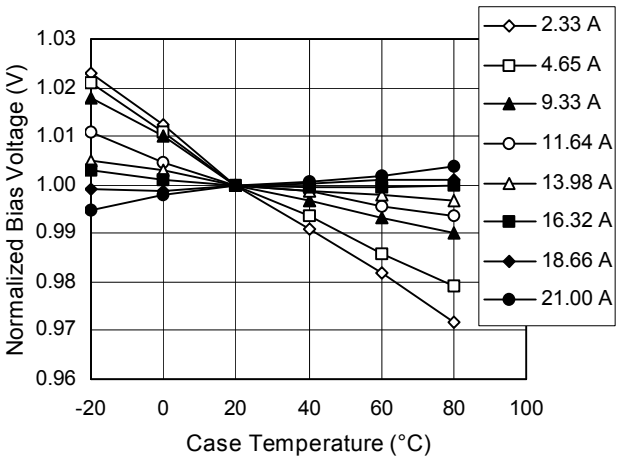
Intermodulation Distortion vs. Output Power

V_{DD} = 30 V, I_{DQ} = 1.6 A, f_1 = 939 MHz, f_2 = 940 MHz



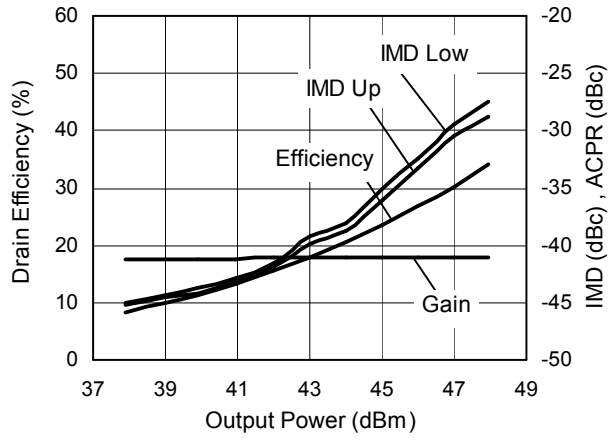
Bias Voltage vs. Temperature

Voltage normalized to typical gate voltage, series show current



Six-carrier GSM Performance

V_{DD} = 30 V, I_{DQ} = 1600 mA, f = 940 MHz, P/AR = 7 dB



Package Outline Specifications

Package H-33288-2

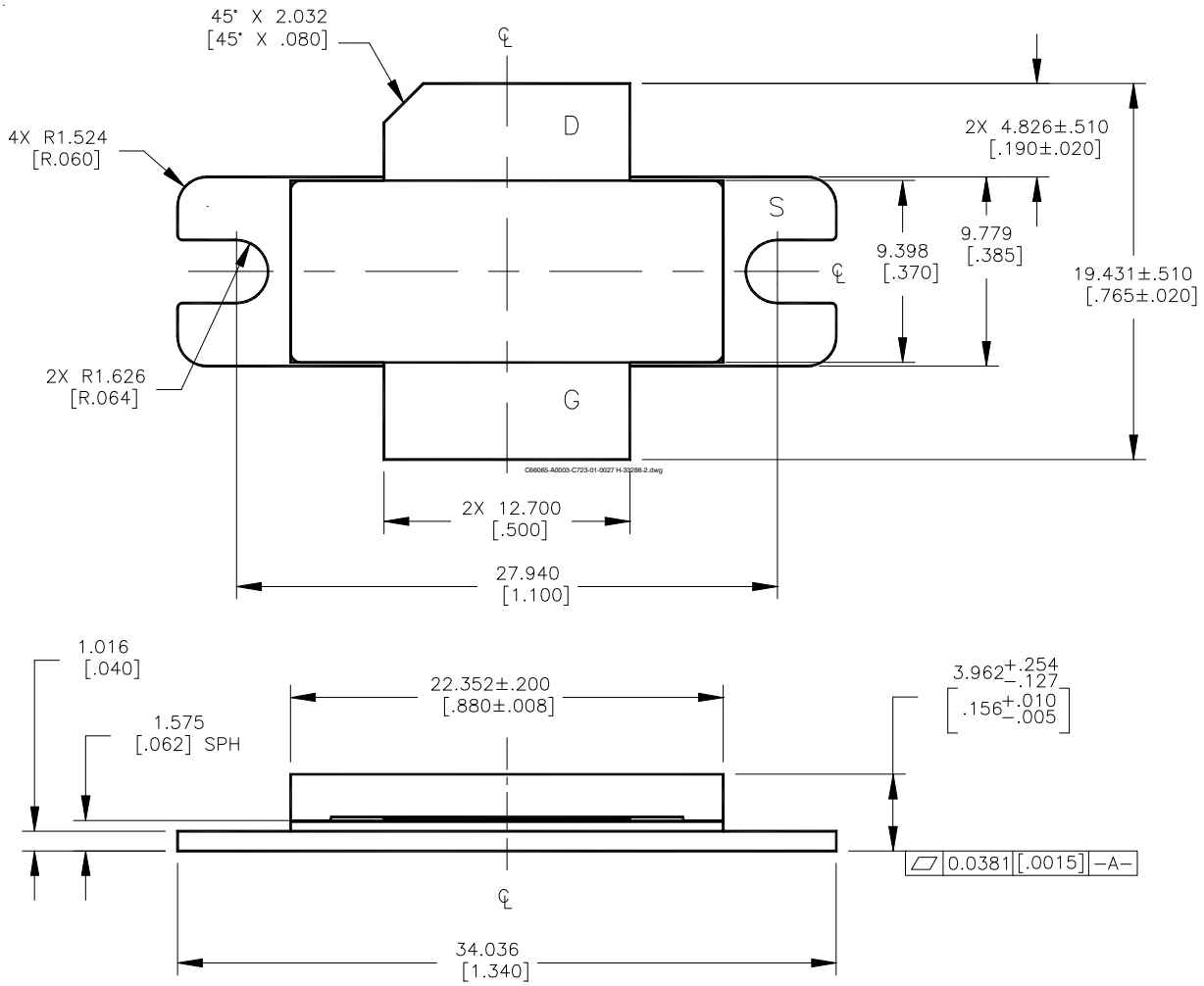


Diagram Notes—unless otherwise specified:

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] unless specified otherwise.
4. Pins: D = drain, S = source, G = gate.
5. Lead thickness: 0.10 +0.051/–0.025 [.004 +.002/–.001].
6. Gold plating less than 0.25 micron [10 microinch].

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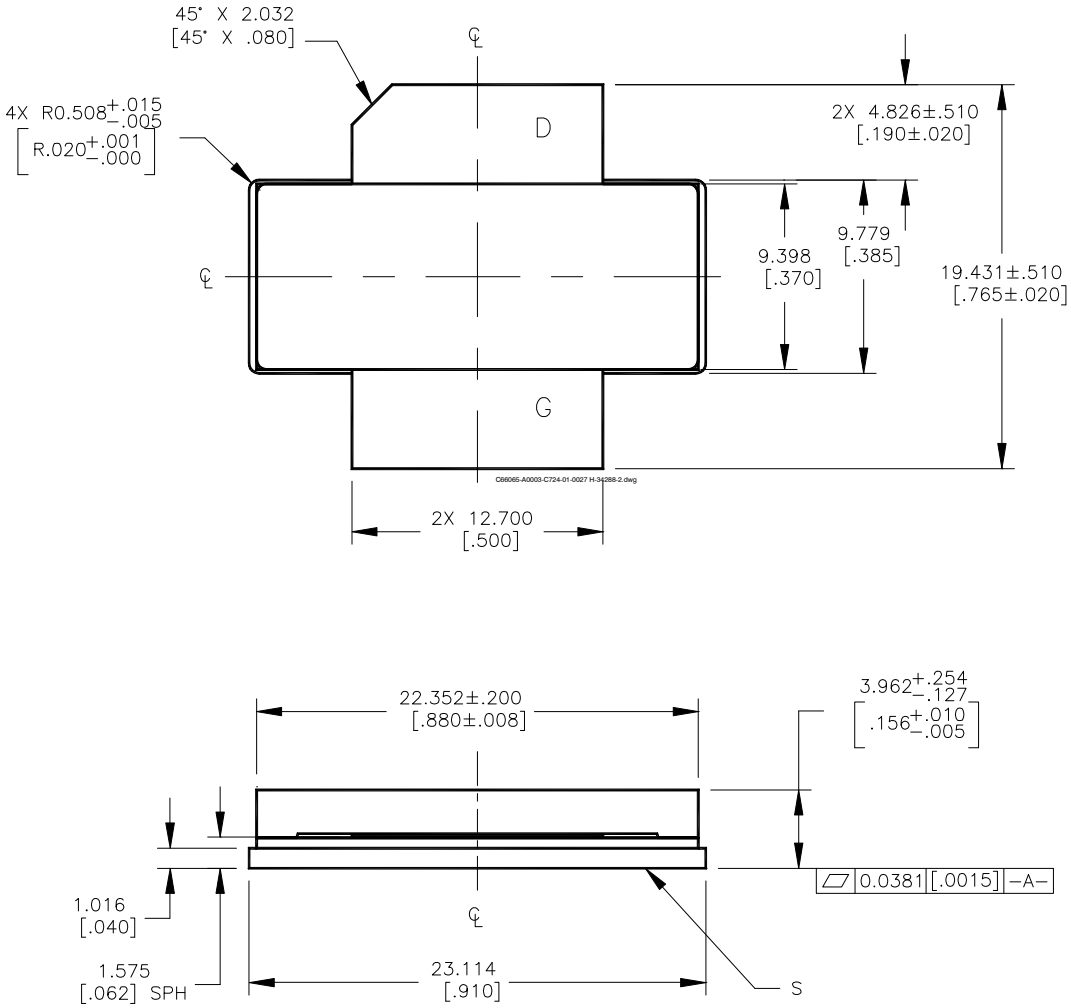
Package Outline Specifications (cont.)

Package H-34288-2



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Revision History:	2009-04-17	Preliminary Data Sheet
Previous Version:	none	

Page	Subjects (major changes since last revision)

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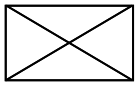

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