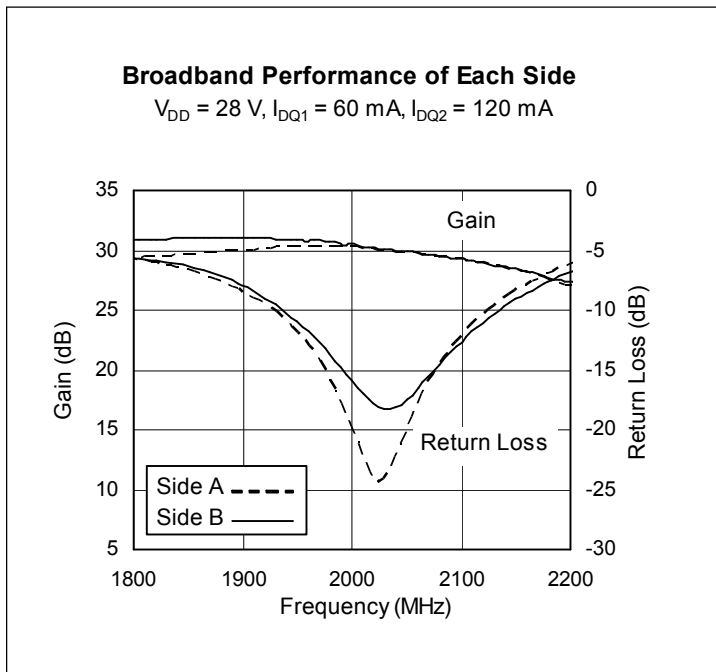


## Dual Wideband RF LDMOS Power Amplifier 40 W, 1800 – 2200 MHz

### Description

The PTMA210404FL integrates two wideband, 20-watt, 2-stage LDMOS integrated amplifiers into an open-cavity, ceramic package. It is designed for use in cellular amplifier applications in the 1800-2200 MHz frequency band. Manufactured with Infineon's advanced LDMOS process, this amplifier offers excellent thermal performance and superior reliability.

PTMA210404FL\*  
Package H-34248-12



### Features

- Designed for wide RF and modulation bandwidths and low memory effects
- Typical channel isolation = 26 dB
- Typical single channel performance CW, 2018 MHz, 28 V
  - Output power at P-1dB = 20 W
  - Linear Gain = 30.5 dB
  - Efficiency = 54%
- Typical Doherty performance with six-carrier TD-SCDMA signal,  $V_{DD} = 28\text{ V}$ ,  $I_{DQ1A} = I_{DQ1B} = 55\text{ mA}$ ,  $I_{DQ2B} = 110\text{ mA}$ ,  $V_{GS2A} = 1.06\text{ V}$ ,  $f = 2018\text{ MHz}$ 
  - Average output power = 10 W
  - Linear Gain = 27 dB
  - Efficiency = 35%
  - ACLR1 = -33 dBc
  - ACLR2 = -34 dBc
- Capable of handling 10:1 VSWR @ 28 V, 50 W (CW) output power
- Integrated ESD protection
- High-performance, thermally-enhanced packages, Pb-free and RoHS compliant, with low-gold plating

### RF Characteristics

#### Six-carrier TD-SCDMA Measurements in Doherty Circuit (tested in Infineon test fixture)

$V_{DD} = 28\text{ V}$ ,  $I_{DQ1A} = I_{DQ1B} = 55\text{ mA}$ ,  $I_{DQ2B} = 110\text{ mA}$ ,  $V_{GS2A} = 1.05\text{ V}$ ,  $P_{OUT} = 10\text{ W}$  average,  $f = 2018\text{ MHz}$ , input PAR = 9.8 dB @ 0.01% CCDF

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	$G_{ps}$	26	27	—	dB
Drain Efficiency	$\eta_D$	33	35	—	%
Adjacent Channel Power Ratio	ACPR	—	-33	-30	dBc
Alternate Channel Power Ratio	Alt	—	-34	-31	dBc

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

\*See Infineon distributor for future availability.

**ESD:** Electrostatic discharge sensitive device—observe handling precautions!

**RF Characteristics** (cont.)

**CW Measurements** (tested in Infineon test fixture)

 $V_{DD} = 28\text{ V}$ ,  $I_{DQ1A} = I_{DQ1B} = 55\text{ mA}$ ,  $I_{DQ2B} = 110\text{ mA}$ ,  $V_{GS2A} = 1.05\text{ V}$ ,  $f = 2018\text{ MHz}$ 

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Gain Flatness	1 W / 15 MHz	$\Delta G$	—	0.30	—	dB
Gain Compression	40 W	—	—	-0.4	-1.0	dB

**DC Characteristics**

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	$\mu\text{A}$
	$V_{DS} = 63\text{ V}$ , $V_{GS} = 0\text{ V}$	$I_{DSS}$	—	—	10.0	$\mu\text{A}$
Final Stage On-state Resistance	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0.1\text{ V}$	$R_{DS(on)1}$	—	3.6	—	$\Omega$
		$R_{DS(on)2}$	—	0.6	—	$\Omega$
Operating Gate Voltage	$V_{DS} = 28\text{ V}$ , $I_{DQ1} = 120\text{ mA}$ , $I_{DQ2} = 110\text{ mA}$	$V_{GS}$	2.0	2.5	3.0	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$ , $V_{DS} = 0\text{ V}$	$I_{GSS}$	—	—	1.0	$\mu\text{A}$

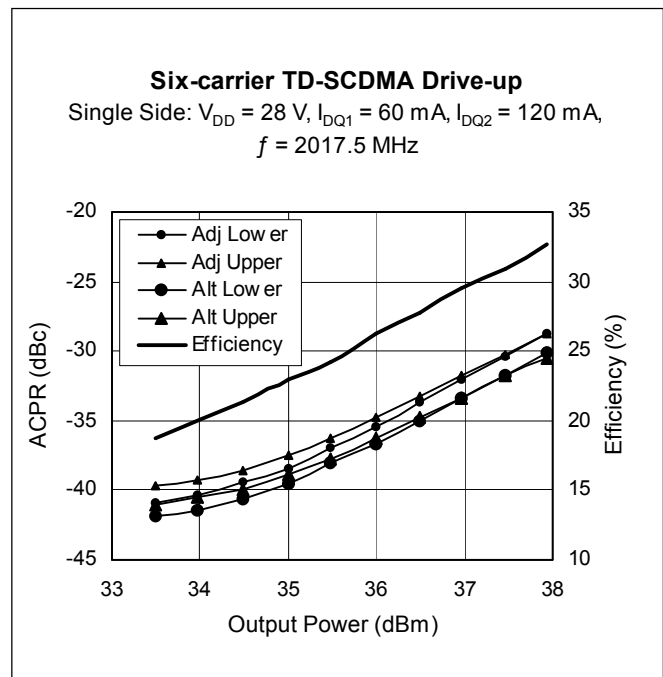
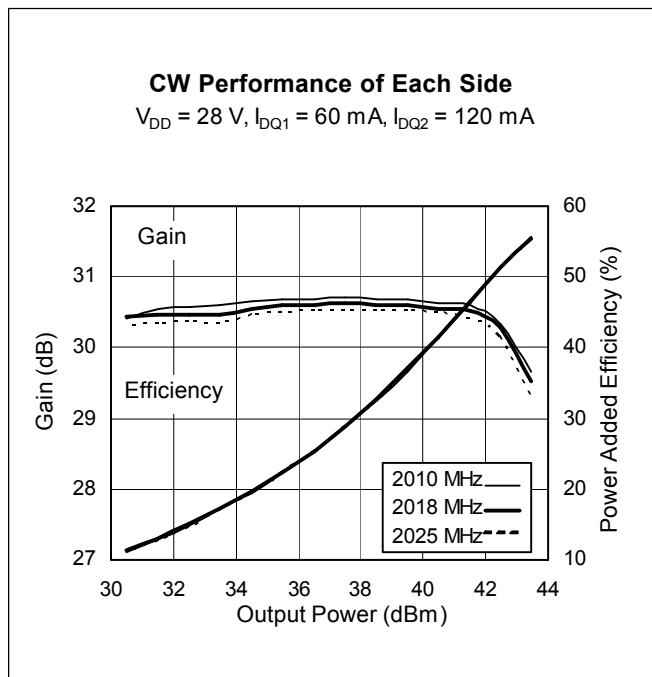
**Maximum Ratings**

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	$^{\circ}\text{C}$
Input Power for CW - each side		$P_{IN}$	< 20	dBm
Total Device Dissipation Above 25 $^{\circ}\text{C}$ derate by	Stage 1	$P_D$	29	W
			0.167	W/ $^{\circ}\text{C}$
Total Device Dissipation Above 25 $^{\circ}\text{C}$ derate by	Stage 2	$P_D$	110	W
			0.625	W/ $^{\circ}\text{C}$
Storage Temperature Range		$T_{STG}$	-40 to +150	$^{\circ}\text{C}$
Thermal Resistance ( $T_{CASE} = 70^{\circ}\text{C}$ )	Stage 1	$R_{\theta JC}$	6.0	$^{\circ}\text{C}/\text{W}$
	Stage 2	$R_{\theta JC}$	1.6	$^{\circ}\text{C}/\text{W}$

### Ordering Information

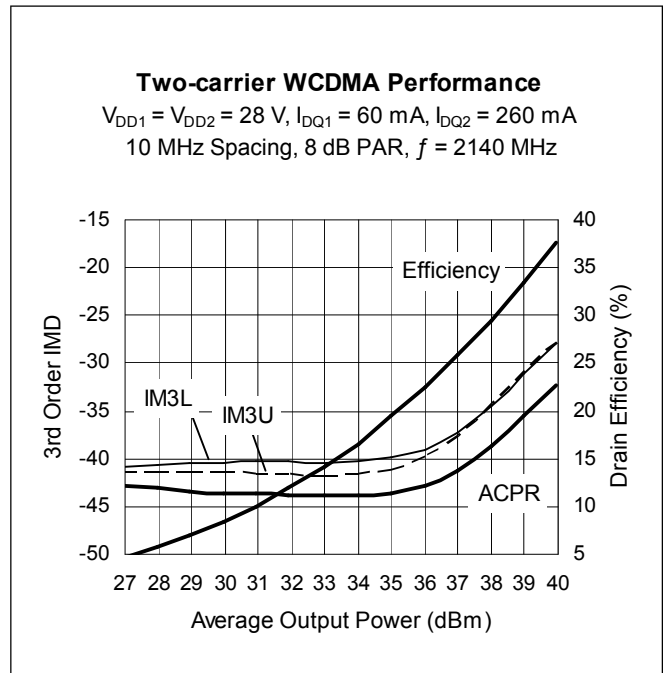
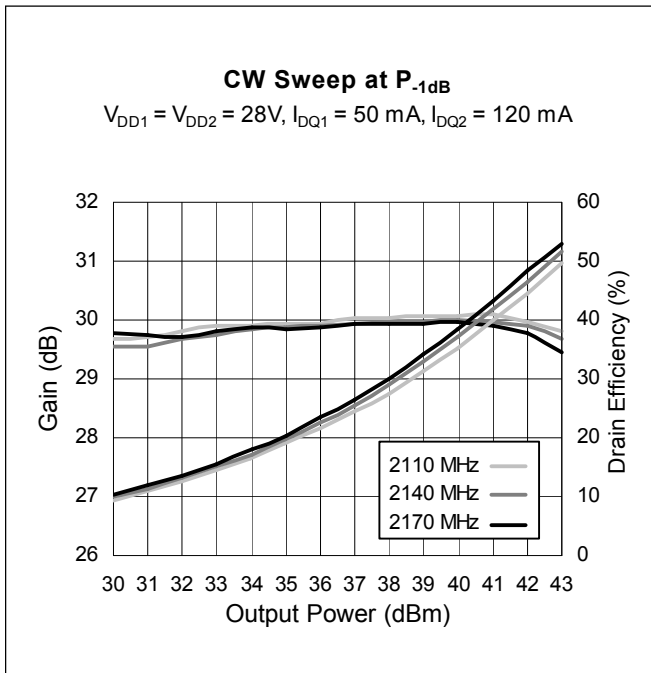
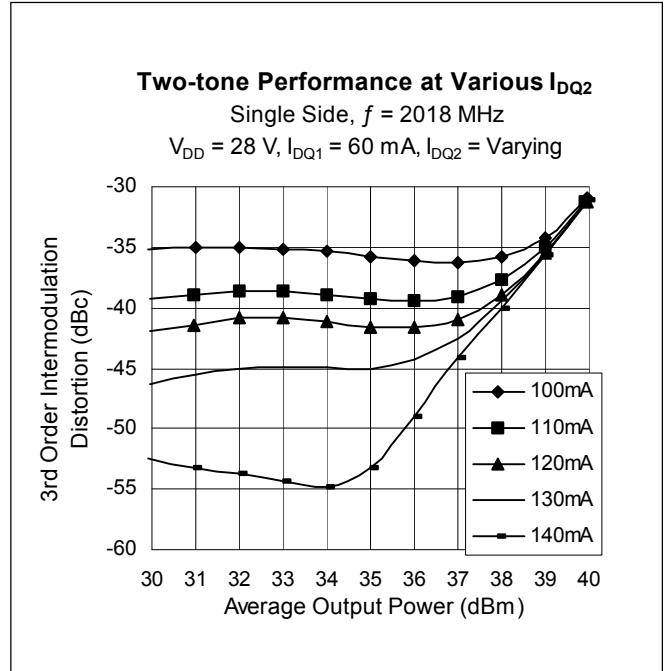
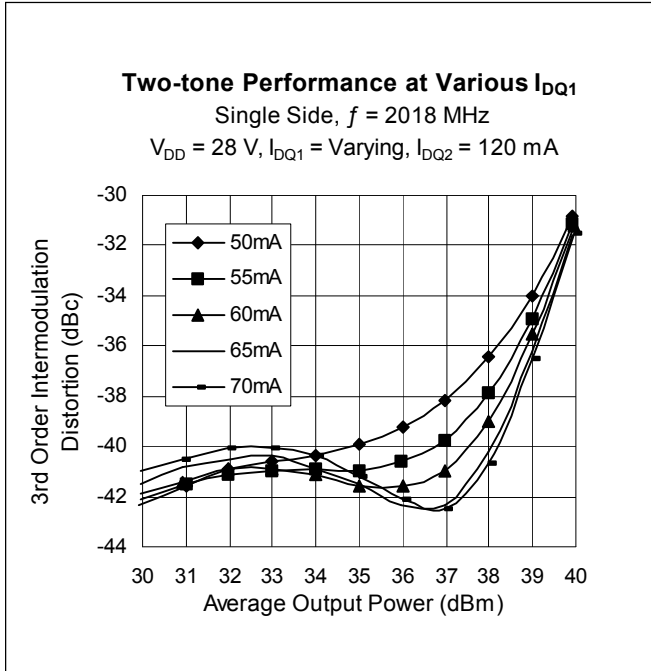
Type and Version	Package Outline	Flange Type	Shipping	Marking
PTMA210404FL* V1	H-34248-12	Earless flange	Tray	PTMA210404FL
PTMA210404FL V1 R250*	H-34248-12	Earless flange	Tape & Reel 250 pcs	PTMA210404F

### Typical Performance (data taken in a production test fixture)

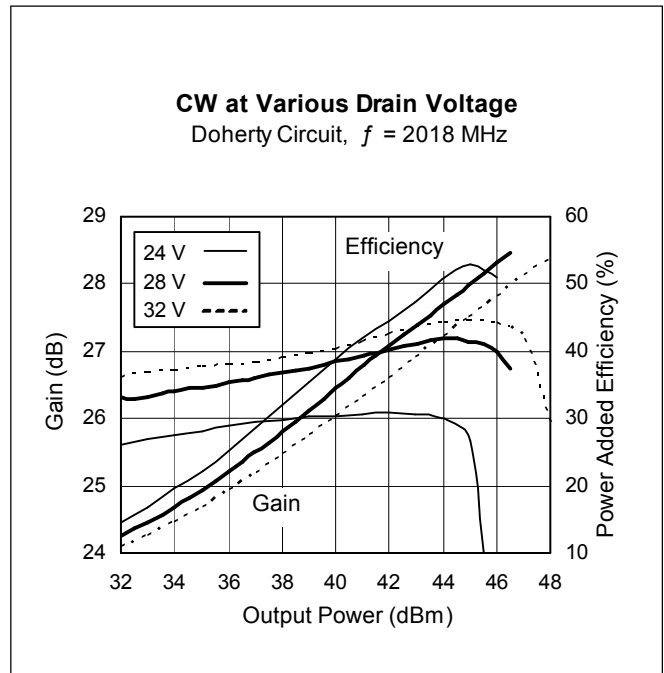
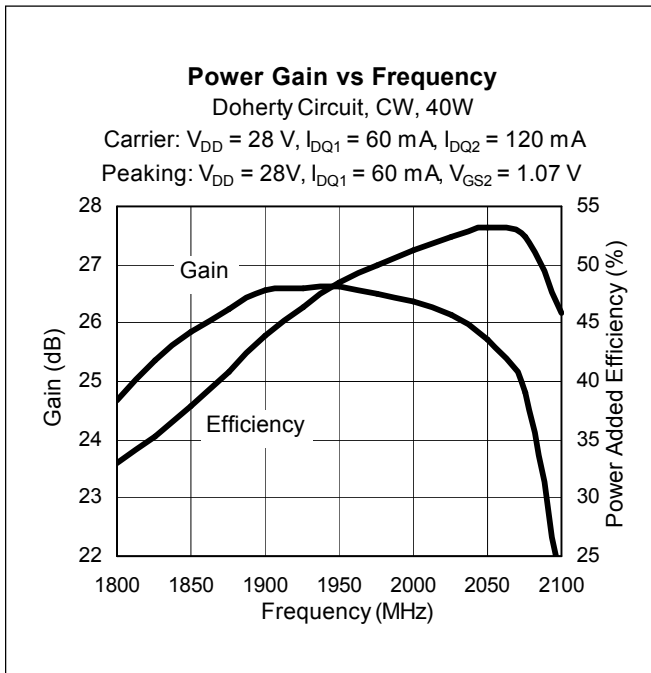
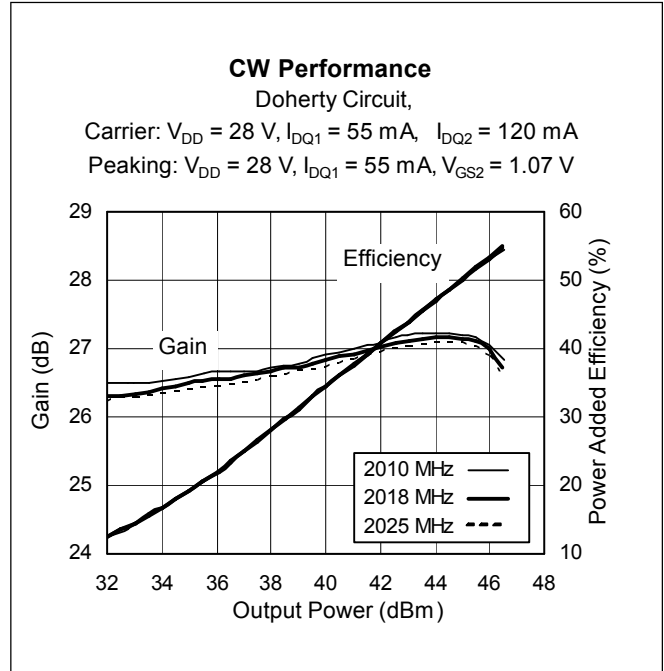
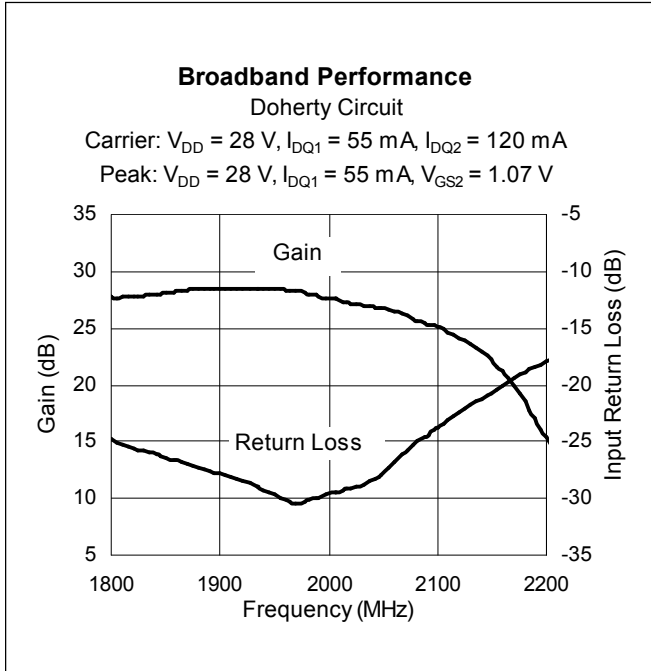


\* See Infineon distributor for future availability.

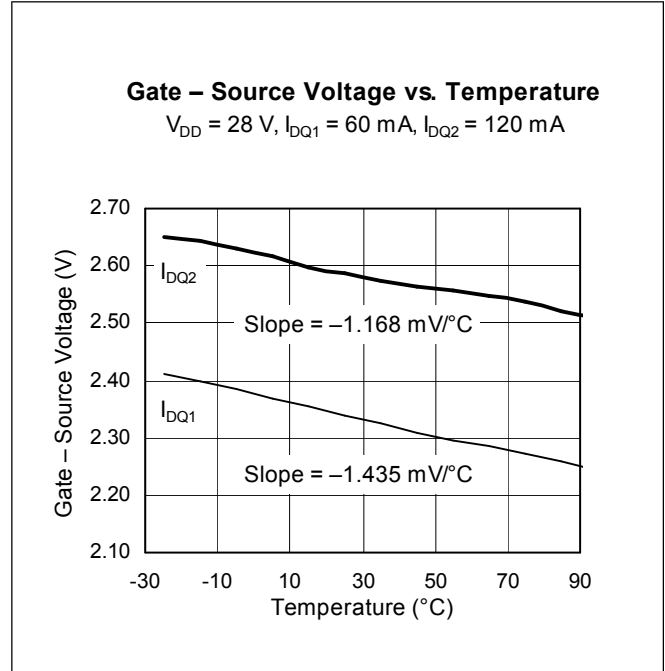
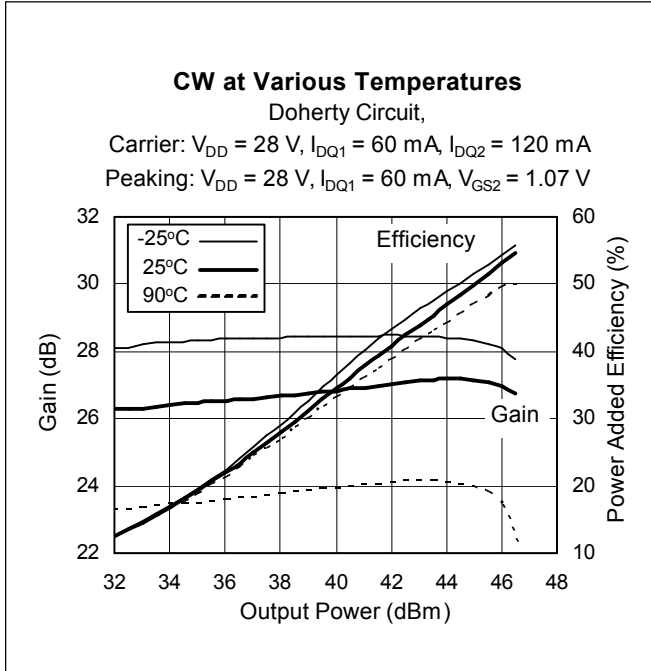
**Typical Performance** (data taken in a production test fixture)



Typical Performance (cont.)

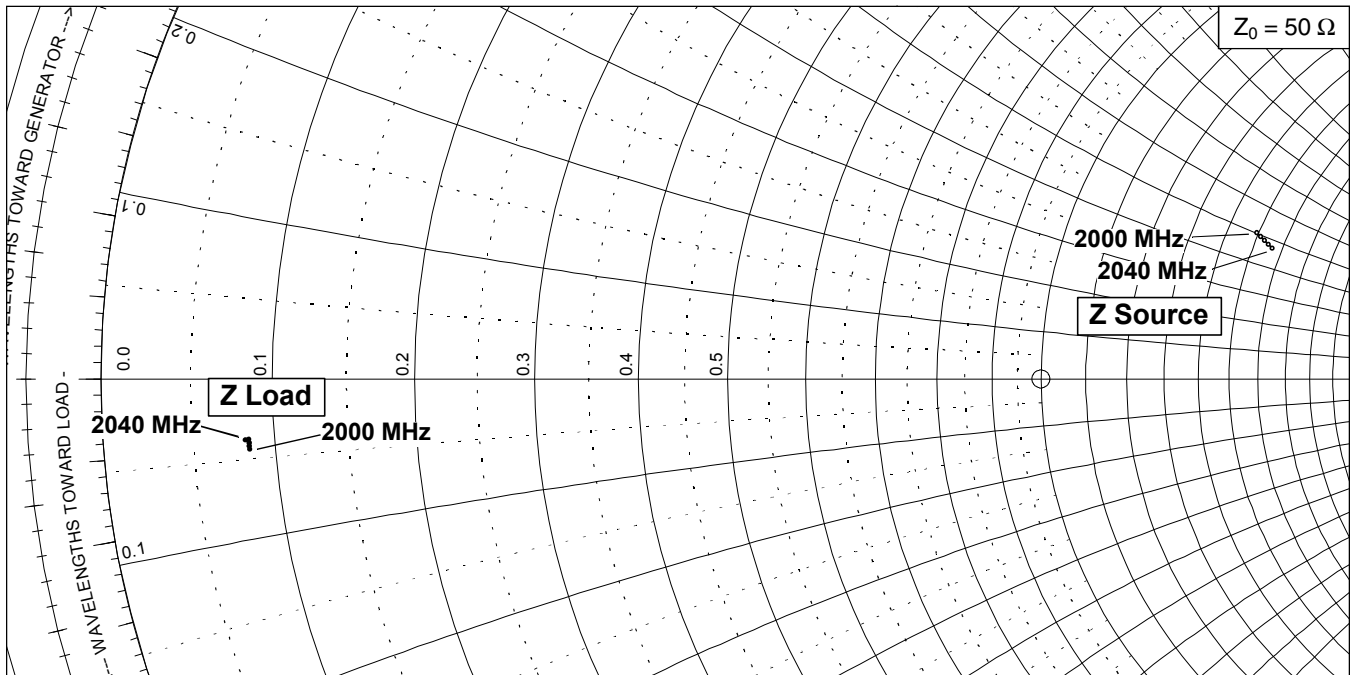
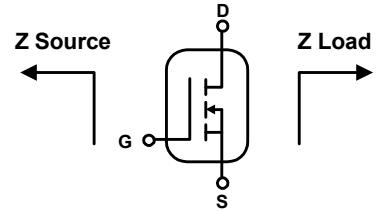


Typical Performance (cont.)

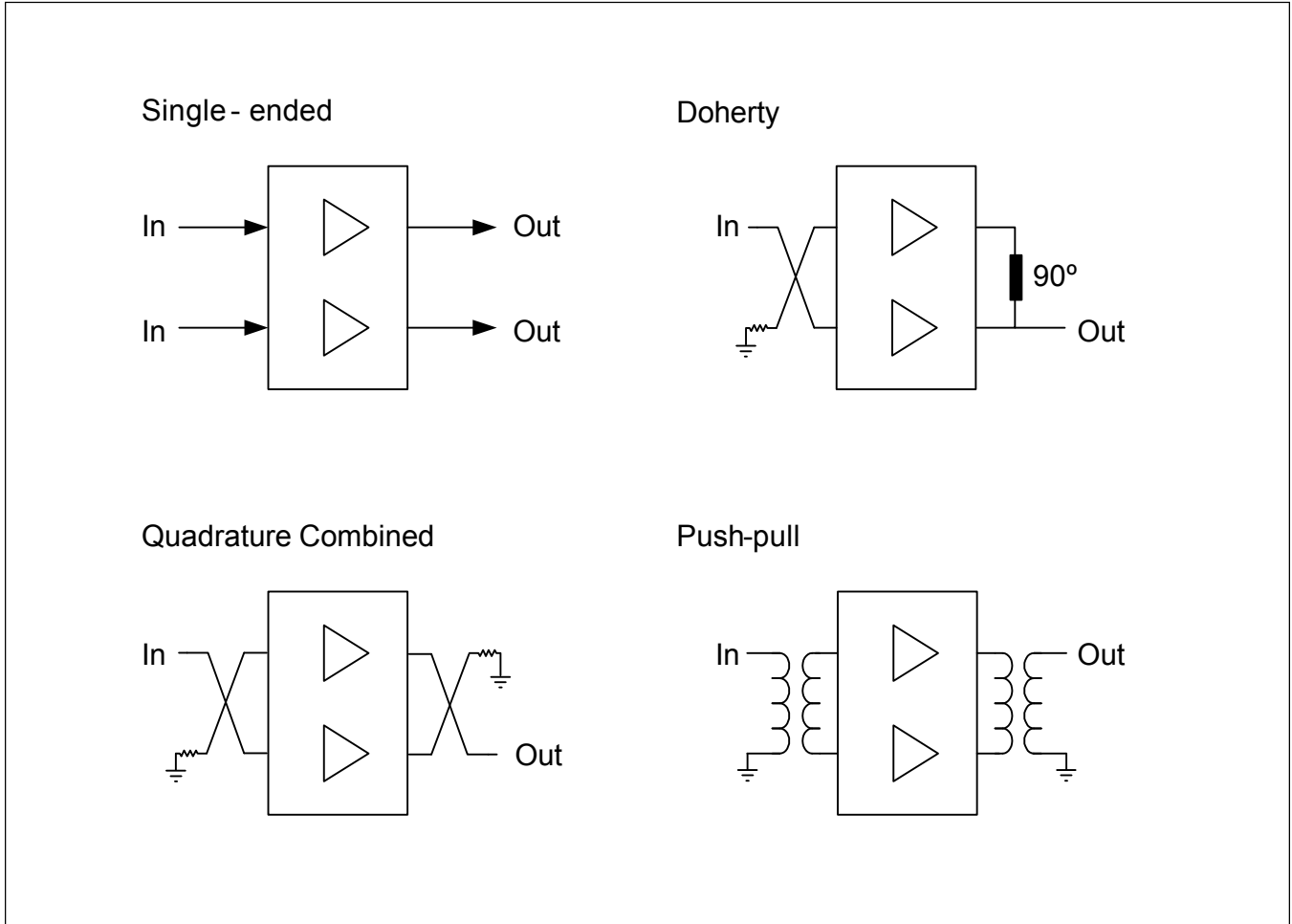


### Broadband Circuit Impedance

Frequency MHz	Z Source W		Z Load W	
	R	jX	R	jX
2000	74.7	25.2	4.2	-2.2
2010	75.6	24.9	4.2	-2.1
2020	76.5	24.5	4.2	-2.0
2030	77.4	24.1	4.2	-1.9
2040	78.3	23.7	4.1	-1.9



Application Examples





Package Specifications

Package H-34248-12 Outline

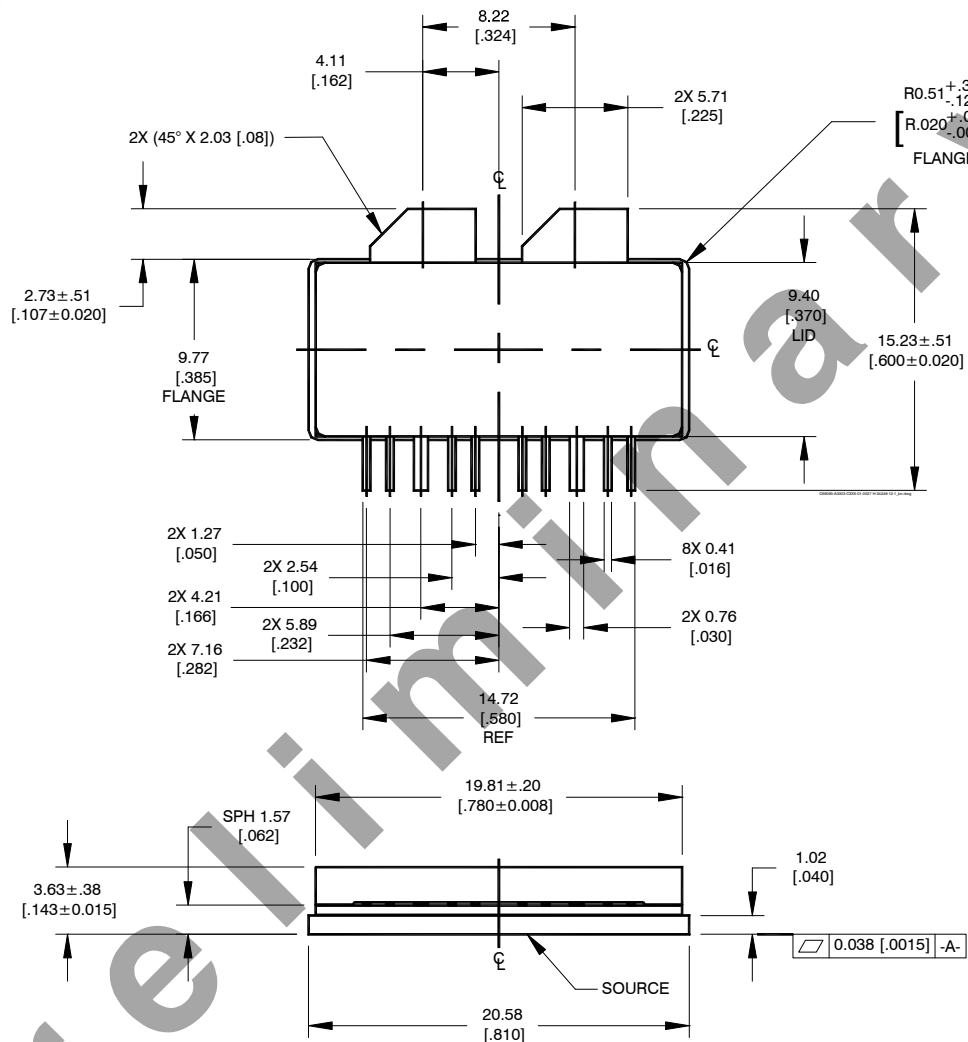
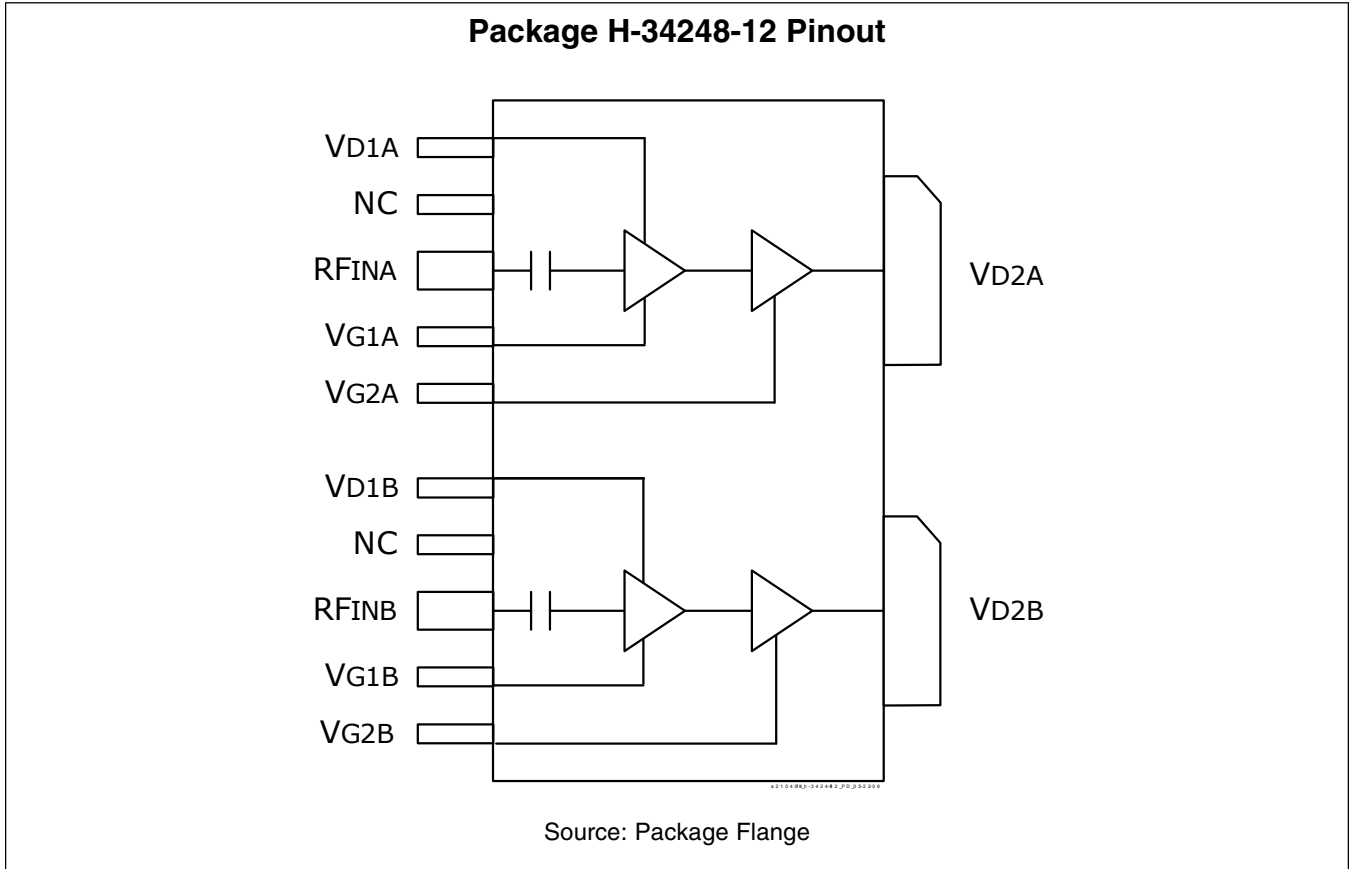


Diagram Notes—unless otherwise specified:

1. Interpret dimensions and tolerances per ASME Y14.5M-1994.
2. Primary dimensions are mm. Alternate dimensions are inches.
7. All tolerances ± 0.127 [.005] unless specified otherwise.
4. Lead thickness: 0.10 +0.051/-0.025 [.004 +.002/-0.001].
5. Gold plating thickness:  
Gold top layer: 0.25 micron [10 microinch] (max)

Package Specifications (cont.)



Find the latest and most complete information about products and packaging at the Infineon Internet page <http://www.infineon.com/rfpower>

Revision History: 2009-06-05

Preliminary Data Sheet

Previous Version: 2009-04-01 Preliminary Data Sheet

Page	Subjects (major changes since last revision)
1, 2	Update product information and tables
3, 4, 5	Update graphs and add new graphs
6	Update impedance data
7	Add application example
9	Update pinout diagram

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Any information within this document that you feel is wrong, unclear or missing at all?

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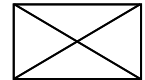
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To request other information, contact us at:

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or +1 408 776 0600 International



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