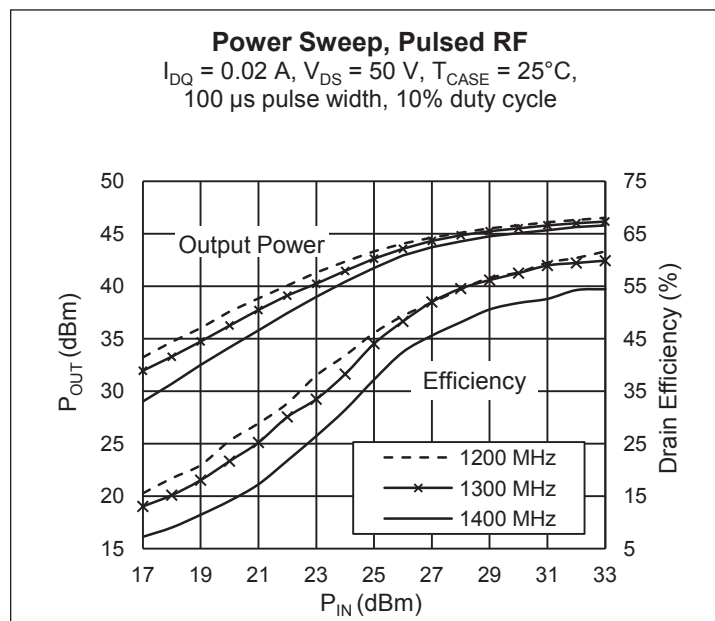
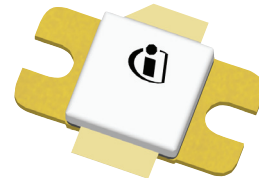


Thermally-Enhanced High Power RF LDMOS FET 25 W, 50 V, 1200 – 1400 MHz

Description

The PTVA120251EA LDMOS FET is designed for use in power amplifier applications in the 1200 MHz to 1400 MHz frequency band. Features include high gain and thermally-enhanced package with bolt-down flange. Manufactured with Infineon's advanced LDMOS process, this device provides excellent thermal performance and superior reliability.

PTVA120251EA
Package H-36265-2



Features

- Unmatched input and output
- High gain and efficiency
- Integrated ESD protection
- Low thermal resistance
- Excellent ruggedness
- Pb-free and RoHS compliant
- Capable of withstanding a 10:1 load mismatch (all phase angles) at $P_{IN} = 36$ dBm, under CW condition.

RF Characteristics

Typical RF Performance (not subject to production test, verified by design/characterization in Infineon test fixture)
 $V_{DD} = 50$ V, $I_{DQ} = 0.02$ A, Input signal ($t_r = 5$ ns, $t_f = 6.5$ ns), 100 μs pulse width, 10% duty cycle, class AB test

Mode of operation	f (MHz)	IRL (dB)	P_{1dB}			P_{3dB}			$P_{droop(pulse)}$ dB @ 30 W	t_r (ns)	t_f (ns)
			Gain (dB)	Eff (%)	P_{OUT} (W)	Gain (dB)	Eff (%)	P_{OUT} (W)			
Pulsed RF	1200	11	17.3	54	30	15.3	60	40	0.16	6	8
Pulsed RF	1300	9	16.6	55	31	14.6	59	38	0.15	6	8
Pulsed RF	1400	13	15.9	51	29	13.9	54	36	0.20	6	8

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics

Pulsed RF Performance (tested in Infineon test fixture)

$V_{DD} = 50\text{ V}$, $I_{DQ} = 0.15\text{ A}$, $P_{OUT} = 25\text{ W}$, $f_1 = 1200\text{ MHz}$, $f_2 = 1300\text{ MHz}$, $f_3 = 1400\text{ MHz}$, 100 μs pulse width, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	16	17	—	dB
Drain Efficiency	η_D	45	47	—	%
Return Loss	IRL	−20	−10	−7	dB

DC Characteristics

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 10\text{ mA}$	$V_{(BR)DSS}$	105	—	—	V
Drain Leakage Current	$V_{DS} = 50\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	1.0	μA
	$V_{DS} = 105\text{ V}$, $V_{GS} = 0\text{ V}$	I_{DSS}	—	—	10.0	μA
On-State Resistance	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	1.4	—	Ω
Operating Gate Voltage	$V_{DS} = 50\text{ V}$, $I_{DQ} = 150\text{ mA}$	V_{GS}	3	3.35	4	V
Gate Leakage Current	$V_{GS} = 10\text{ V}$, $V_{DS} = 0\text{ V}$	I_{GSS}	—	—	1.0	μA

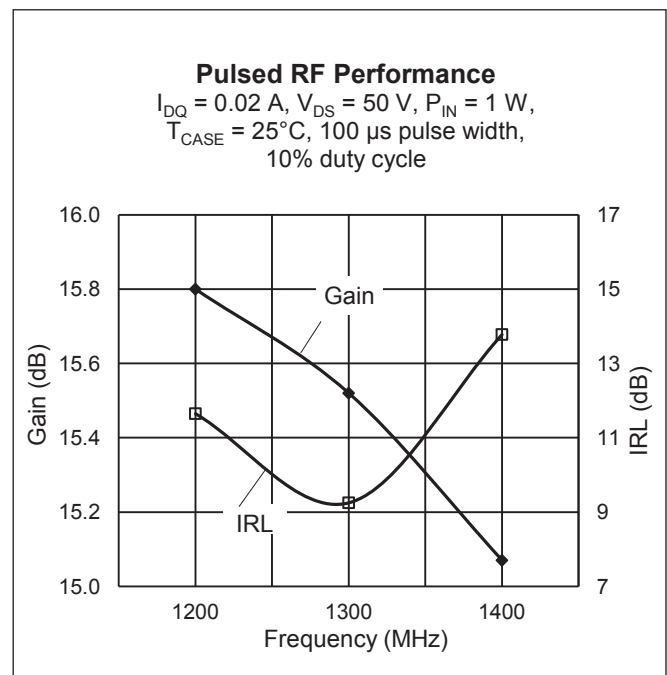
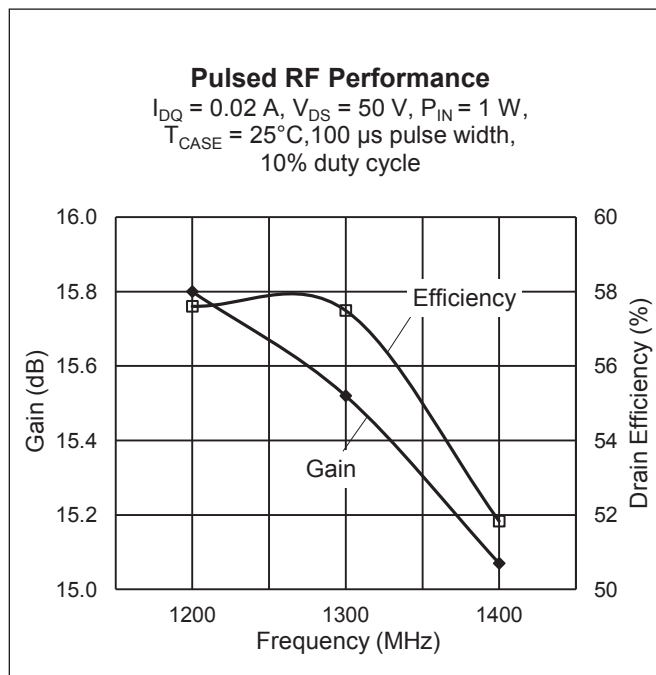
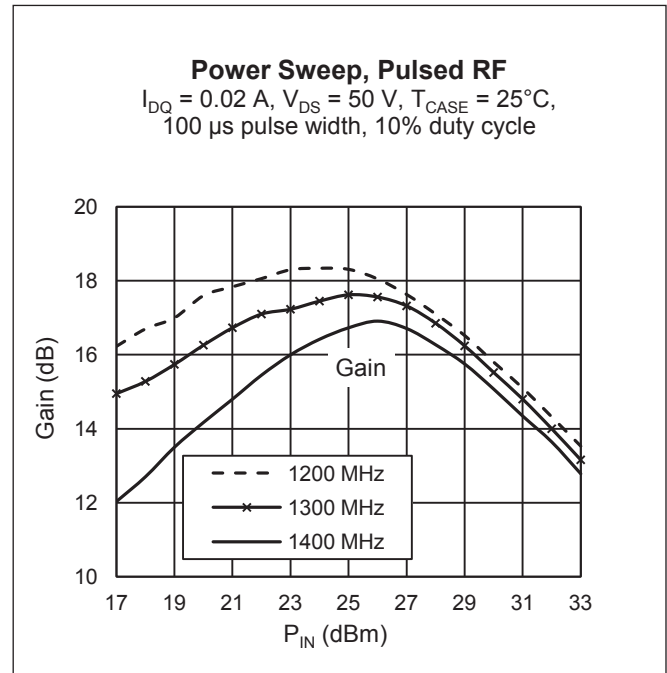
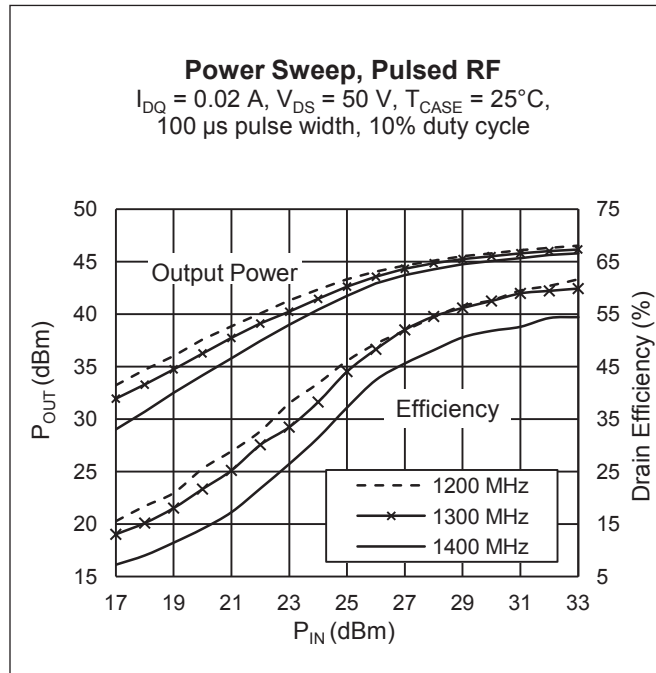
Maximum Ratings

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	105	V
Gate-Source Voltage	V_{GS}	−6 to +12	V
Junction Temperature	T_J	200	$^{\circ}\text{C}$
Storage Temperature Range	T_{STG}	−65 to +150	$^{\circ}\text{C}$
Thermal Resistance ($T_{CASE} = 70^{\circ}\text{C}$, 25 W, CW)	$R_{\theta JC}$	3.7	$^{\circ}\text{C/W}$

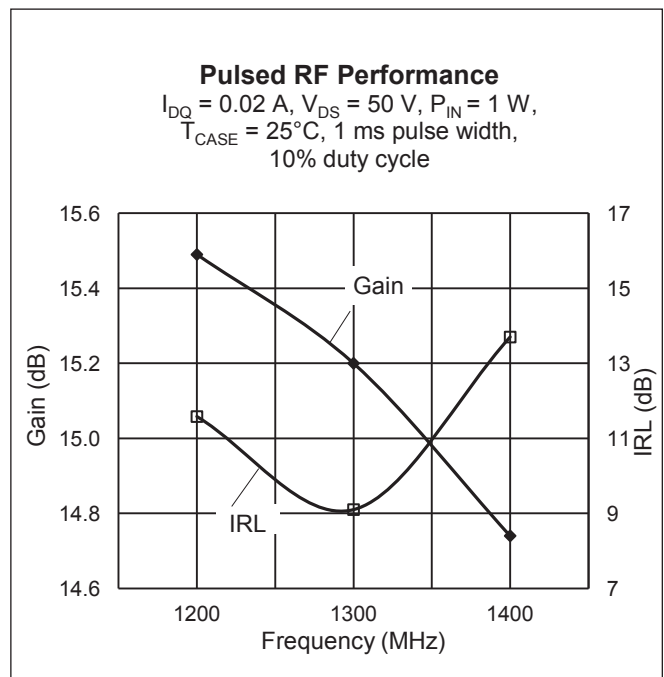
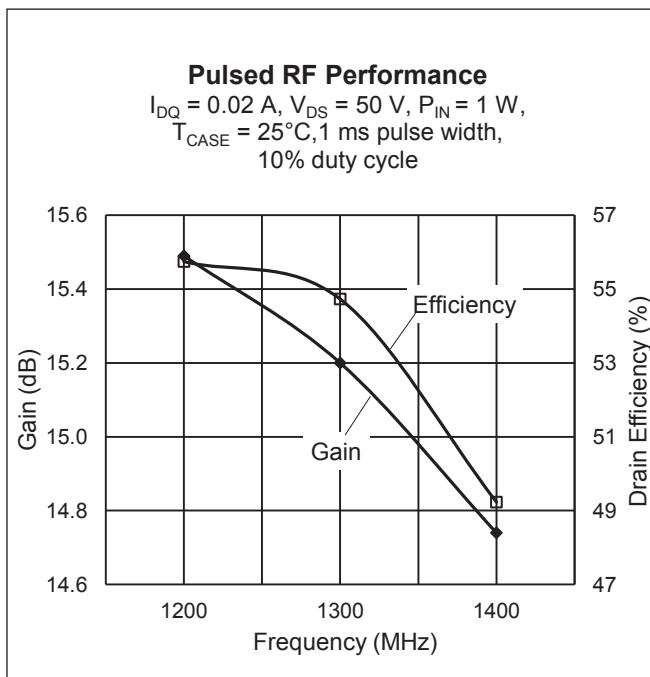
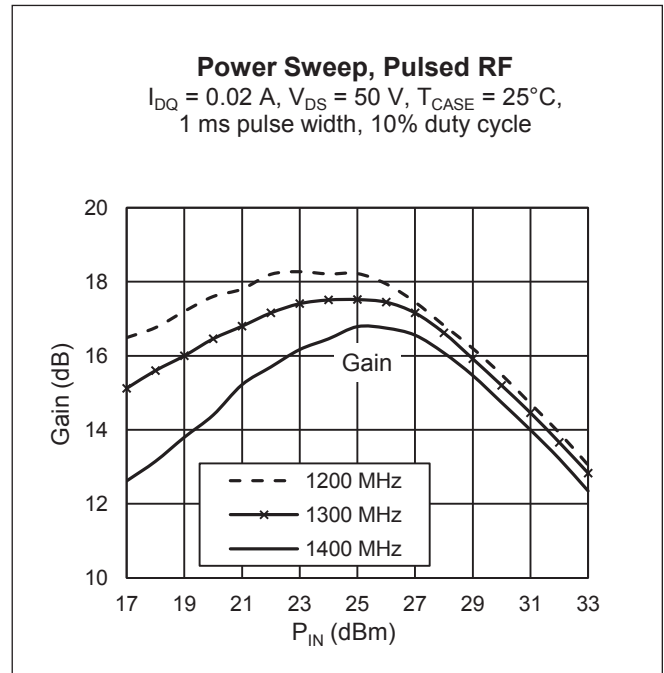
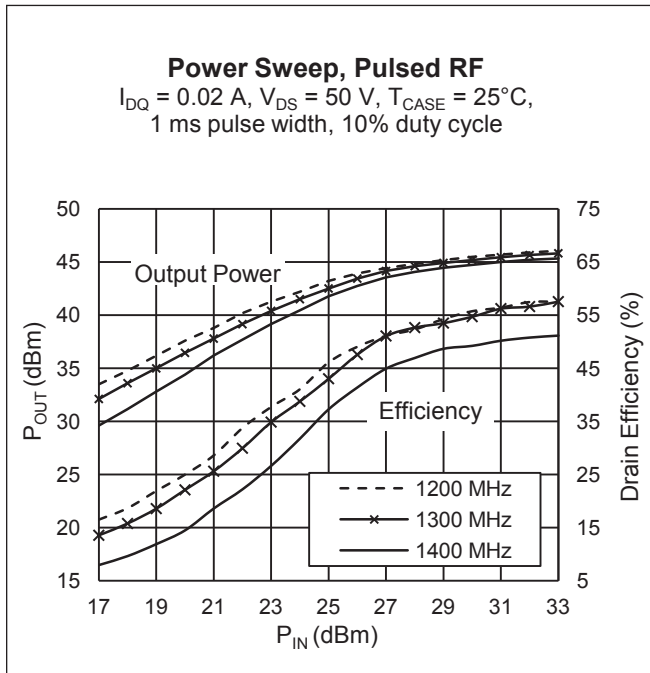
Ordering Information

Type and Version	Order Code	Package	Shipping
PTVA120251EA V1	PTVA120251EAV1XWSA1	H-36265-2, slotted flange, single ended	Tray
PTVA120251EA V1 R250	PTVA120251EAV1R250XTMA1	H-36265-2, slotted flange, single ended	Tape & Reel, 250pcs

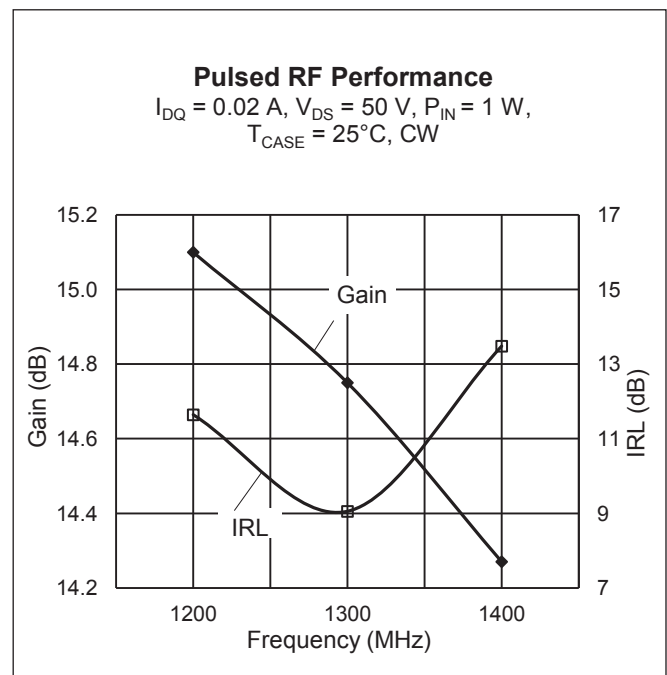
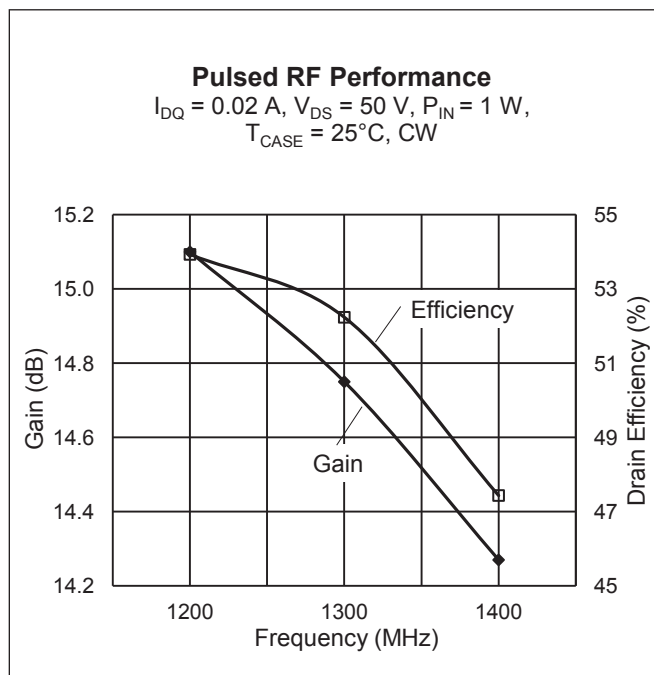
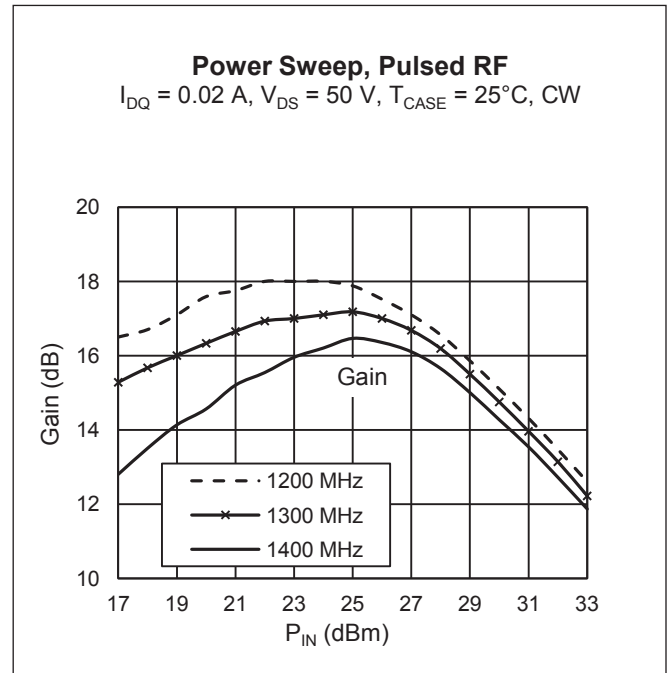
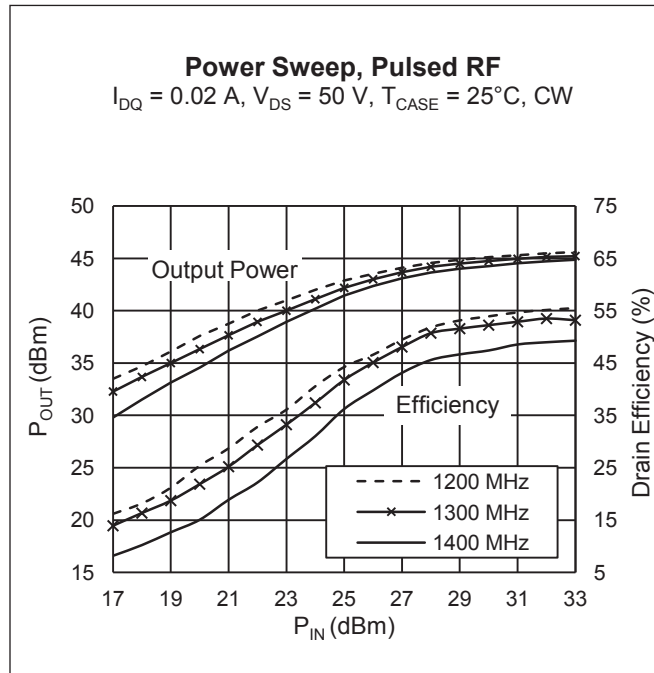
Typical RF Performance (data taken in production test fixture)



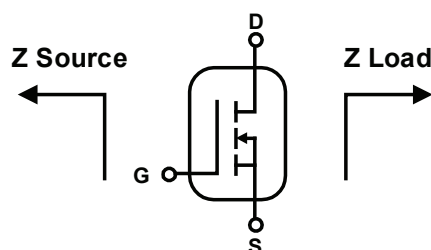
Typical RF Performance (cont.)



Typical RF Performance (cont.)

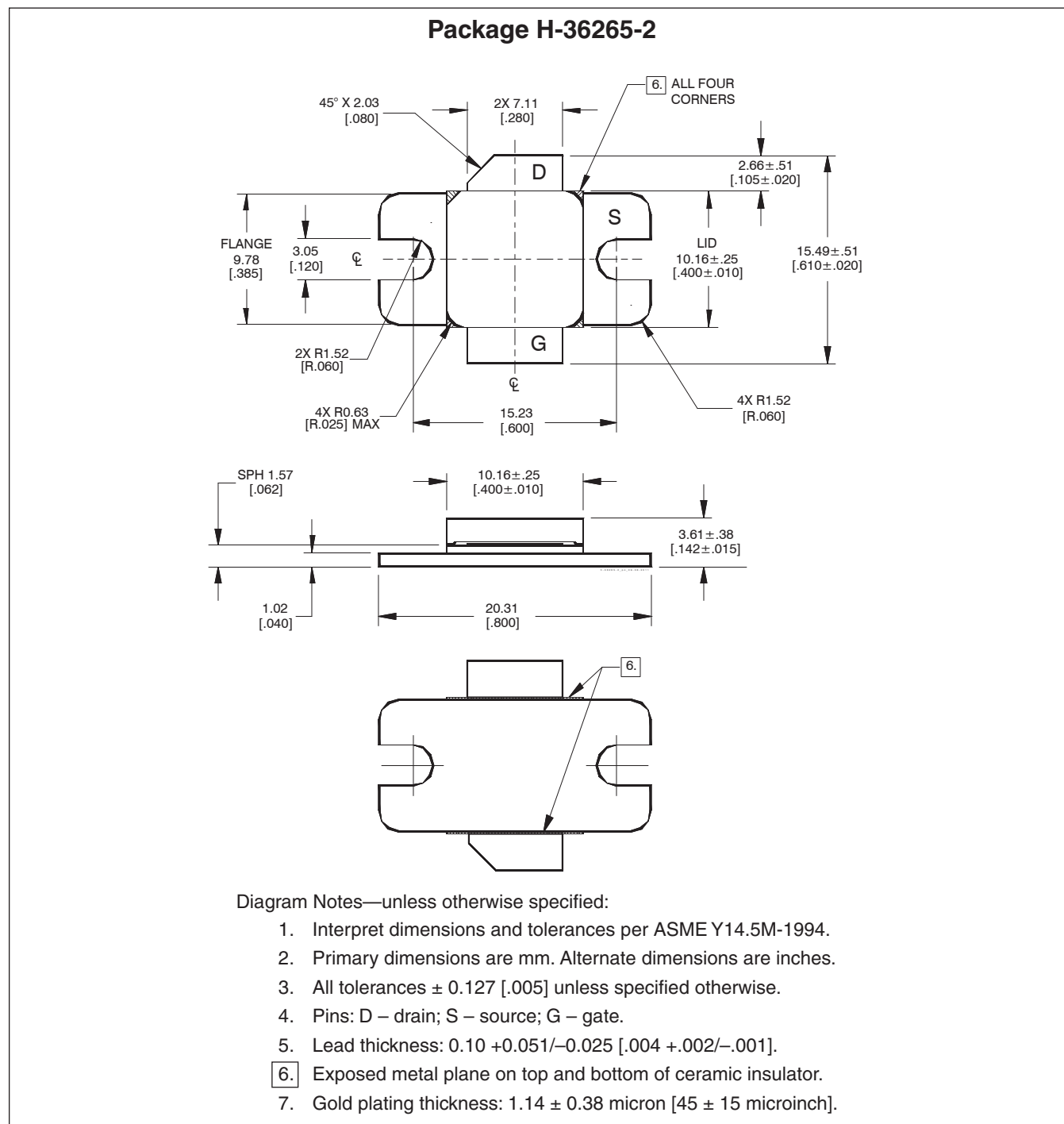


Broadband Circuit Impedance



Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1200	4.40	-0.80	6.85	-5.91
1300	5.10	-1.68	6.65	-6.36
1400	4.60	-3.04	7.51	-8.38

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: 2012-06-04

Preliminary Data Sheet

Previous Version: None

Page	Subjects (major changes since last revision)

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