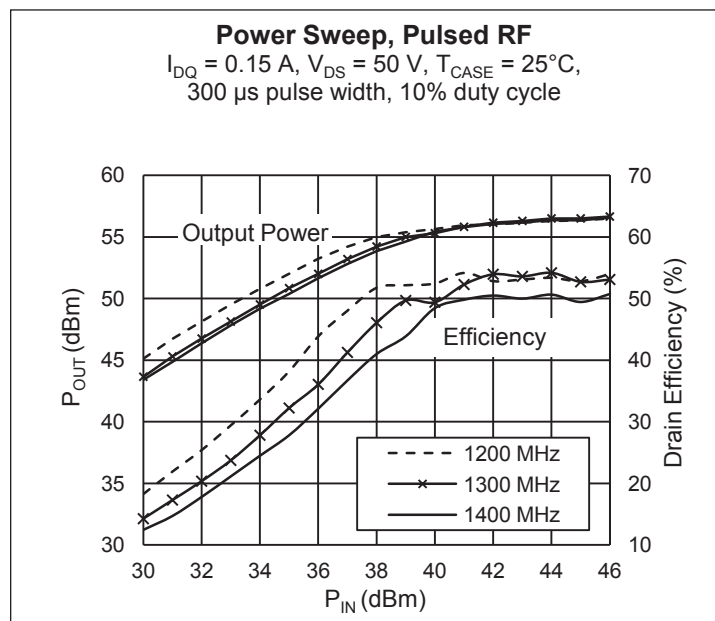
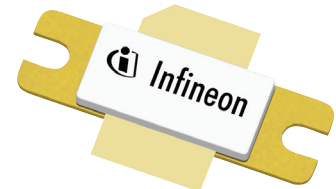


Thermally-Enhanced High Power RF LDMOS FET 350 W, 50 V, 1200 – 1400 MHz

Description

The PTVA123501EC 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.

PTVA123501EC
Package H-36248-2



Features

- Broadband internal matching
- 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 55.5 dBm under pulsed conditions: 300 μs pulse width, 10% duty cycle, $V_{DD} = 50 \text{ V}$

RF Characteristics

Typical RF Performance (not subject to production test, verified by design/characterization in Infineon test fixture)
 $V_{DD} = 50 \text{ V}$, $I_{DQ} = 0.15 \text{ A}$, Input signal ($t_r = 5 \text{ ns}$, $t_f = 6.5 \text{ ns}$), 300 μs pulse width, 10% duty cycle, class AB test

Mode of operation	f (MHz)	IRL (dB)	P _{1dB}			P _{3dB}			P _{droop(pulse)} dB @ 400 W	t_r (ns)	t_f (ns)
			Gain (dB)	Eff (%)	P _{OUT} (W)	Gain (dB)	Eff (%)	P _{OUT} (W)			
Pulsed RF	1200	14	16.2	52	355	14.2	53	410	0.3	6	7
Pulsed RF	1300	8.5	15.2	49	370	13.2	54	430	0.25	6	7
Pulsed RF	1400	10	15	49	350	13	50	410	0.3	6	7

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)

$V_{DD} = 50\text{ V}$, $I_{DQ} = 0.15\text{ A}$, $P_{OUT} = 350\text{ W}$, $f_1 = 1200\text{ MHz}$, $f_2 = 1300\text{ MHz}$, $f_3 = 1400\text{ MHz}$, 300 μs pulse width, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	13	14	—	dB
Drain Efficiency	η_D	48	52	—	%
Gain Flatness	ΔG	0	0.5	1	dB
Return Loss	IRL	−20	9	−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	$V_{GS} = 10\text{ V}$, $V_{DS} = 0.1\text{ V}$	$R_{DS(on)}$	—	0.1	—	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

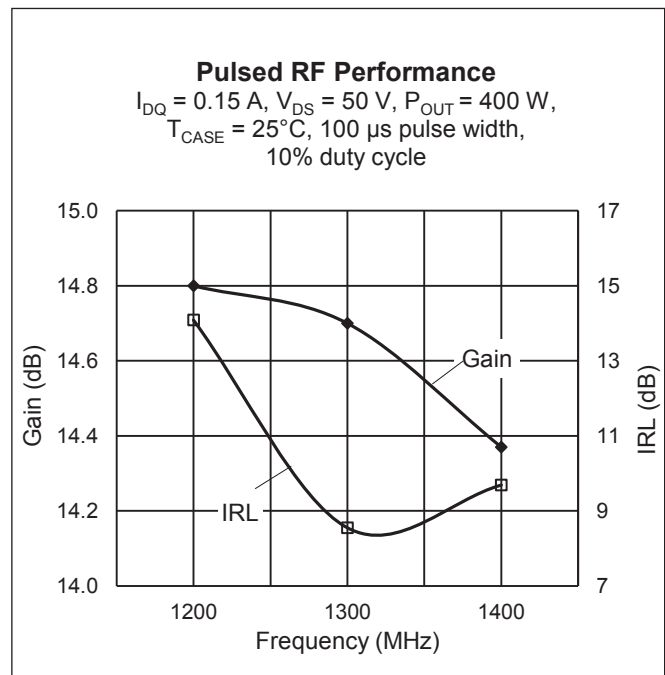
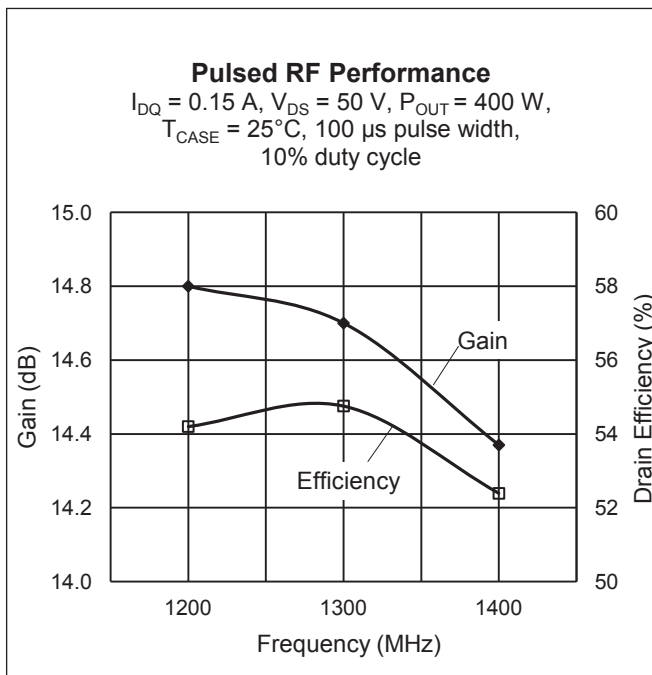
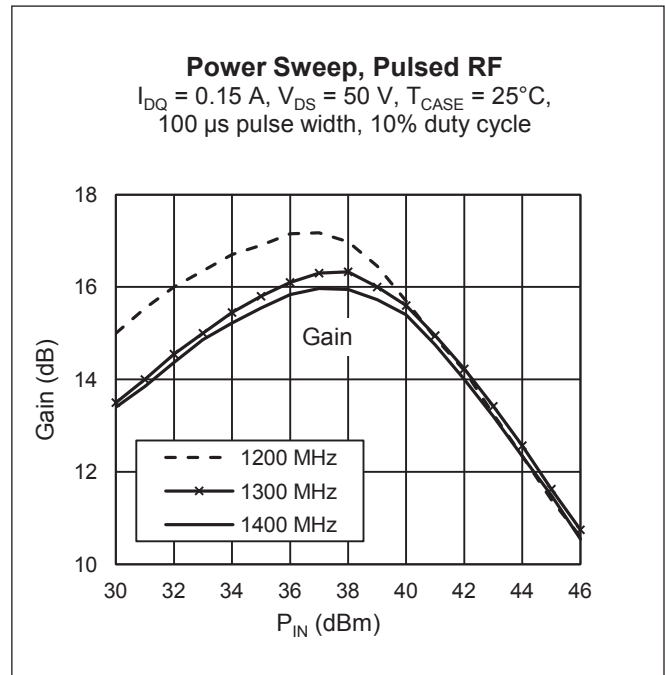
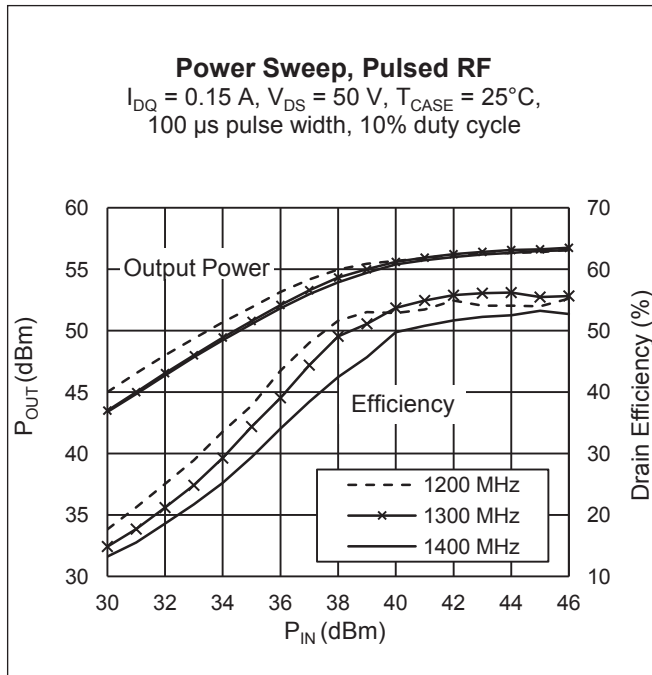
Maximum Ratings

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 ($T_{CASE} = 70^{\circ}\text{C}$, 400 W, 1 ms, 10% duty cycle)	$R_{\theta JC}$	0.36	$^{\circ}\text{C/W}$

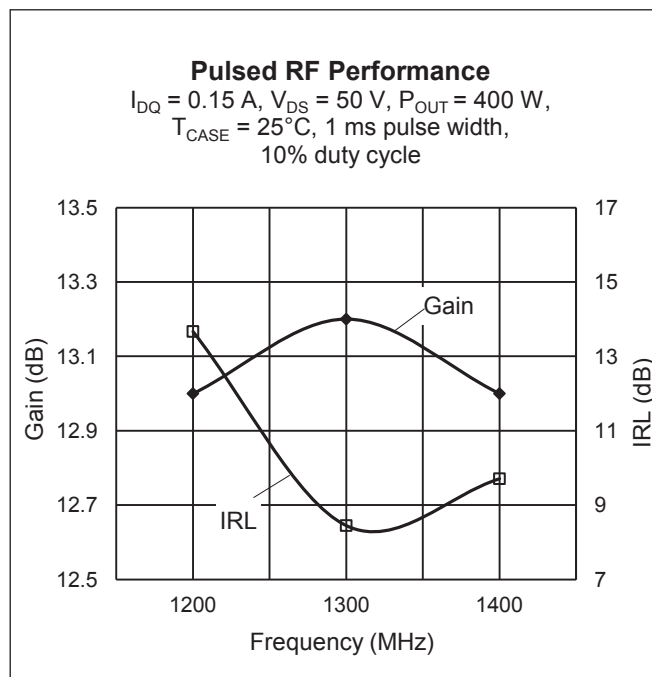
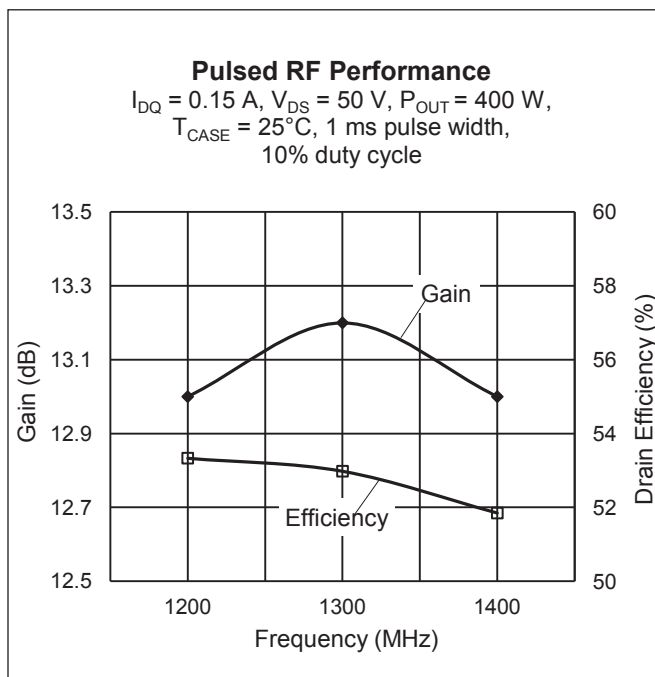
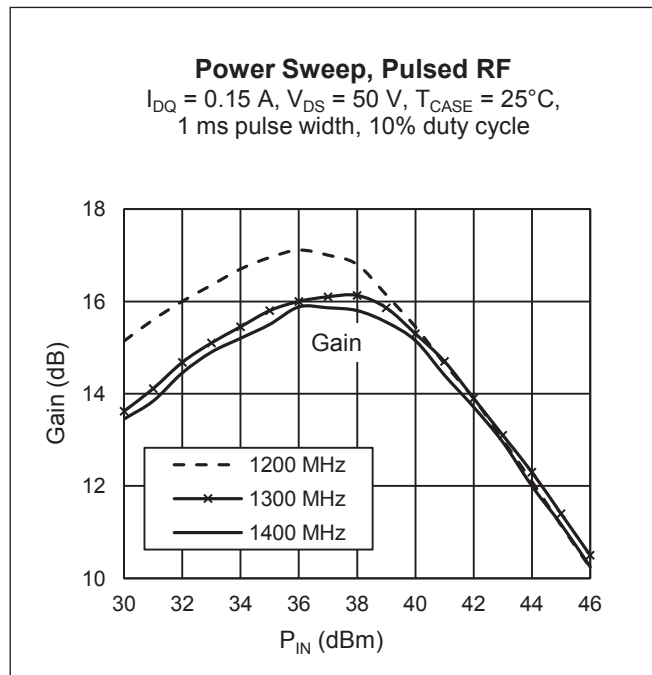
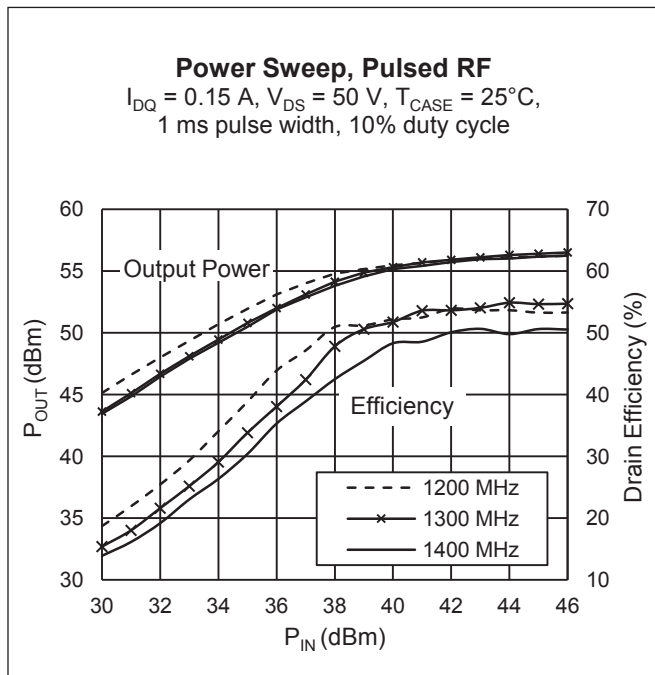
Ordering Information

Type and Version	Order Code	Package	Package Description	Shipping
PTVA123501EC V1	PTVA123501ECV1XWSA1	H-36248-2	Slotted flange, single ended	Tray
PTVA123501EC V1 R250	PTVA123501ECV1R250XTMA1	H-36248-2	Slotted flange, single ended	Tape & Reel, 250pcs

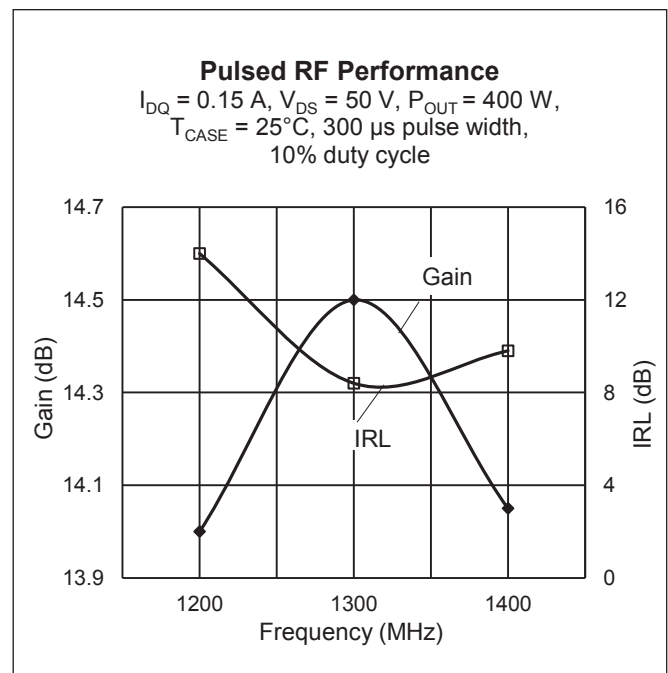
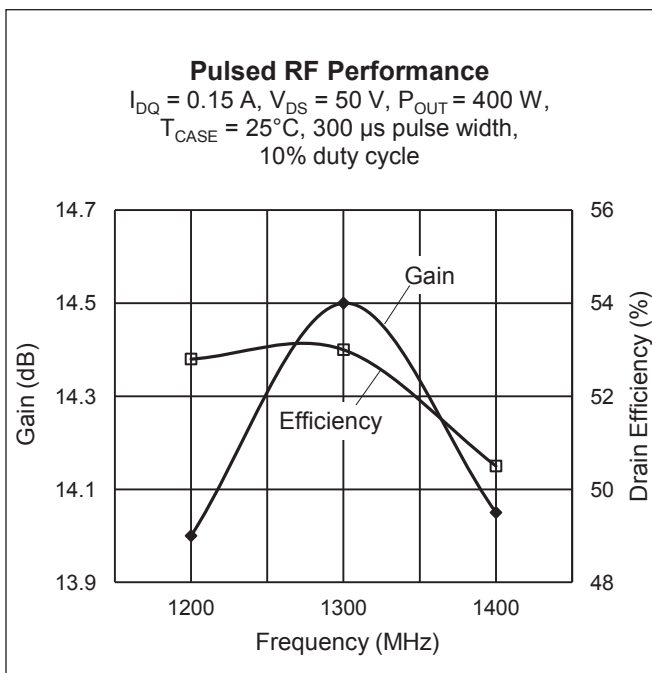
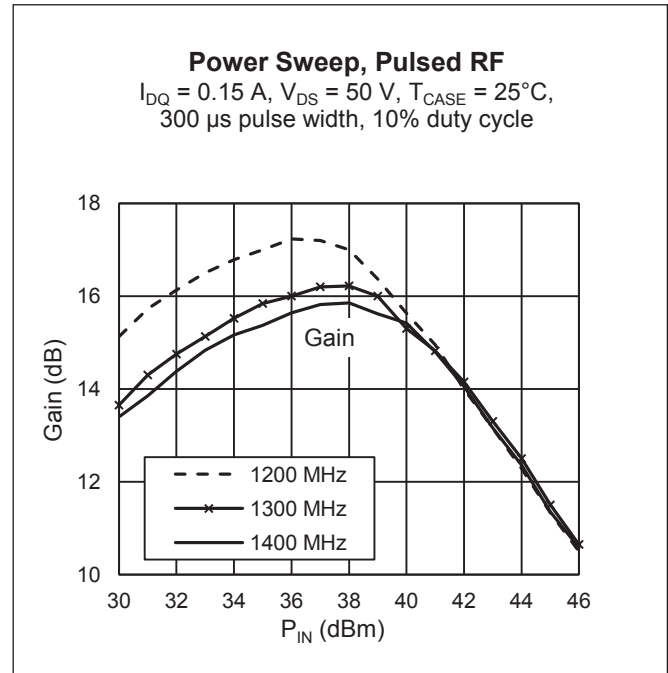
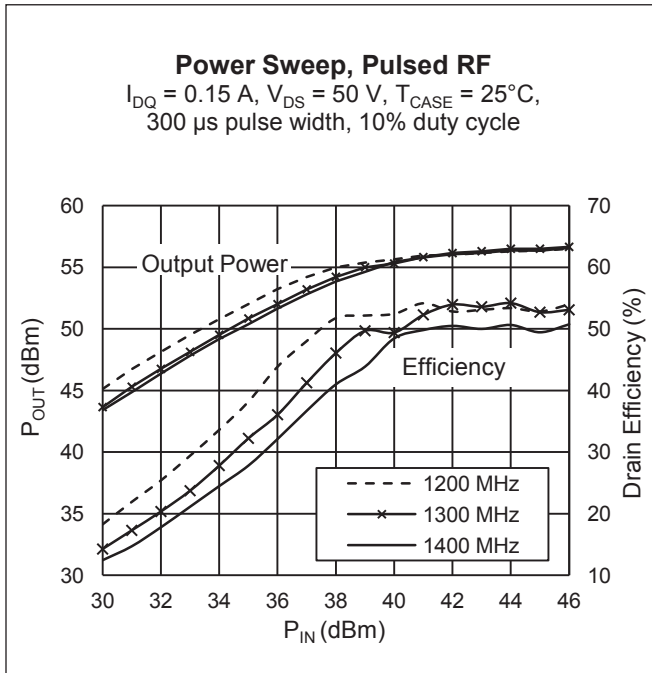
Typical RF Performance (data taken in production test fixture)



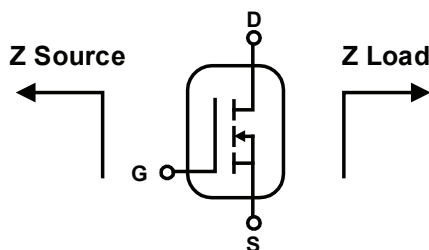
Typical RF Performance (cont.)



Typical RF Performance (cont.)



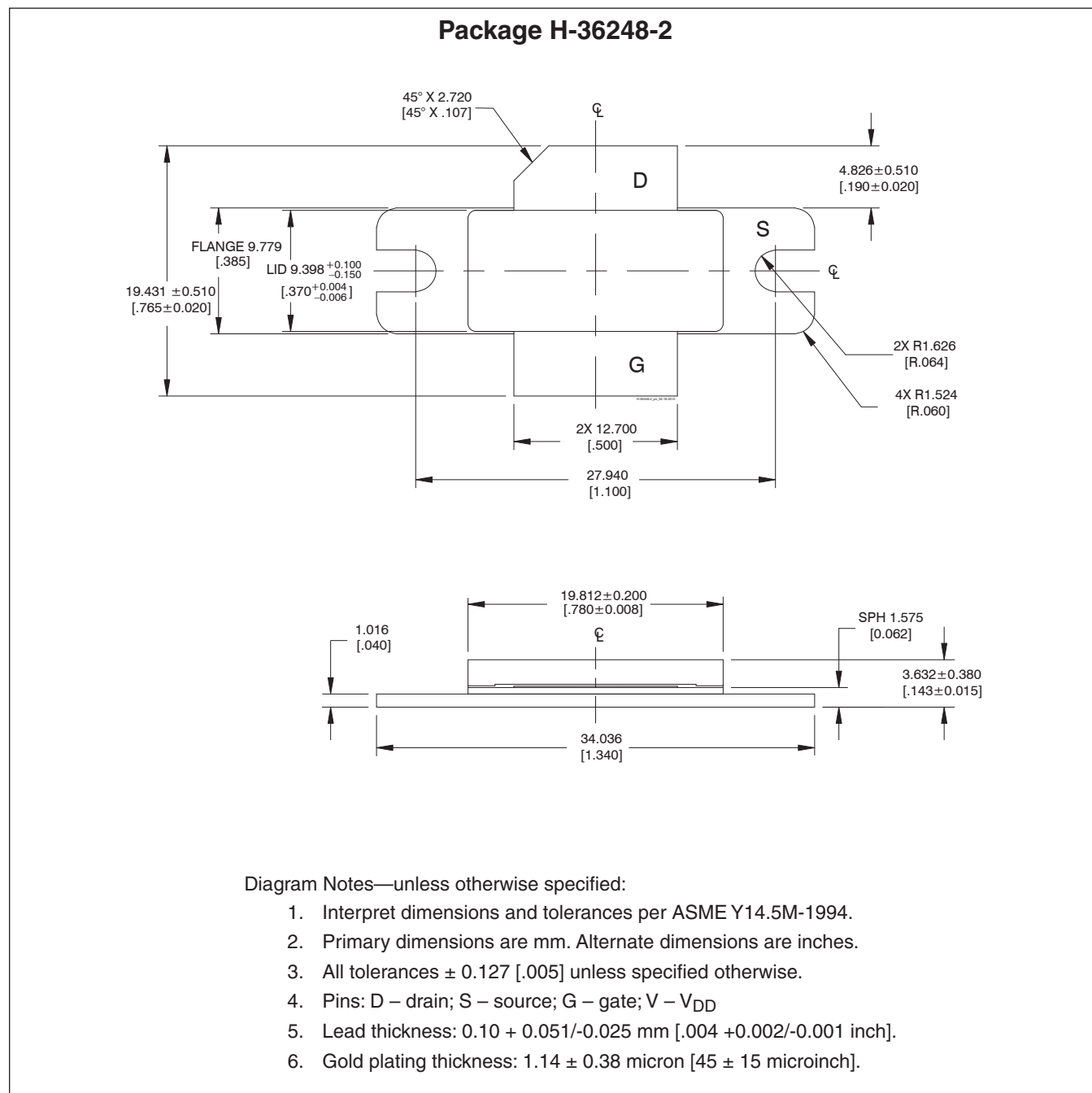
Broadband Circuit Impedance



Frequency	Z Source Ω		Z Load Ω	
MHz	R	jX	R	jX
1200	1.49	-0.99	2.17	-1.64
1300	1.85	-0.61	1.67	-1.22
1400	1.62	-0.62	1.27	-0.71

See next page for Package Outline Specifications

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: 2012-06-05 Preliminary Data Sheet

Previous Version: None

Page	Subjects (major changes since last revision)

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