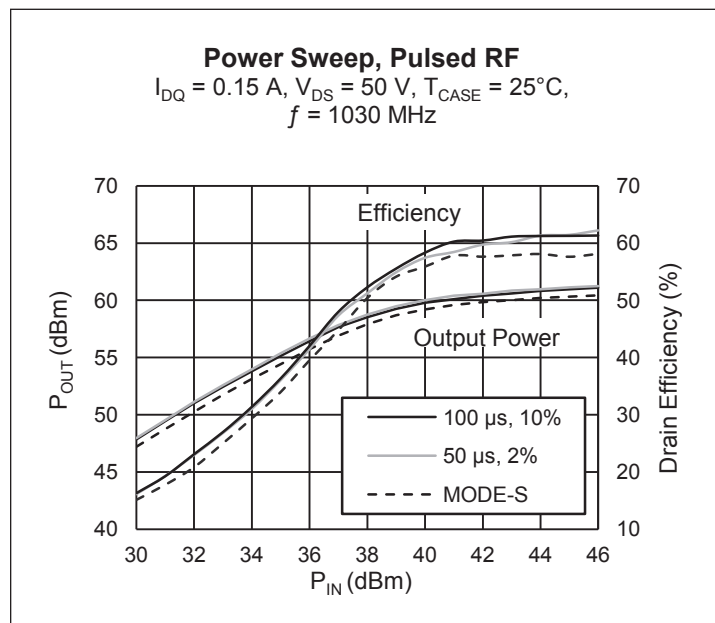


Thermally-Enhanced High Power RF LDMOS FET 1000 W, 50 V, 1030 / 1090 MHz

Description

The PTVA101K02EV LDMOS FET is designed for use in power amplifier applications in the 1030 MHz / 1090 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.

PTVA101K02EV
Package H-36275-4



Features

- Broadband input 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 1000 W under MODE-S pulse condition, (32 μs ON / 18 μs OFF) X 80, LTDF = 6.4%.

RF Characteristics

Pulsed RF Performance (tested in Infineon test fixture)

$V_{DD} = 50 \text{ V}$, $I_{DQ} = 0.15 \text{ A}$, $P_{OUT} = 1000 \text{ W}$, $f = 1030 \text{ MHz}$, 100 μs pulse width, 10% duty cycle

Characteristic	Symbol	Min	Typ	Max	Unit
Gain	G_{ps}	16	17	—	dB
Drain Efficiency	η_D	56	58	—	%
Return Loss	IRL	−30	−22	−7	dB

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

ESD: Electrostatic discharge sensitive device—observe handling precautions!

RF Characteristics

Typical RF Performance (not subject to production test, verified by design/characterization in Infineon test fixture)

$V_{DD} = 50\text{ V}$, $I_{DQ} = 75\text{ mA}$ per side, Input signal ($t_r = 5\text{ ns}$, $t_f = 6.5\text{ ns}$), $T_{CASE} = 25^\circ\text{C}$, class AB test

Mode of operation	f (MHz)	IRL (dB)	P_{1dB}			P_{3dB}			$P_{droop(pulse)}$ dB @ 1000 W	t_r (ns)	t_f (ns)
			Gain (dB)	Eff (%)	P_{OUT} (W)	Gain (dB)	Eff (%)	P_{OUT} (W)			
100 μs , 10%	1030	20	17.7	57.4	960	15.7	60.2	1148	0.20	7	8
50 μs , 2%	1030	20	17.8	59	1050	15.8	61	1216	0.05	7	8
MODE-S (32 μs ON / 18 μs OFF)X80, LTDF=6.4%	1030	20	16.9	57	872	14.9	58	1000	0.60	7	8
100 μs , 10%	1090	15	17.7	55	930	15.7	60	1140	0.20	7	8
50 μs , 2%	1090	16	19	61	950	17	61	1080	0.05	7	8

DC Characteristics (per side)

Characteristic	Conditions	Symbol	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{GS} = 0\text{ V}$, $I_{DS} = 10\text{ mA}$	$V_{(BR)DSS}$	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

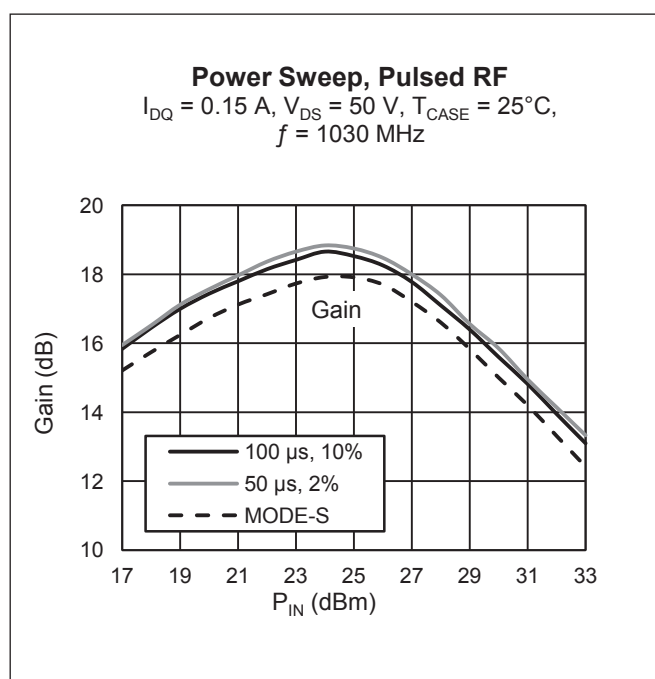
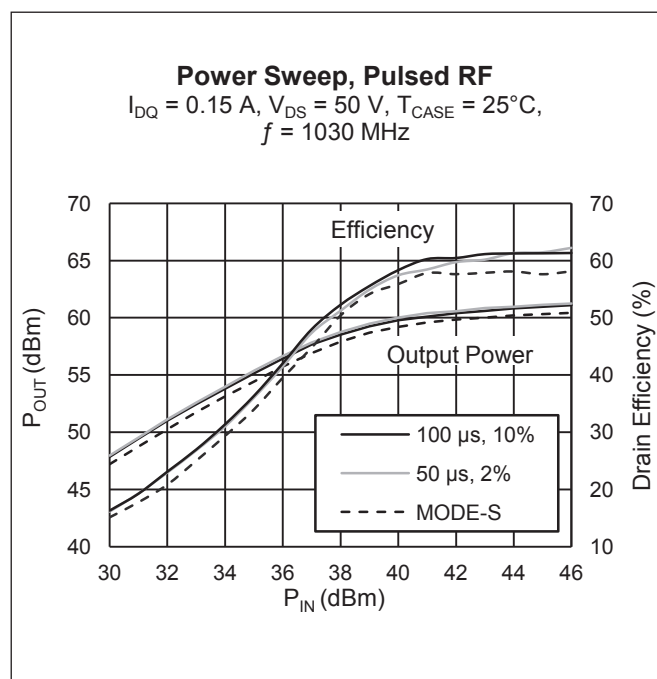
Maximum Ratings

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 ($T_{CASE} = 70^\circ\text{C}$, 1000 W, MODE−S)	$R_{\theta JC}$	0.16	$^\circ\text{C/W}$

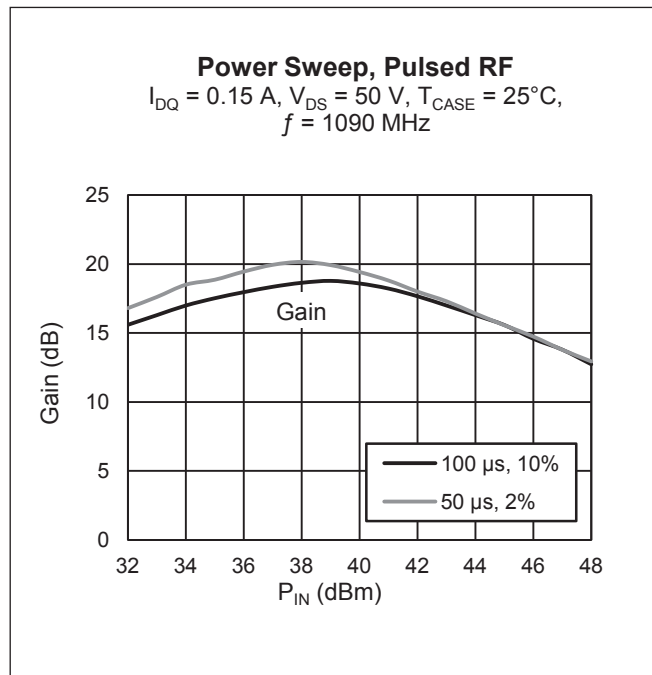
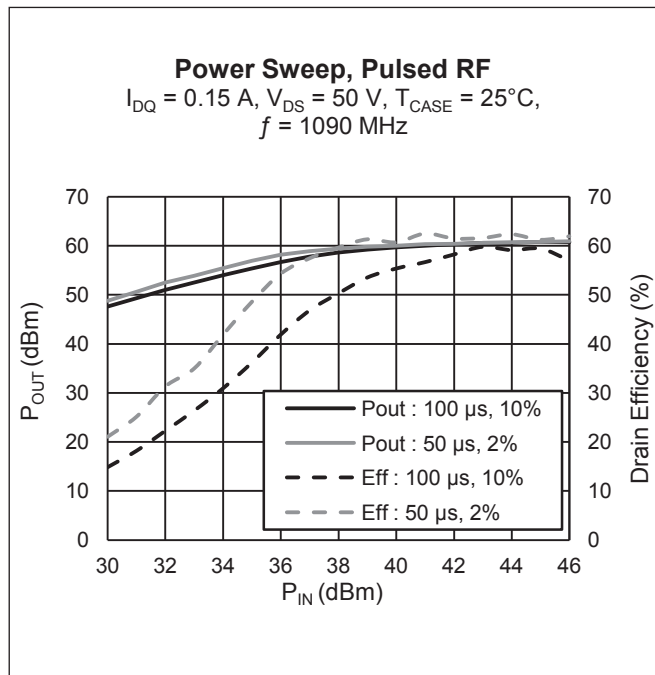
Ordering Information

Type and Version	Order Code	Package and Description	Shipping
PTVA101K02EV V1	PTVA101K02EVV1XWSA1	H-36275-4, slotted flange, single ended	Tray
PTVA101K02EV V1 R250	PTVA101K02EVV1R250XTMA1	H-36275-4, slotted flange, single ended	Tape & Reel, 250pcs

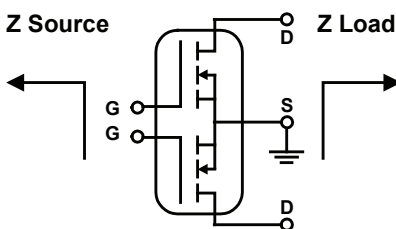
Typical RF Performance (data taken in production test fixture)



Typical RF Performance (cont.)



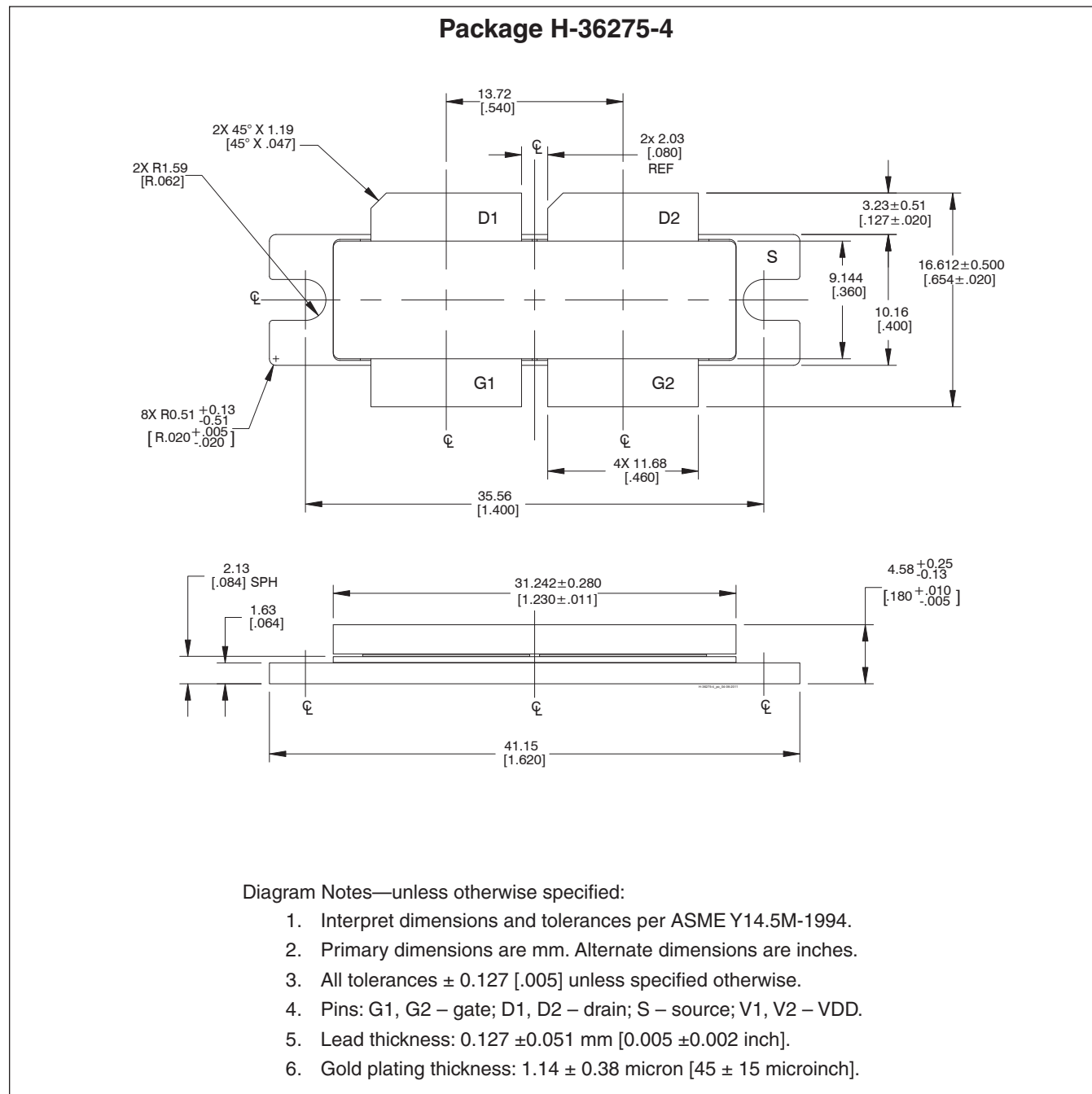
Broadband Circuit Impedance



Frequency MHz	Z Source Ω		Z Load Ω	
	R	jX	R	jX
1030	2.00	1.51	1.48	0.07
1090	2.35	0.64	1.12	-0.28

Note: Measurement on single side.

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: 2012-06-07

Preliminary Data Sheet

Previous Version: None

Page	Subjects (major changes since last revision)

We Listen to Your Comments

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

Your feedback will help us to continuously improve the quality of this document.

Please send your proposal (including a reference to this document) to:

highpowerRF@infineon.com

To request other information, contact us at:

+1 877 465 3667 (1-877-GO-LDMOS) USA

or +1 408 776 0600 International

**Edition 2012-06-07****Published by****Infineon Technologies AG****81726 Munich, Germany****© 2012 Infineon Technologies AG****All Rights Reserved.****Legal Disclaimer**

The information given in this document shall in no event be regarded as a guarantee of conditions or characteristics.

With respect to any examples or hints given herein, any typical values stated herein and/or any information regarding the application of the device, Infineon Technologies hereby disclaims any and all warranties and liabilities of any kind, including without limitation, warranties of non-infringement of intellectual property rights of any third party.

Information

For further information on technology, delivery terms and conditions and prices, please contact the nearest Infineon Technologies Office (www.infineon.com/rfpower).

Warnings

Due to technical requirements, components may contain dangerous substances. For information on the types in question, please contact the nearest Infineon Technologies Office.

Infineon Technologies components may be used in life-support devices or systems only with the express written approval of Infineon Technologies, if a failure of such components can reasonably be expected to cause the failure of that life-support device or system or to affect the safety or effectiveness of that device or system. Life support devices or systems are intended to be implanted in the human body or to support and/or maintain and sustain and/or protect human life. If they fail, it is reasonable to assume that the health of the user or other persons may be endangered.