



COAXIAL

# Power Detector

## ZV47-E673RMS+

50Ω -35 dBm to +0 dBm 0.1 to 67 GHz 1.85 mm Female

### KEY FEATURES

- Ultra Wide Matched Input Freq. Range: 0.1 to 67 GHz
- 35 dB Linear Dynamic Range (< ±1 dB Error)
- Positive Output Voltage Slope, 0 to +1.2 V
- Low Supply Current: 34 mA at +3.3 V typical

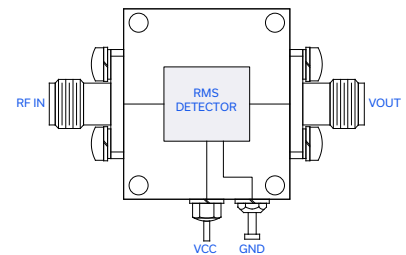


Generic photo used for illustration purposes only

### APPLICATIONS

- Test and Measurement
- RMS Power Detection of Complex Waveforms
- 4G, 5G and 6G Transmit Power Control
- Radar Systems

### FUNCTIONAL DIAGRAM



### PRODUCT OVERVIEW

Mini-Circuits' ZV47-E673RMS+ is a high-accuracy RMS power detector with an ultra-wide RF input bandwidth of 0.1 GHz to 67 GHz. The DC output voltage of the detector provides an accurate representation of the average signal power applied to the RF input. This device provides a linear-in-dB response with 29 mV/dB logarithmic slope over its 35 dB dynamic range with typically better than ±1 dB accuracy. It is housed in a compact, gold over nickel plated brass alloy case (0.84" x 0.96" x 0.37") with a 1.85 mm female connector on the RF input and a 2.92 mm female connector providing the detected output voltage.

### ELECTRICAL SPECIFICATIONS AT +25°C

Parameter		Frequency (GHz)	Min.	Typ.	Max.	Units
Frequency Range			0.1		67	GHz
Dynamic Range at ±1 dB Error		0.1 - 67	-35 to 0			dBm
Output Voltage Range		0.1 - 67	0 to +1.2			V
Slope		0.1 - 67		+29		mV/dB
Return Loss		0.1 - 67		12		dB
Pulse Response Time	Rise	0.1 - 67		2.9		µsec
	Fall	0.1 - 67		8.1		
DC Operating Conditions	Vcc	0.1 - 67	+2.7	+3.3	+3.6	V
	Current	0.1 - 67		34		mA

### ABSOLUTE MAXIMUM RATINGS<sup>1</sup>

Parameter	Ratings
Operating Case Temperature	-40 °C to +85 °C
Storage Temperature	-55 °C to +100 °C
DC Supply Voltage	+3.8 V
DC Supply Current	38 mA
RF Input Power	+12 dBm

1. Permanent damage may occur if any of these limits are exceeded.





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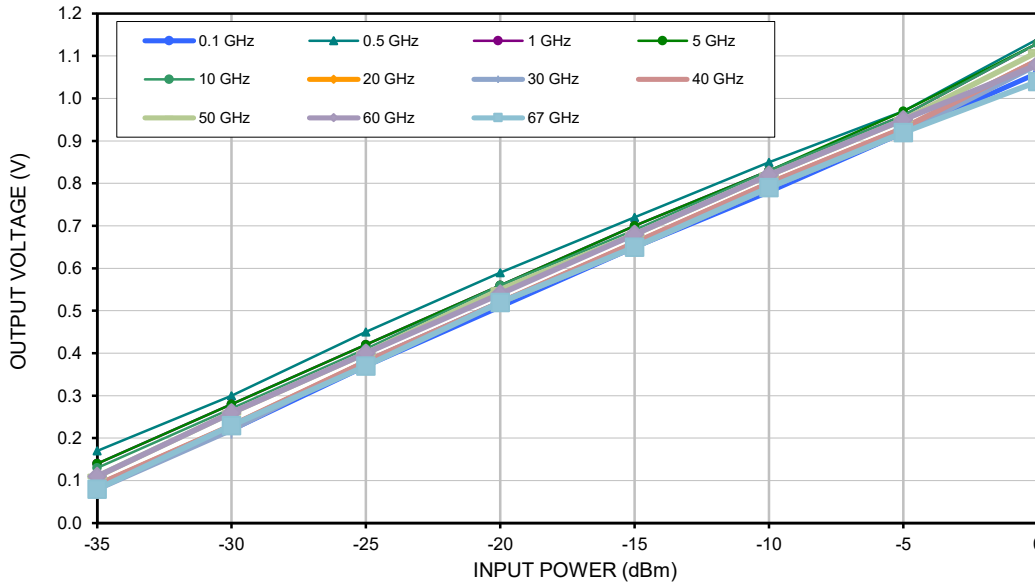
## ZV47-E673RMS+

Mini-Circuits

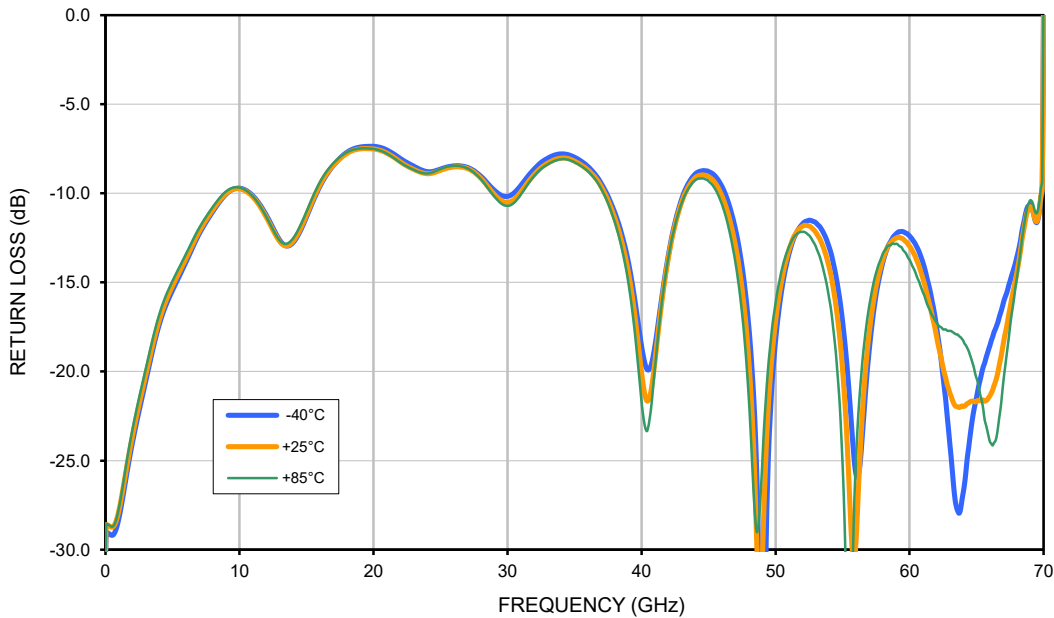
50Ω -35 dBm to +0 dBm 0.1 to 67 GHz 1.85 mm Female

### TYPICAL PERFORMANCE GRAPHS

#### OUTPUT POWER @+25°C



#### RETURN LOSS





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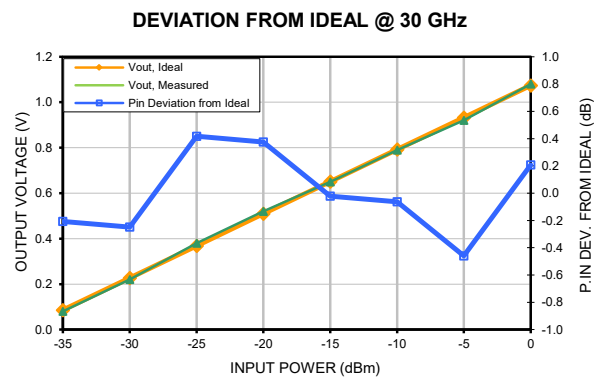
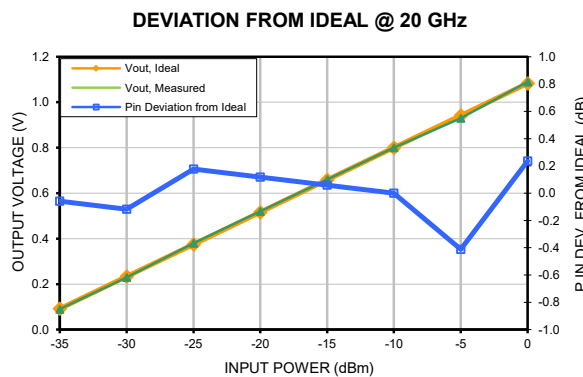
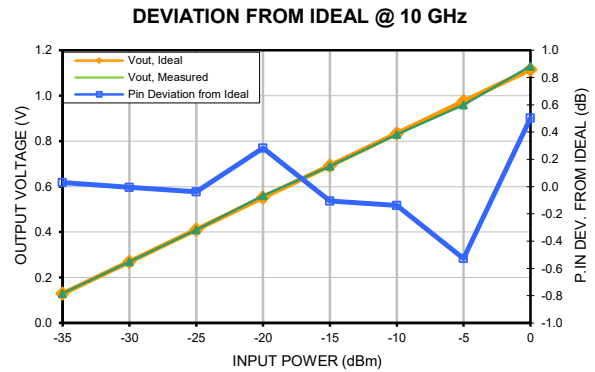
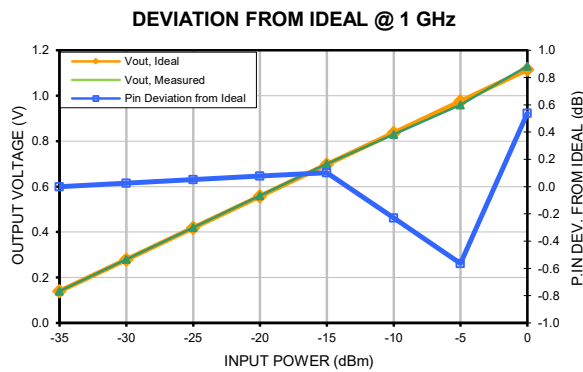
# Power Detector

## ZV47-E673RMS+

50Ω -35 dBm to +0 dBm 0.1 to 67 GHz 1.85 mm Female

### TYPICAL PERFORMANCE GRAPHS

The following charts show measured output voltage as a function of input power at a fixed frequency (green), plotted alongside an ideal linear voltage curve (orange) for comparison. Also shown is the difference of measured and ideal voltage represented as an error in input power (blue).





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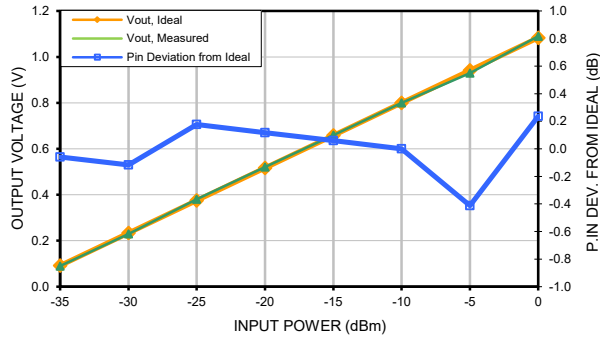
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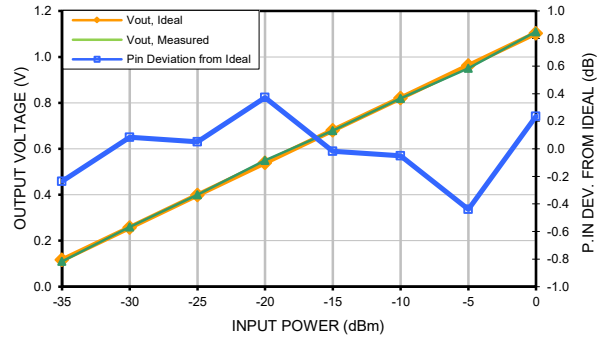
50Ω -35 dBm to +0 dBm 0.1 to 67 GHz 1.85 mm Female

### TYPICAL PERFORMANCE GRAPHS

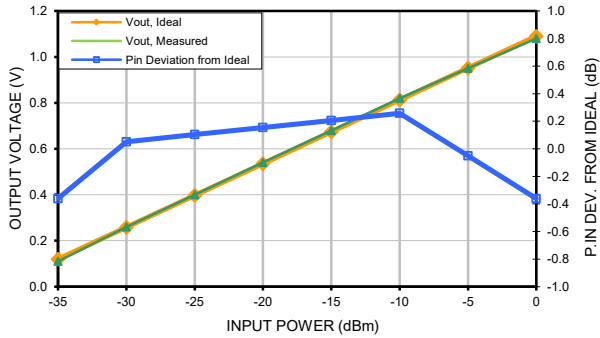
DEVIATION FROM IDEAL @ 40 GHz



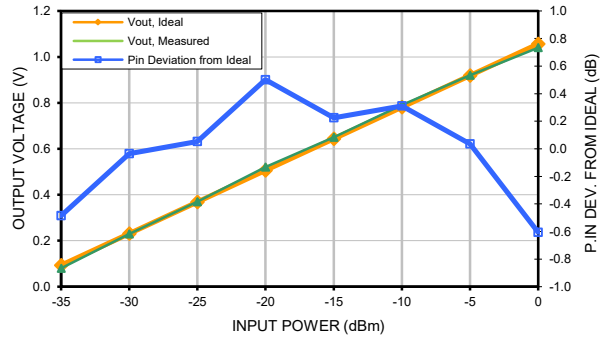
DEVIATION FROM IDEAL @ 50 GHz



DEVIATION FROM IDEAL @ 60 GHz



DEVIATION FROM IDEAL @ 67 GHz





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# Power Detector

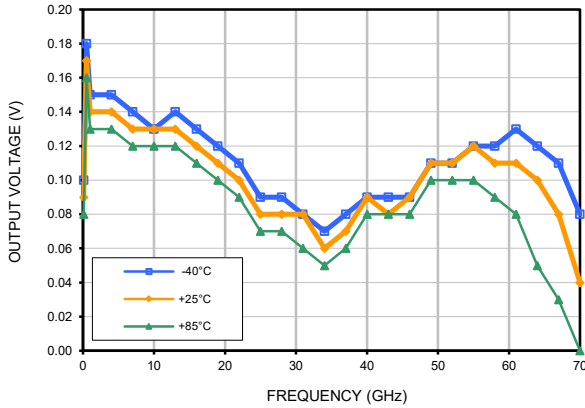
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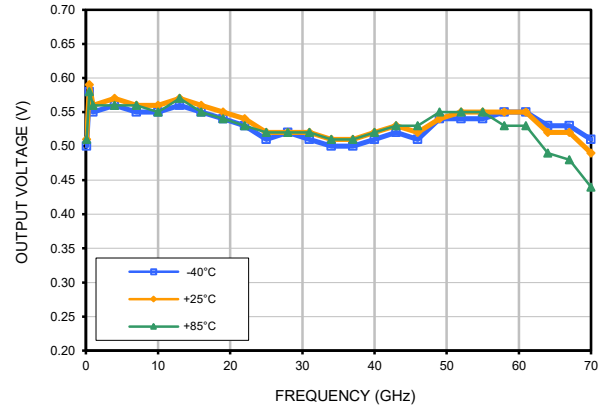
### TYPICAL PERFORMANCE GRAPHS

The following charts show measured output voltage at various temperatures as a function of frequency at a fixed input power.

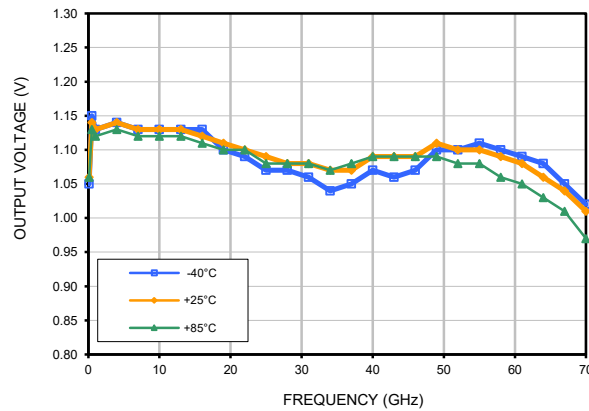
OUTPUT VOLTAGE @ -35 dBm



OUTPUT VOLTAGE @ -20 dBm



OUTPUT VOLTAGE @ 0 dBm





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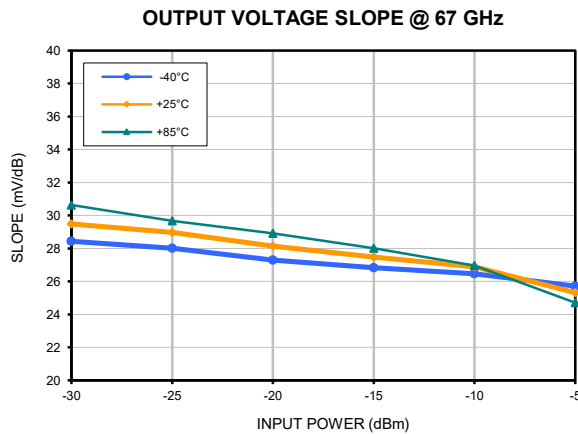
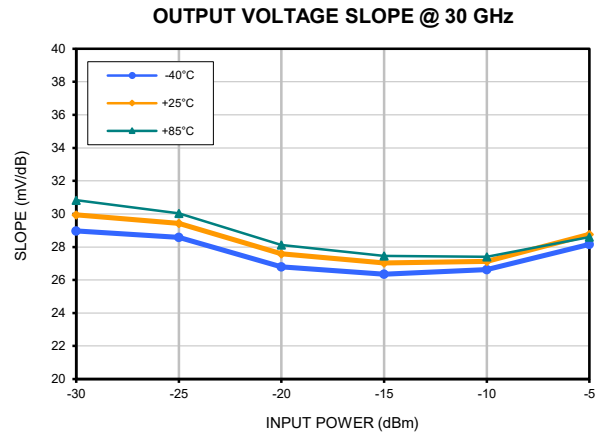
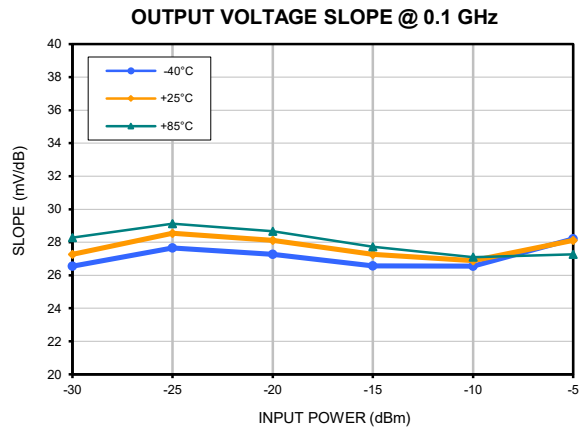
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### TYPICAL PERFORMANCE GRAPHS

The following charts show output voltage slope at various temperatures as a function of input power at a fixed frequency. The output voltage slope at a given input power is obtained by using linear regression over the range from -35 dBm to 0 dBm.





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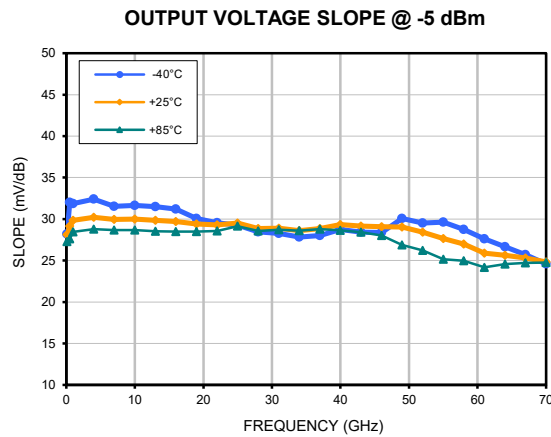
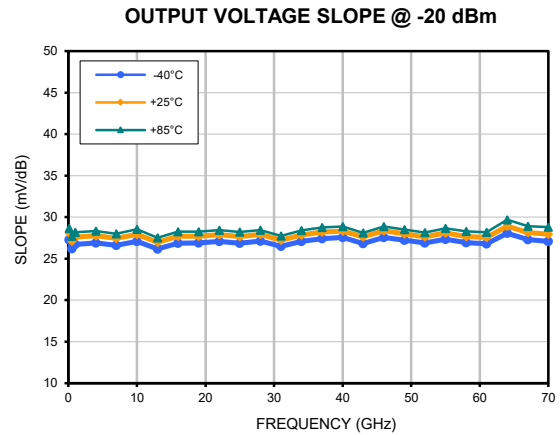
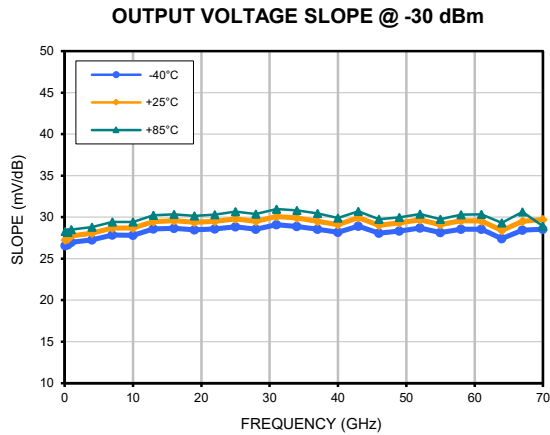
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### TYPICAL PERFORMANCE GRAPHS

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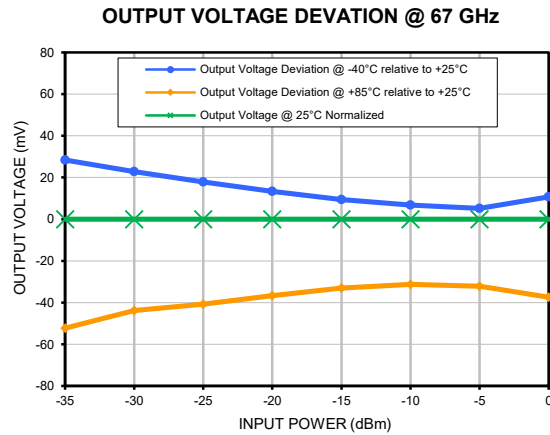
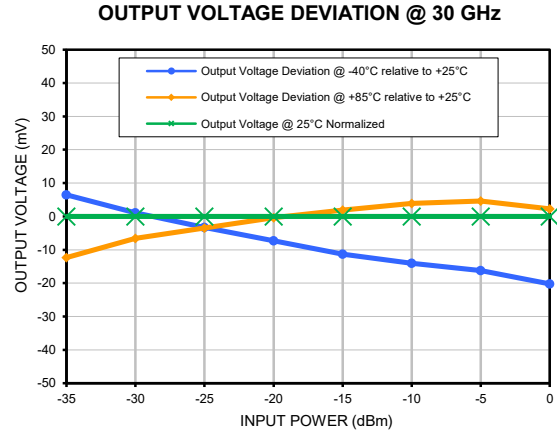
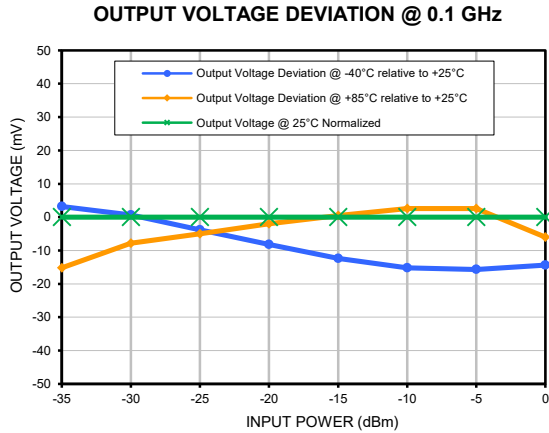
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## ZV47-E673RMS+

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### TYPICAL PERFORMANCE GRAPHS

The following charts show measured output voltage deviation at -40°C relative to +25°C (blue) and measured output voltage deviation at +85°C relative to +25°C (orange). Also shown is the measured output voltage measured at +25°C normalized (green) for comparison.







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# Power Detector

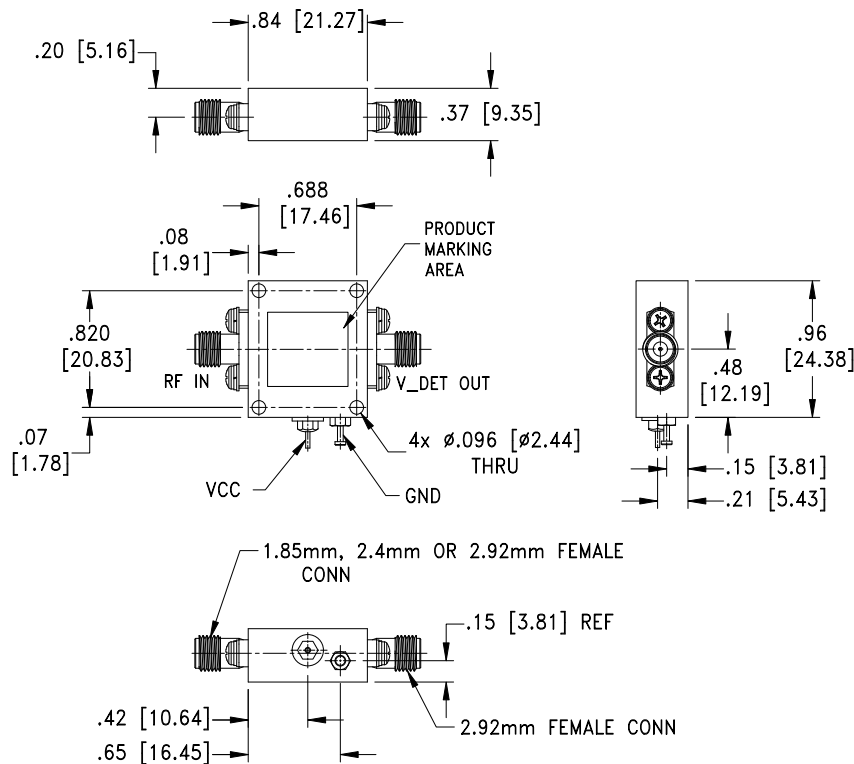
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### COAXIAL/PIN DESCRIPTION

Function	Marking on Unit	Connector
RF IN	RF IN	1.85 Female
VOUT	V_DET OUT	2.92 Female
Vcc (+3.3V)	VCC	-
GROUND	GND	-

### CASE STYLE DRAWING



Weight: 45 grams  
Dimensions are in inches [mm]. Tolerances: 2 Pl.  $\pm$ .03; 3 Pl.  $\pm$ .015

### PRODUCT MARKING\*: ZV47-E673RMS+

\*Marking may contain other features or characters for internal lot control.

