

Power Detector

50Ω, -50dBm to +15dBm, 10 to 8000 MHz

ZX47-50+ ZX47-50LN+



CASE STYLE: HN1173

| Connectors | Model |
|------------|--------------|
| SMA | ZX47-50-S+ |
| SMA | ZX47-50LN-S+ |

+RoHS Compliant
The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications

Maximum Ratings

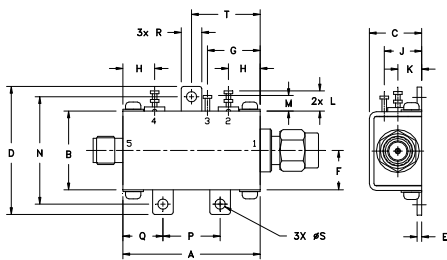
| | |
|----------------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| DC Power: | |
| Max. voltage | 5.7V |
| Max. current | 120mA |
| Internal Power Dissipation | 0.73W |
| Input Power | +22dBm |

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

Coaxial Connections

| | |
|--------------------|---|
| RF IN | 1 |
| DC OUT | 5 |
| Vcc (+5V) | 2 |
| TEMPERATURE SENSOR | 4 |
| GROUND | 3 |

Outline Drawing

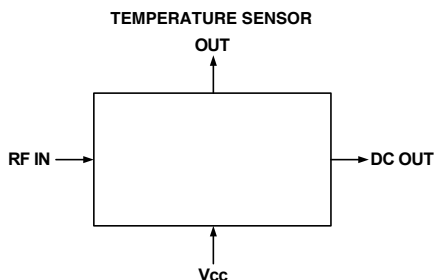


NOTE: When soldering the DC connections, caution must be used to avoid overheating the DC terminals. See Application Note [AN-40-10](#).

Outline Dimensions (inch/mm)

| | | | | | | | | | |
|-------|-------|-------|-------|------|------|-------|-------|-------|------|
| A | B | C | D | E | F | G | H | J | K |
| 1.20 | .69 | .46 | 1.12 | .04 | .34 | .46 | .28 | .33 | .21 |
| 30.48 | 17.53 | 11.68 | 28.45 | 1.02 | 8.64 | 11.68 | 7.11 | 8.38 | 5.33 |
| L | M | N | P | Q | R | S | T | wt. | |
| .18 | .14 | .94 | .50 | .35 | .18 | .106 | .60 | grams | |
| 4.57 | 3.56 | 23.88 | 12.70 | 8.89 | 4.57 | 2.69 | 15.24 | 31.8 | |

Simplified Functional Diagram



Features

- Low Noise (Output Ripple) for ZX47-50LN+, 20mVp-p Typ. @ 10MHz
- High Dynamic Range
- Wide Bandwidth
- Single Supply Voltage: +5V
- Stability Over Temperature
- Built-in Temperature Sensor
- Protected by US patent 6,790,049

Applications

- RF/IF Power Measurements
- Low Cost Power Monitoring System
- RF Leakage Monitors
- Fast feedback Levelling Circuits
- RF Power Control
- Receiver RF/IF Gain Control
- RSSI measurements

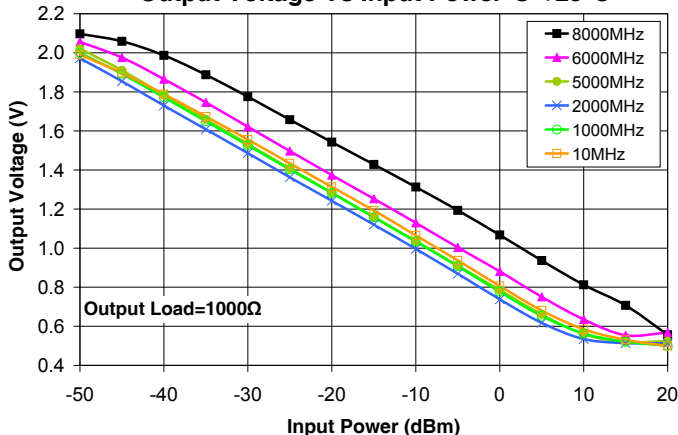
Electrical Specifications (T_{AMB} = 25°C)

| FREQ. (MHz) | DYNAMIC RANGE AT ±1dB ERROR (dBm) | OUTPUT VOLT. RANGE (V) | SLOPE (mV/dB) (Note 1) | VSWR (:1) | PULSE RESPONSE TIME (nSec) Typ. | | TEMP. SENSOR OUTPUT SLOPE (mV/°C) (Note 2) | DC OPERATING POWER | | | | |
|-------------|-----------------------------------|------------------------|------------------------|-----------|---------------------------------|-----------------|--|--------------------|------|------|---------------------|--|
| | | | | | ZX47-50+ Rise | ZX47-50LN+ Fall | | Vcc (Volts) | | | Note 3 Current (mA) | |
| Min. | Max. | Typ. | Typ. | Typ. | Typ. | | Typ. | Min. | Typ. | Max. | Typ. | |
| 10 | 1000 | -45 to +10 | | 1.05 | | | | | | | | |
| 1000 | 5000 | -50 to +5 | | 1.20 | | | | | | | | |
| 5000 | 6000 | -45 to +10 | 0.50 - 2.10 | 1.30 | | | | | | | | |
| 6000 | 8000 | -40 to +15 | | 1.20 | | | | | | | | |

Notes:

1. The negative slope indicates that Output Voltage decreases as Input Power increases. See "Output Voltage vs Input Power" graph below.
2. Temperature sensor output provides a DC Output Voltage which increases linearly with temperature rise. Recommended minimum load for this port is 2 kΩ.
3. Recommended minimum load at DC out port is 100 Ω. See maximum ratings for no damage.

Output Voltage Vs Input Power @ +25°C



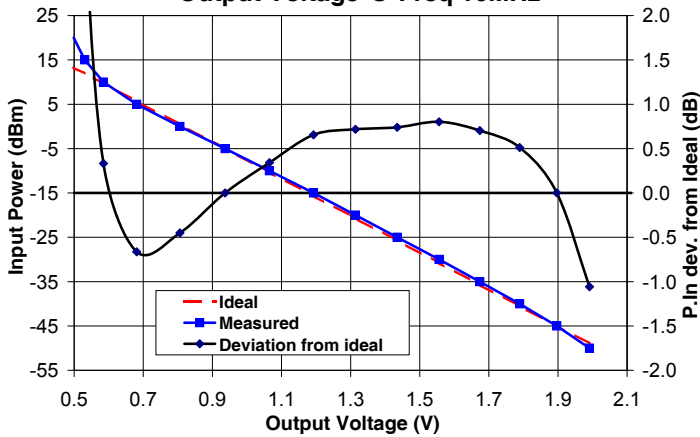
Notes

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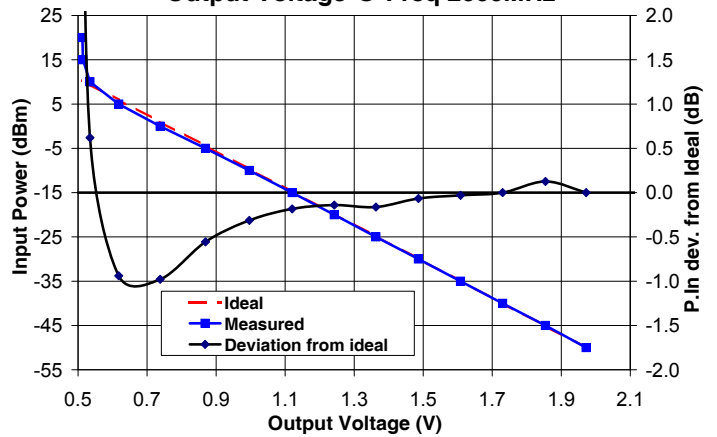


Performance Curves

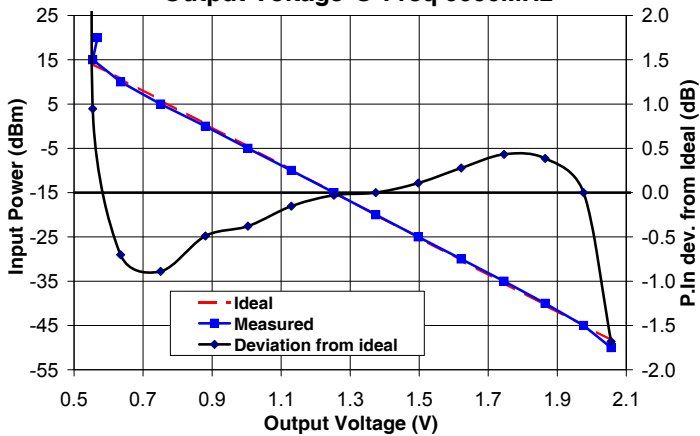
Power Input Deviation from Ideal Vs Output Voltage @ Freq 10MHz



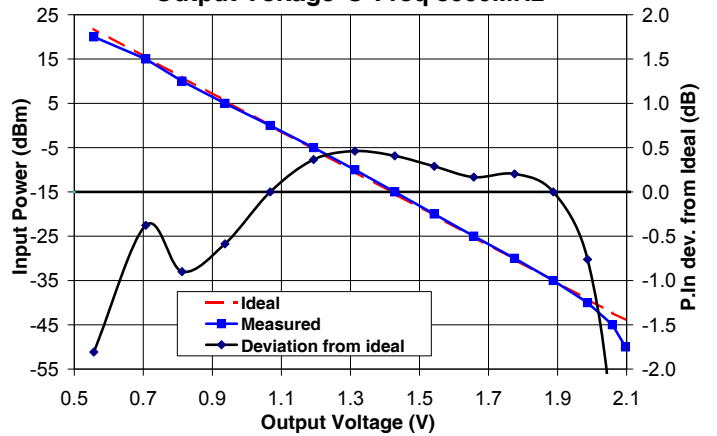
Power Input Deviation from Ideal Vs Output Voltage @ Freq 2000MHz



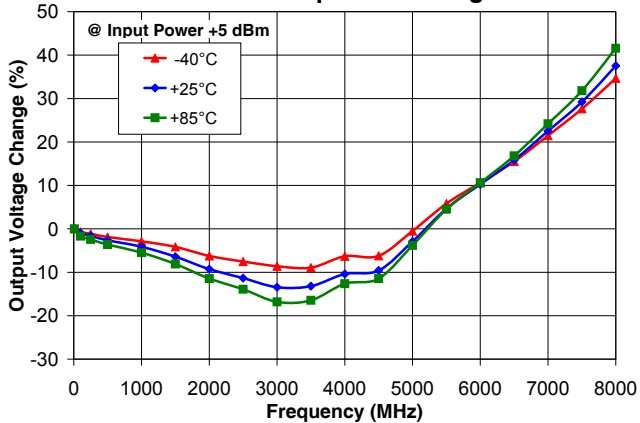
Power Input Deviation from Ideal Vs Output Voltage @ Freq 6000MHz



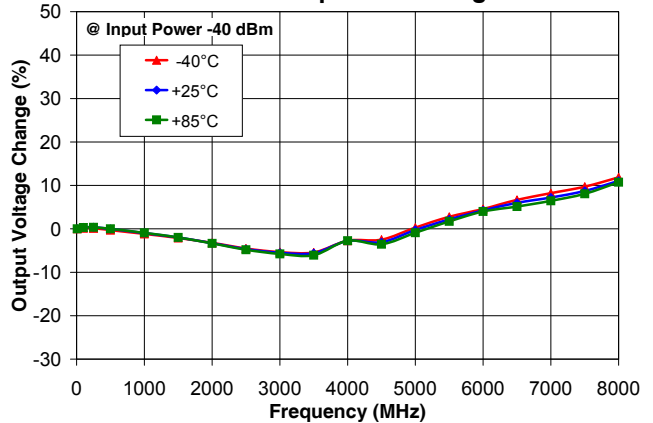
Power Input Deviation from Ideal Vs Output Voltage @ Freq 8000MHz



Output Voltage Change Vs Freq Over Temperature Range



Output Voltage Change Vs Freq Over Temperature Range



Notes

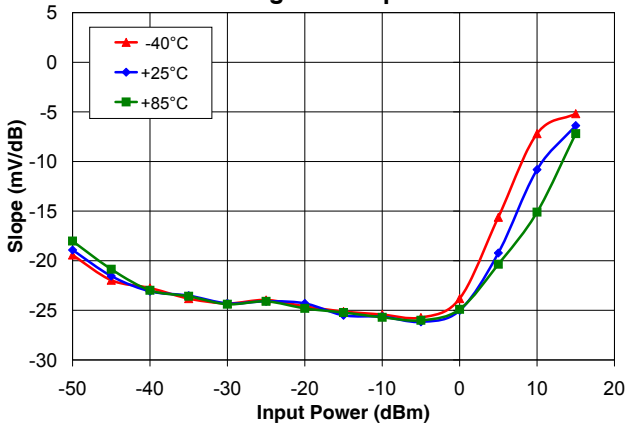
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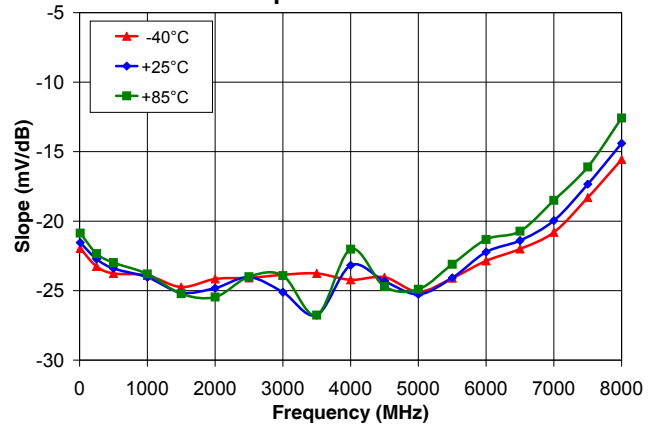
Performance Curves

ZX47-50+ ZX47-50LN+

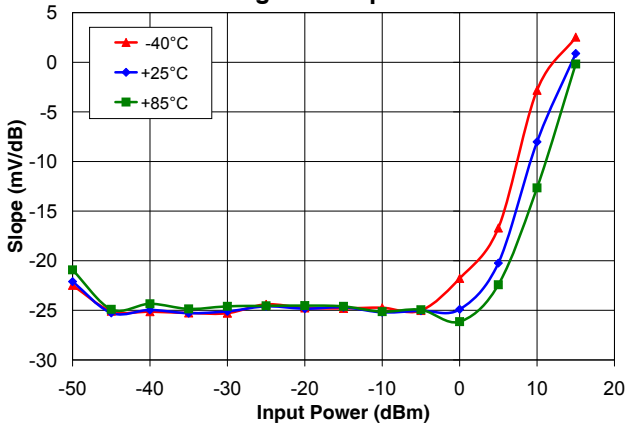
Slope Vs Input Power Over Temperature Range @ Freq 10MHz



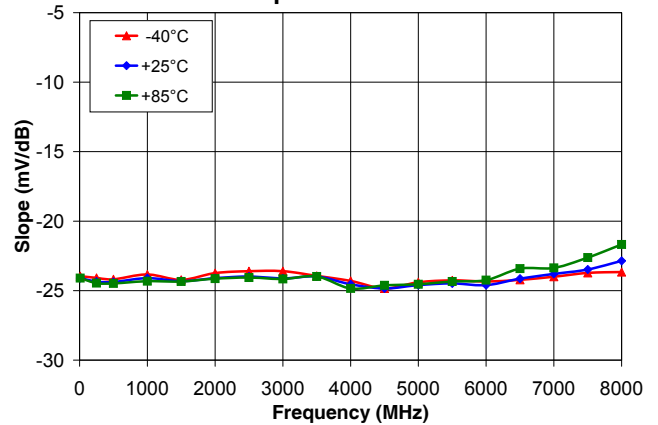
Slope Vs Freq Over Temperature Range @ Input Power -45dBm



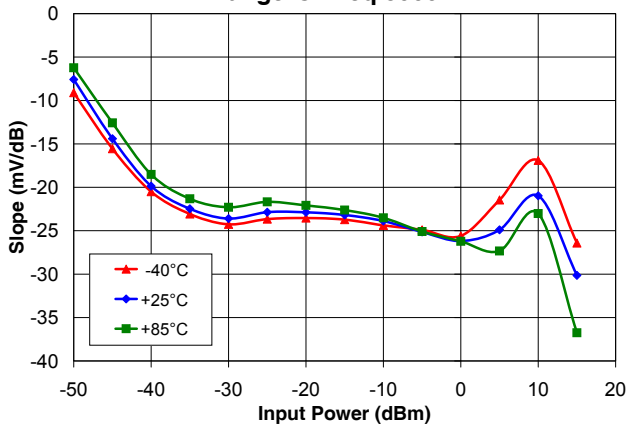
Slope Vs Input Power Over Temperature Range @ Freq 5000MHz



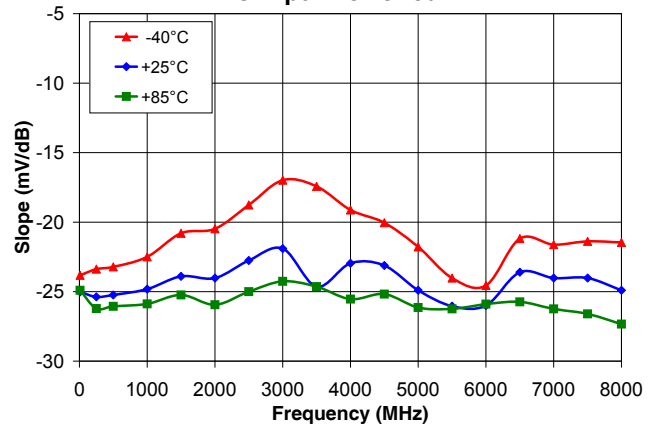
Slope Vs Freq Over Temperature Range @ Input Power -25dBm



Slope Vs Input Power Over Temperature Range @ Freq 8000MHz



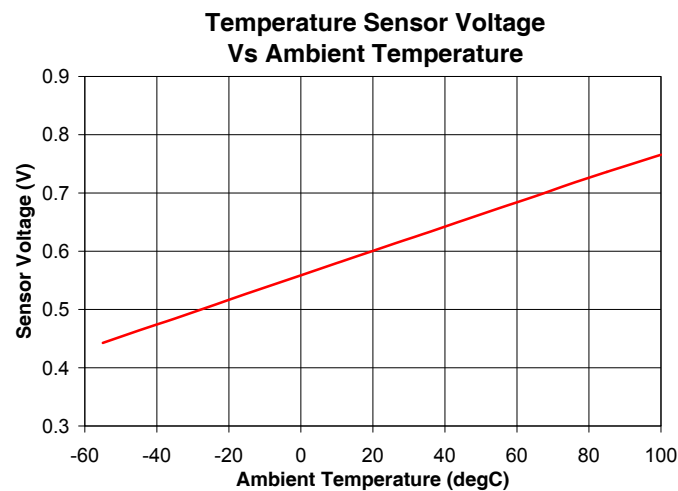
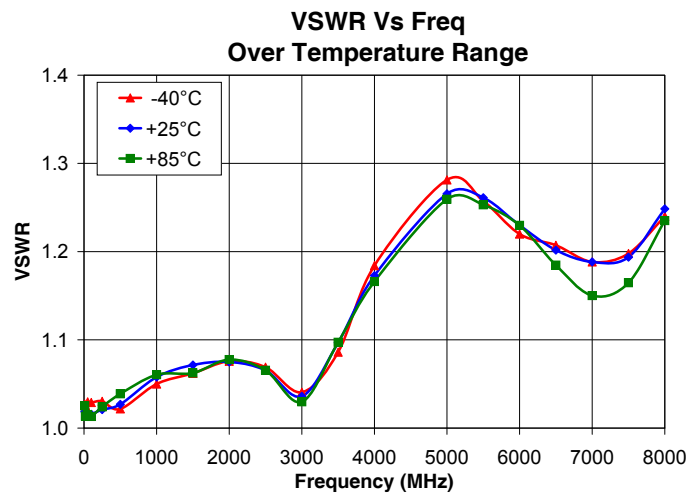
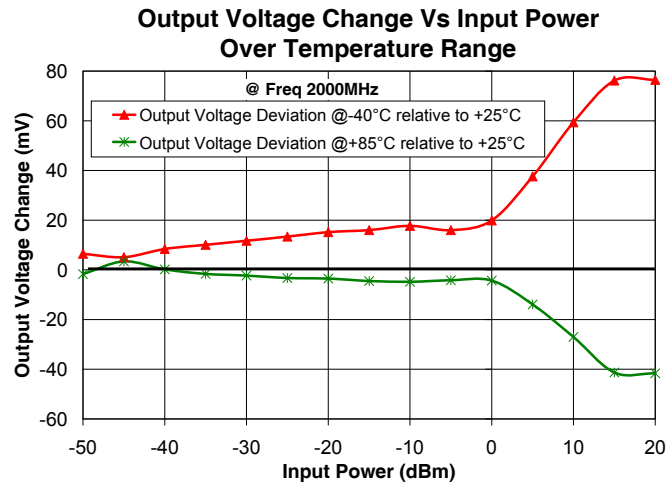
Slope Vs Freq Over Temperature Range @ Input Power 0dBm



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