National Semiconductor

LMH2110
PRODUCT BRIEF

January 7, 2010

8 GHz Logarithmic RMS Power Detector with 45 dB Dynamic Range

General Description

The LMH2110 is a 45 dB Logarithmic RMS power detector particularly suited for accurate power measurement of modulated RF signals that exhibit large peak-to-average ratios, i.e. large variations of the signal envelope. Such signals are encountered in W-CDMA and LTE cell phones. The RMS measurement topology inherently ensures a modulation insensitive measurement.

The device has an RF frequency range from 50 MHz to 8 GHz. It provides an accurate, temperature and supply insensitive, output voltage that relates linearly to the RF input power in dBm. The LMH2110's excellent conformance to a logarithmic response enables an easy integration by using slope and intercept only, reducing calibration effort significantly. The device operates with a single supply from 2.7V to 5V. The LMH2110 has an RF power detection range from -40 dBm to 5 dBm and is ideally suited for use in combination with a directional coupler. Alternatively a resistive divider can be used as well.

The device is active for EN = High, otherwise it is in a low power consumption shutdown mode. To save power and prevent discharge of an external filter capacitance, the output (OUT) is high-impedance during shutdown.

The LMH2110 power detector is offered in a tiny 6-bump microSMD package.

"Notice: This document is not a datasheet. For more information regarding this product or to order samples please contact your local National Semiconductor sales office or visit http://www.national.com/support/dir.html.

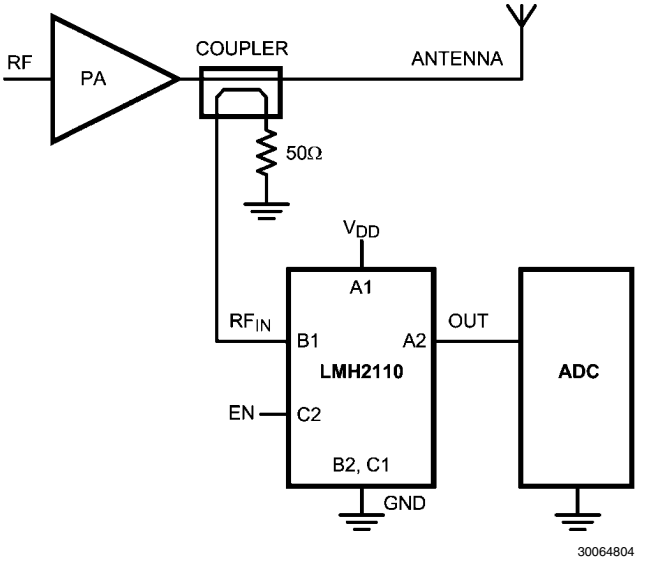
Features

- Logarithmic root mean square response
- 45 dB linear-in-dB power detection range
- Multi-band operation from 50 MHz to 8 GHz
- LOG conformance better than ±0.5 dB
- Highly temperature insensitive, ±0.25 dB
- Modulation independent response, 0.08 dB
- Minimal Slope and Intercept variation
- Shutdown functionality
- Wide supply range from 2.7V to 5V
- Tiny 6-bump microSMD package

Applications

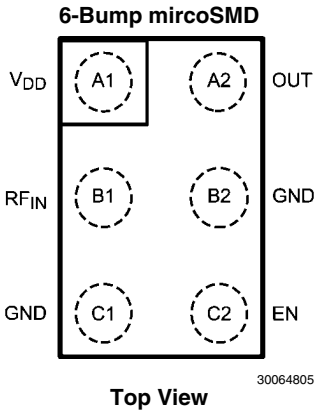
- Multi Mode, Multi band RF power control
  - GSM/EDGE
  - CDMA/CDMA2000
  - W-CDMA
  - OFDMA
  - LTE
- Infrastructure RF Power Control

Typical Application



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Connection Diagram



Top View

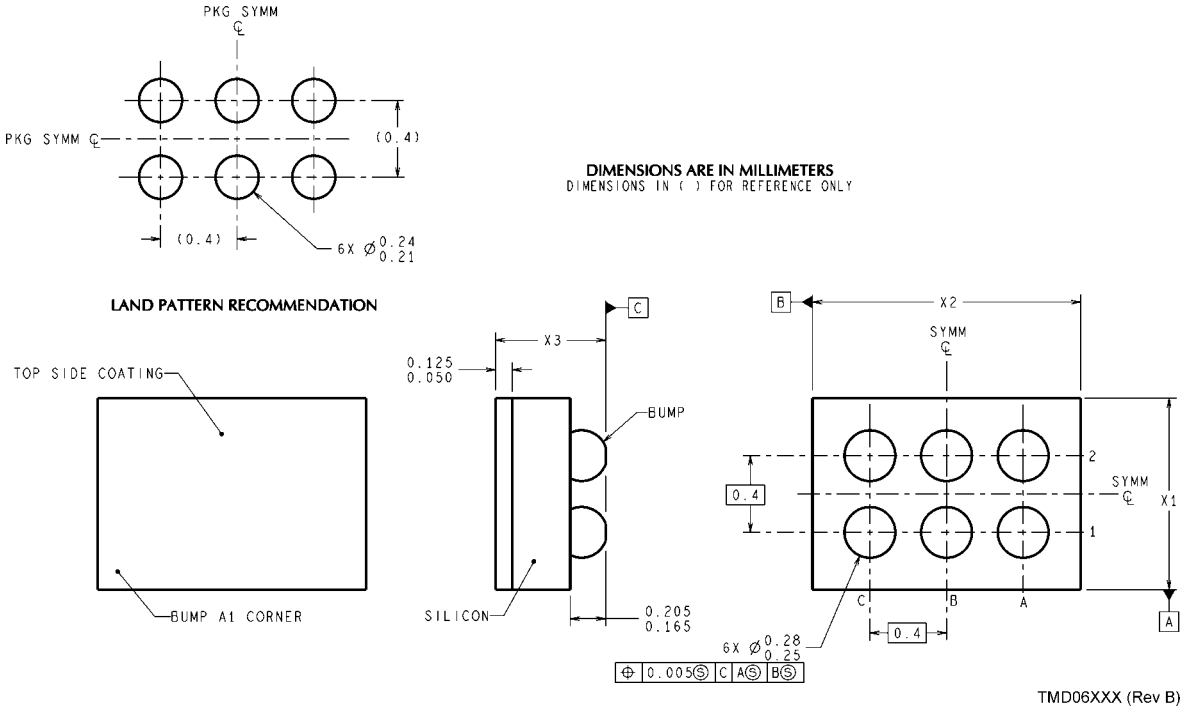
Pin Descriptions

	microSMD	Name	Description
Power Supply	A1	V_{DD}	Positive Supply Voltage.
	C1	GND	Power Ground.
	B2	GND	Power Ground. May be left floating in case grounding is not feasible.
Logic Input	C2	EN	The device is enabled for EN = High, and in shutdown mode for EN = Low. EN should be <2.5V for having low I_{EN}. For EN >2.5V, I_{EN} increases slightly, while device is still functional. Absolute maximum rating for EN = 3.6V.
Analog Input	B1	RF_{IN}	RF input signal to the detector, internally terminated with 50Ω.
Output	A2	OUT	Ground referenced detector output voltage.

Ordering Information

Package	Part Number	Package Marking	Transport Media	NSC Drawing	Status
6–Bump microSMD	LMH2110TM	P	250 Units Tape and Reel	TMD06BBA	Released
	LMH2110TMX		3k Units Tape and Reel		

Physical Dimensions inches (millimeters) unless otherwise noted



6-Bump microSMD
NS Package Number TMD06BBA
X1 = 0.840 ± 0.030 mm, X2 = 1.240 ± 0.030 mm, X3 = 0.600 ± 0.075 mm

Notes

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Switching Regulators	www.national.com/switchers	Distributors	www.national.com/contacts
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LED Lighting	www.national.com/led	Feedback/Support	www.national.com/feedback
Voltage References	www.national.com/vref	Design Made Easy	www.national.com/easy
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