

Product Overview

MCLD6040 is a high performance, low power RF logarithmic power detector designed for the measurement of wireless signals in the frequency range of 0.1GHz to 6GHz. It has a typical dynamic range of 40dB and best accuracy for variety of wireless applications for power control, TSSI and other RF power measurement. This detector has very tiny DFN 1.5x1.5mm package with 6pins.

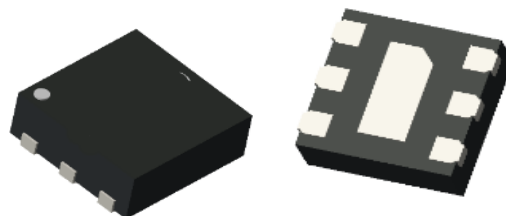


Figure 1. 6 Pad 1.5 x 1.5 mm DFN Package

Key Features

- 0.1GHz - 6GHz Frequency Range
- Linear logarithmic RF power detector
- Input Range -40dBm to 0dBm
- Low current Consumption
- Integrated temperature compensation circuits
- Compact and low-cost 1.5mm x1.5mm DFN package (MSL3, 260°C per JEDEC J-STD-020)
- ESD Level: HBM 1000V; CDM 1000V
- ROHS compatible

Applications

- FDD and TDD 2G/3G/4G LTE/5G NR systems
- TSSI and RSSI for wireless devices
- Transmitter power measurement
- Transmitter PA control
- Customer Premises Equipment (CPE)

Function Block Diagram

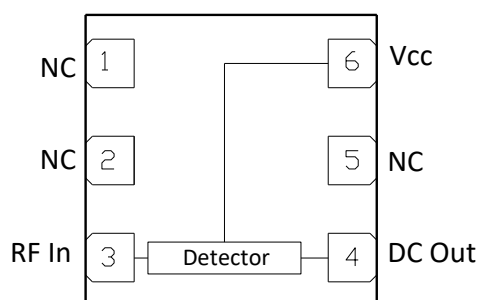


Figure 2

Ordering Information

Part No.	Description
MCLD6040	0.1-6GHz 40dB log RF detector, 7' Reel with 4000pcs

Pin Description

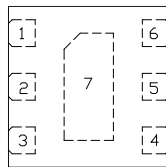


Figure 3

Signal Descriptions

Pin	Name	Description	Pin	Name	Description
1	NC	Not connected	5	NC	Not connected
2	NC	Not connected	6	VCC	Supply Voltage
3	RFIN	RF input port	7	GND PAD	Ground PAD
4	VOUT	DC output port			

Absolute Maximum Ratings

Parameter	Symbol	Rating	Unit
Storage Temperature	TSTG	-55 to 125	°C
Operating Temperature	TC	-40 to 105	°C
Operating Junction Temperature	TJ	175	°C
Thermal Resistance	Rθjc	180	°C/W
Operating Voltage	VCC	5	V
Input Power (CW signal)	PIN	5	dBm

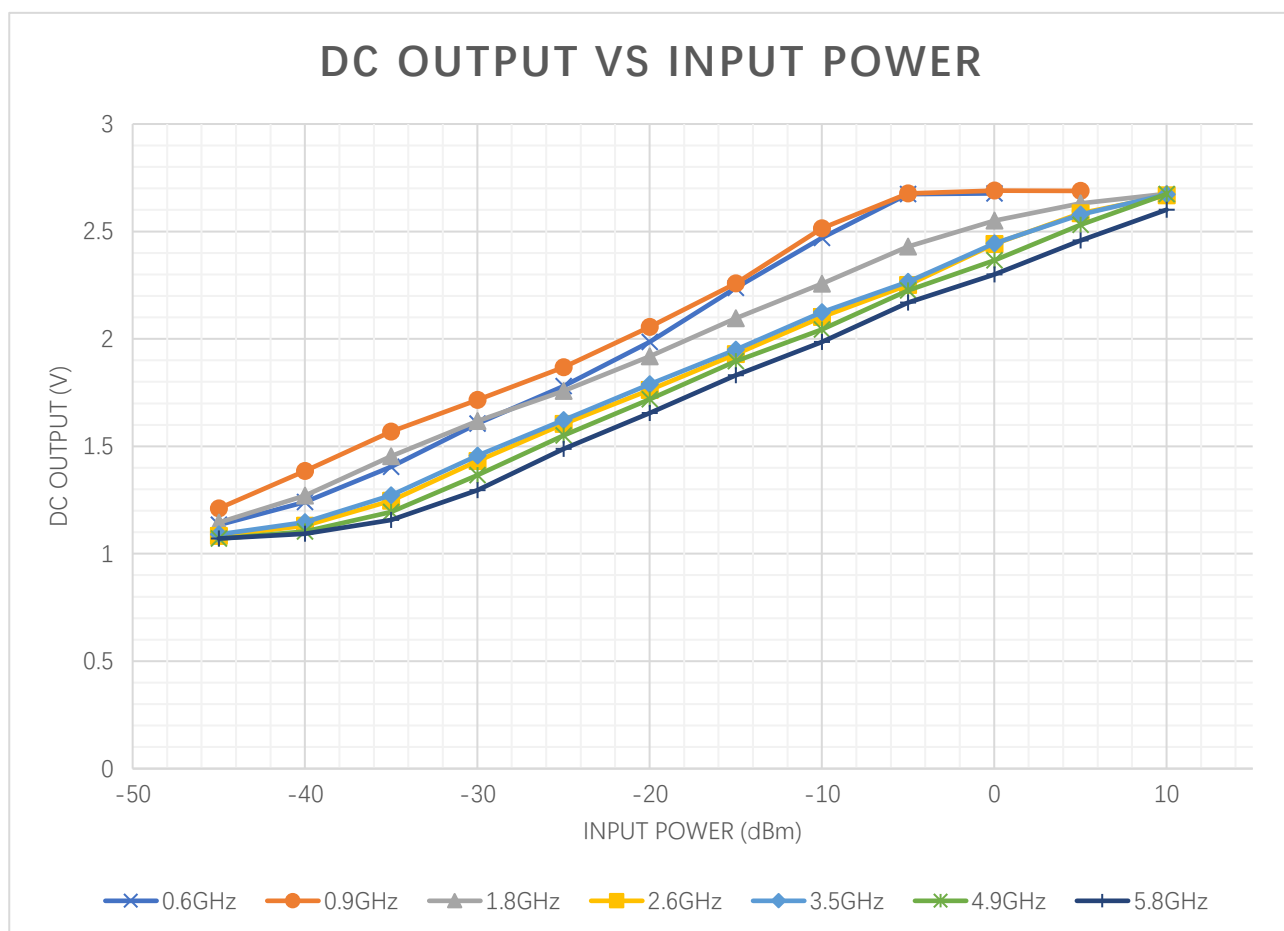
Recommended Operating Conditions

Parameter	Symbol	Min	Typ	Max	Unit
Operating Voltage	VCC	2.7	3.3	5	V
Operating current	ICC		7	15	mA
Operating frequency	f	0.1		6	GHz
Operating temperature	TC	-40	25	85	°C

Electrical Specifications

(VCC = 3.3V, f = 3500MHz, TC = +25 °C, Input / Output Load = 50Ω)

Parameter	Conditions	Min	Typ	Max	Unit
RF input Frequency Range		100		6000	MHz
RF input Power Range		-40		0	dBm
Output Voltage Rang		1.0		2.7	V
Turn On Time				300	ns
Turn Off Time				350	ns
Output Voltage Slope	600MHz		42		mV/dB
	1800MHz		32		mV/dB
	2600MHz		34		mV/dB
	3500MHz		33		mV/dB
	4900MHz		33		mV/dB



Evaluation Board Schematic

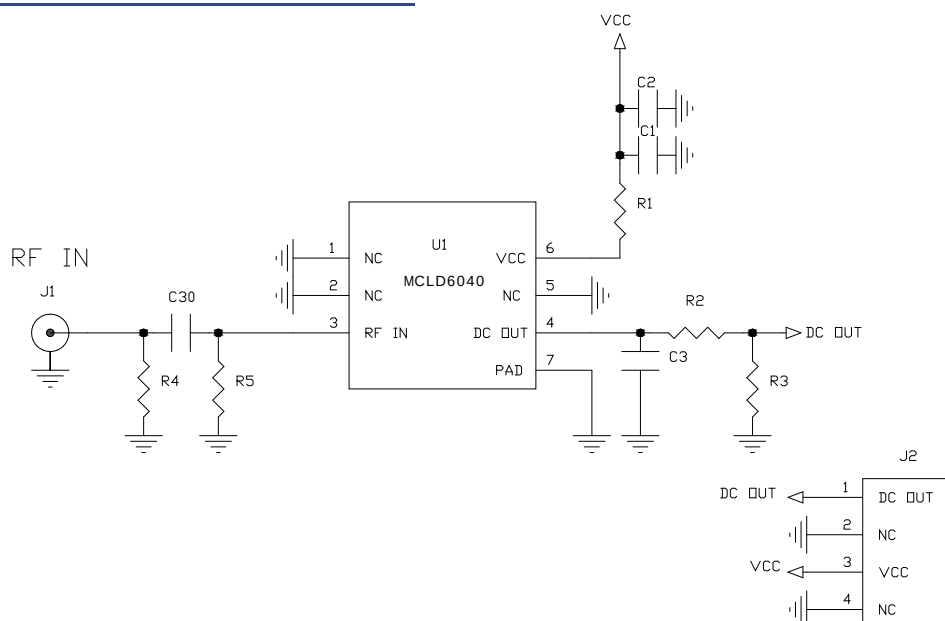
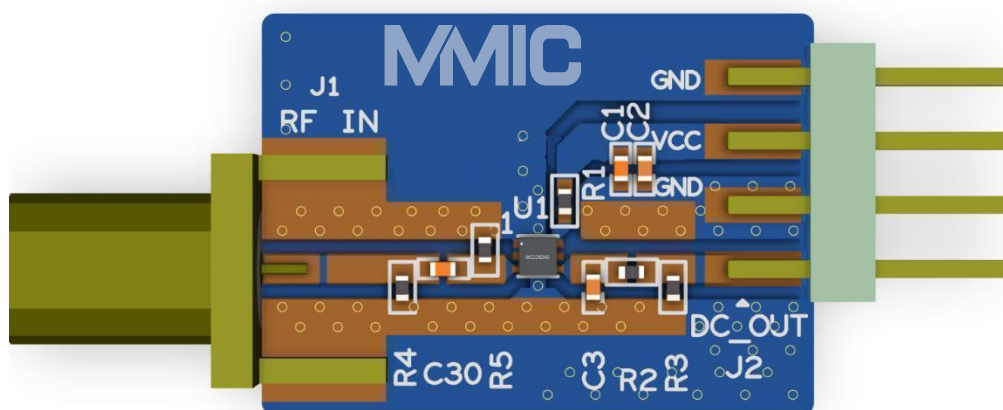


Figure 4

Evaluation Board Bill of Materials (BOM)

Component	Description	Size
C30	100pF	0603/0402
C3	10pF	0603/0402
R2	0ohm	0603/0402
R3	10kohm	0603/0402
C2	10nF	0603/0402
R1/C1	0.1GHz, 56nH/220pF	
R1/C1	0.6GHz, 22nH/100pF	
R1/C1	1.8GHz, 8.6nH/22pF	
R1/C1	2.6GHz, 6.8nH/18pF	
R1/C1	3.5GHz, 4.7nH/16pF	
R1/C1	4.9GHz, 2.2nH/10pF	

Rest of the components on the schematic are not used in this part.



Package Dimensions

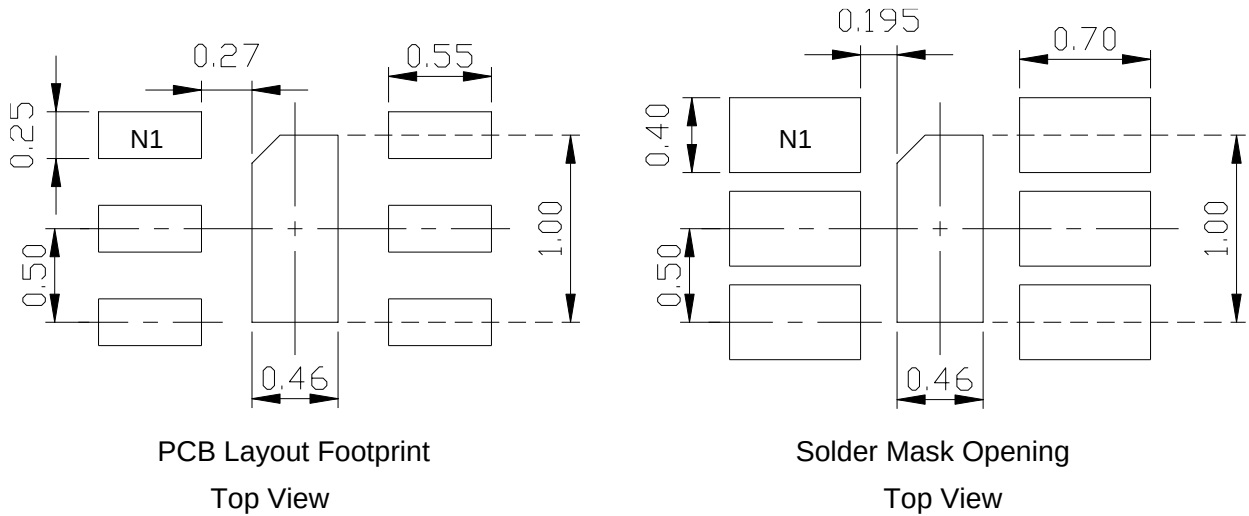


Figure 6. Layout Footprint

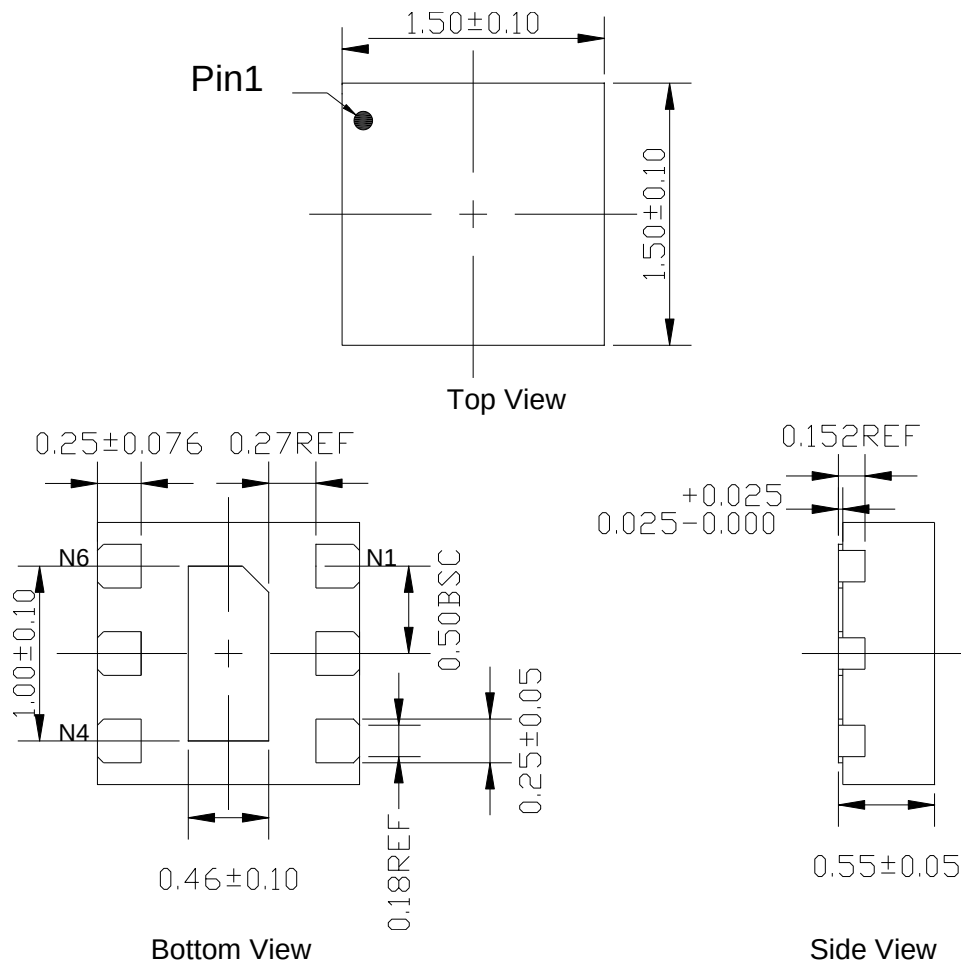
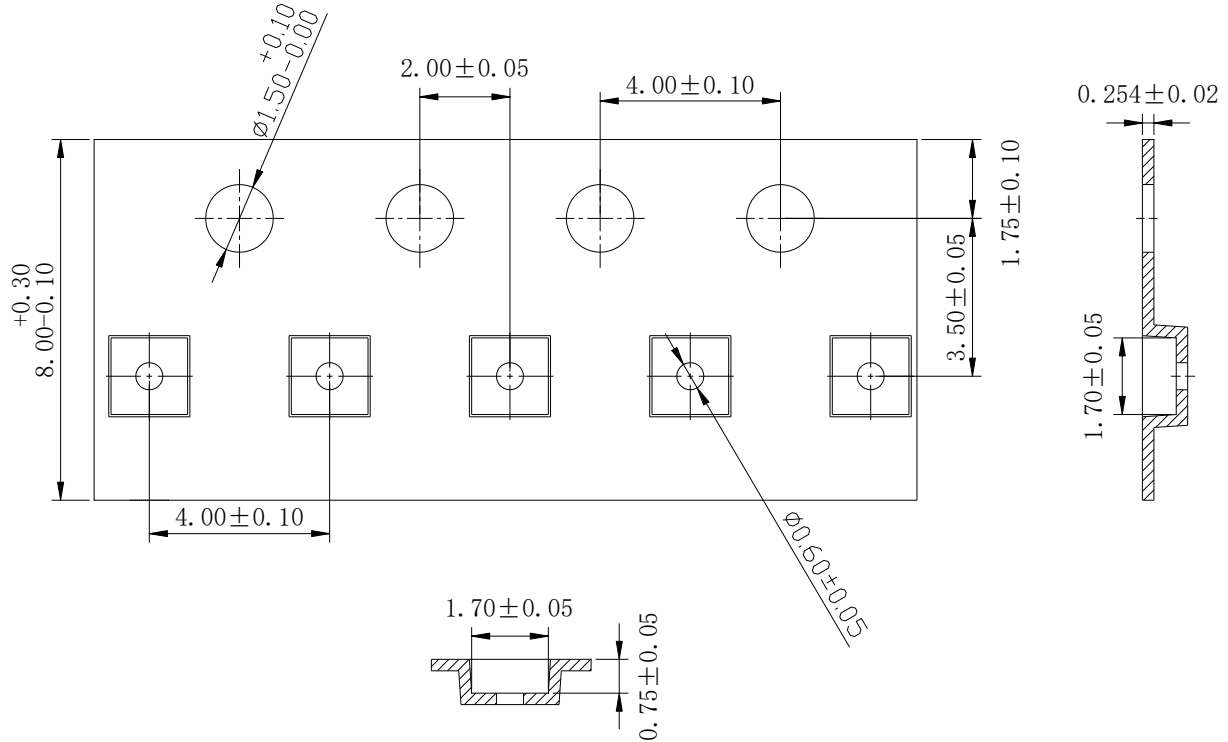


Figure 7. Package Dimensions

Tape and Reel Dimensions



- Note:
1. Carrier tape color: Black
 2. Cover tape width: 5.50 ± 0.10
 3. Cover tape color: Transparent
 4. 10 sprocket hole pitch cumulative tolerance $\pm 0.20\text{MAX}$
 5. Camber not to exceed 1mm in 100mm
 6. Mold# DFN1.5X1.5X0.5
 7. All DIMS in mm

Figure 8