

WIDEBAND FIXED ATTENUATOR FAMILY, DC - 25 GHz HMC656LP2E / HMC657LP2E / HMC658LP2E

Typical Applications

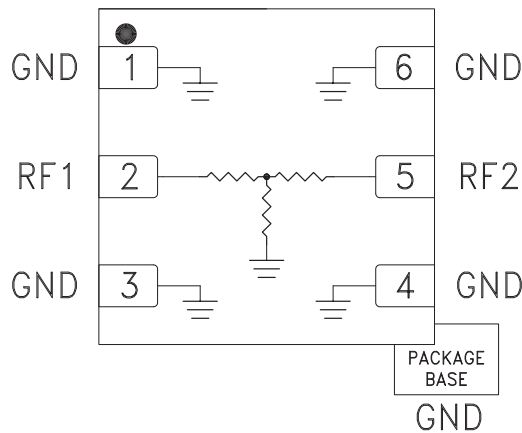
The HMC656LP2E - HMC658LP2E are ideal for:

- Fiber Optics
- Microwave Radio
- Military & Space
- Test & Measurement
- Scientific Instruments
- RF / Microwave Circuit Prototyping

Features

- 3 Attenuator Products:
10, 15, & 20 dB Fixed Attenuation Levels
- Wide Bandwidth: DC - 25 GHz
- Excellent Attenuation Accuracy
- Power Handling: +25 dBm
- 6 Lead 2x2mm SMT Package: 4mm²

Functional Diagrams



General Description

The HMC656LP2E / 657LP2E / 658LP2E are a line of wideband fixed value SMT 50 Ohm matched attenuators which offer relative attenuation levels of 10, 15 and 20 dB respectively. These passive attenuators are ideal for military, test equipment, and other wideband applications where extremely flat attenuation, and excellent VSWR vs. frequency are required.

These wideband attenuators handle up to +25 dBm of input power, and are compatible with high volume surface mount manufacturing techniques.

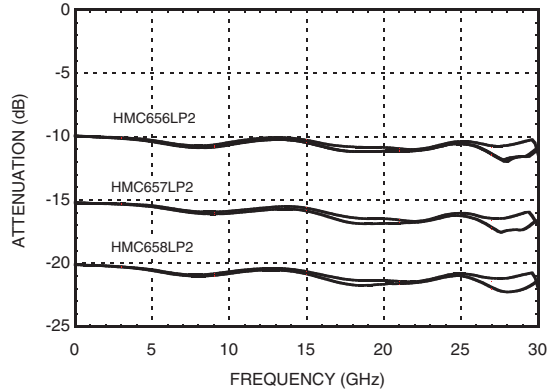
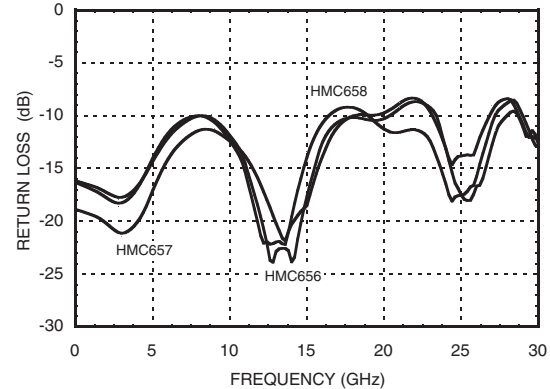
Electrical Specifications, $T_A = +25^\circ\text{C}$, 50 Ohm system

Part Number	Attenuator Value	Return Loss (Min.)	Return Loss (Typ.)	Attenuation Tolerance [1]	Temperature Coefficient (Typical) [2]	Units
						DC - 25
HMC656LP2E	10	7	12	± 1.5	0.0004	dB
HMC657LP2E	15	7	14	± 2.0	0.0006	dB
HMC658LP2E	20	7	12	± 2.0	0.0004	dB

[1] Attenuation Tolerance is valid over temperature.

[2] Temperature Coefficient Units are dB/°C.

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Attenuation vs. Temperature

Return Loss

Absolute Maximum Ratings

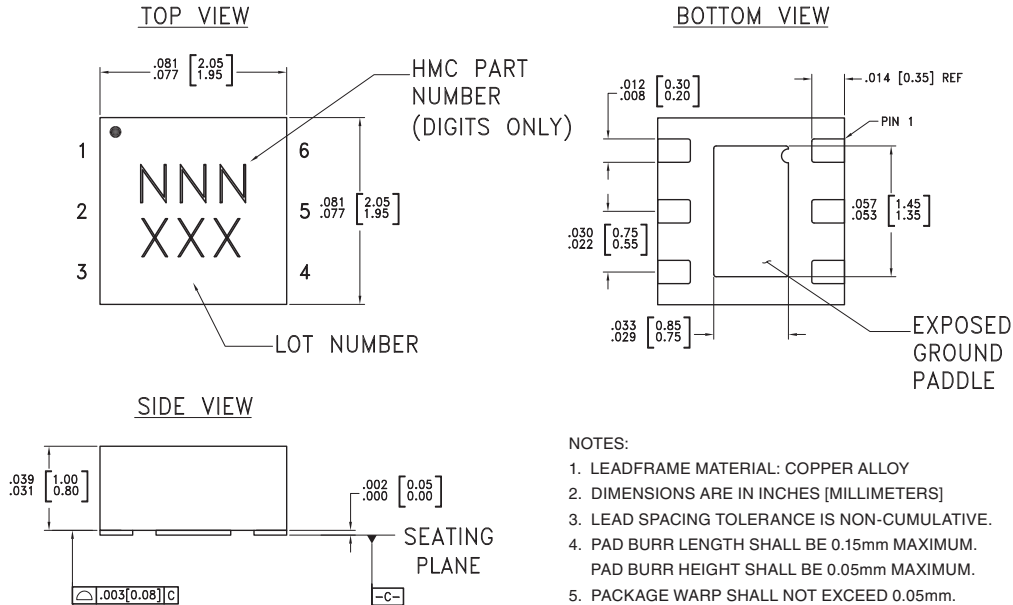
Part Number	HMC656LP2E	HMC657LP2E	HMC658LP2E	Units
RF Input Power (CW)	25	25	25	dBm
DC Voltage Terminated	4.9	4.4	4.8	V
DC Voltage Open	5.3	4.6	4.9	V
Storage Temperature	-65 to +150			°C
Operating Temperature	-40 to +85			°C
ESD Sensitivity (HBM)	Class 1B	Class 1B	Class 1B	



**ELECTROSTATIC SENSITIVE DEVICE
OBSERVE HANDLING PRECAUTIONS**

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Outline Drawing



NOTES:

1. LEADFRAME MATERIAL: COPPER ALLOY
2. DIMENSIONS ARE IN INCHES [MILLIMETERS]
3. LEAD SPACING TOLERANCE IS NON-CUMULATIVE.
4. PAD BURR LENGTH SHALL BE 0.15mm MAXIMUM.
PAD BURR HEIGHT SHALL BE 0.05mm MAXIMUM.
5. PACKAGE WARP SHALL NOT EXCEED 0.05mm.
6. ALL GROUND LEADS AND GROUND PADDLE MUST BE SOLDERED TO PCB RF GROUND.
7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED LAND PATTERN.

Package Information

Part Number	Package Body Material	Lead Finish	MSL Rating	Package Marking ^[3]
HMC656LP2 through HMC658LP2	Low Stress Injection Molded Plastic	Sn/Pb Solder	MSL1 ^[1]	NNN XXX
HMC656LP2E through HMC658LP2E	RoHS-compliant Low Stress Injection Molded Plastic	100% matte Sn	MSL1 ^[2]	NNN XXX

[1] Max peak reflow temperature of 235 °C
 [2] Max peak reflow temperature of 260 °C
 [3] 3-Digit lot number XXX

Pin Descriptions

Pin Number	Function	Description	Interface Schematic
1, 3, 4, 6	GND	Package bottom must be connected to RF/DC ground.	
2, 5	RF1, RF2	This pin is DC coupled and matched to 50 Ohms. Use DC Blocking capacitors if the input / output signals have non-zero DC potential	