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

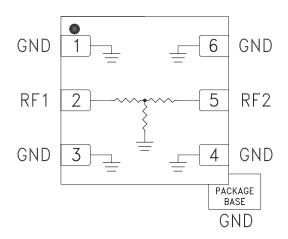
Wide Bandwidth: DC - 25 GHz

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

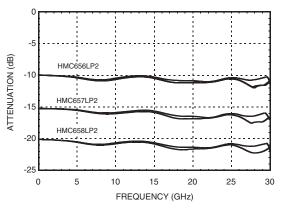
Part Number	Attenuator Value	Return Loss (Typical)	Attenuation Tolerance	Units
		DC - 25		GHz
HMC656LP2E	10	12	± 1.5	dB
HMC657LP2E	15	14	± 2.0	dB
HMC658LP2E	20	12	±2.0	dB



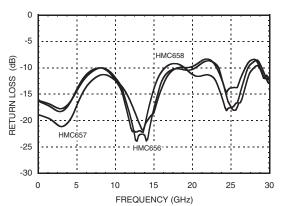
HMC656LP2E to HMC658LP2E

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

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	





HMC656LP2E TO HMC658LP2E

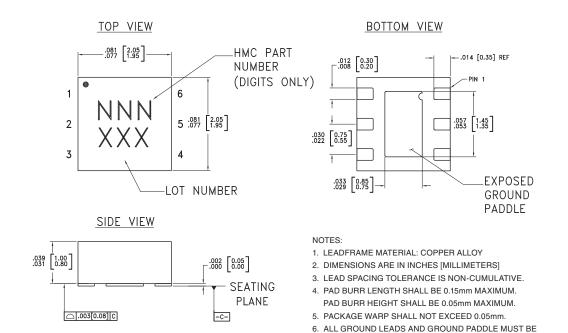
WIDEBAND FIXED ATTENUATOR FAMILY, DC - 25 GHz HMC656LP2E / HMC657LP2E / HMC658LP2E

SOLDERED TO PCB RF GROUND.

LAND PATTERN.

7. REFER TO HITTITE APPLICATION NOTE FOR SUGGESTED

Outline Drawing



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



HMC656LP2E to HMC658LP2E

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Pin Descriptions

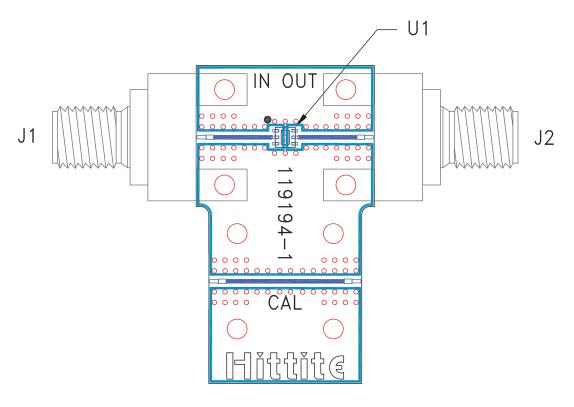
Pin Number	Function	Description	Interface Schematic
1, 3, 4, 6	GND	Package bottom must be connected to RF/DC ground.	⊖ GND =
2, 5	RF1, RF2	This pin is DC coupled and matched to 50 Ohms. Use DC Blocking capacitors if the input / output signals have non-zero DC potential	RF1 O



HMC656LP2E TO HMC658LP2E

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Evaluation PCB



List of Materials for Evaluation PCB 119197 [1]

Item	Description
J1 - J2	PCB Mount SMA Connector
U1	HMC656LP2E through HMC658LP2E Passive Attenuator
PCB [2]	119194 Evaluation PCB

[1] Reference this number when ordering complete evaluation PCB

[2] Circuit Board Material: Rogers 4350

The circuit board used in the final application should be generated with proper RF circuit design techniques. Signal lines at the RF port should have 50 ohm impedance and the package ground leads and exposed paddle should be connected directly to the ground plane similar to that shown above. The evaluation circuit board shown above is available from Hittite Microwave Corporation upon request.



HMC656LP2E to HMC658LP2E

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Notes: