

HMC656LP2E TO HMC658LP2E

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

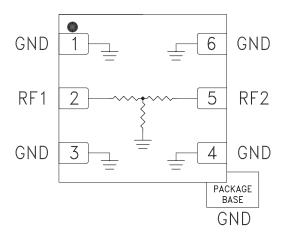
Typical Applications

The HMC656LP2E - HMC658LP2E are ideal for:

v02.0112

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

Functional Diagrams



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

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 (Min.)	Return Loss (Typ.)	Attenuation Tolerance ^[1]	Temperature Coefficient (Typical) [2]	Units
		DC - 25				GHz
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.

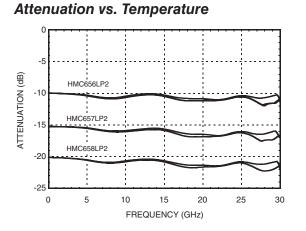
[2] Temperature Coefficient Units are dB/ °C.

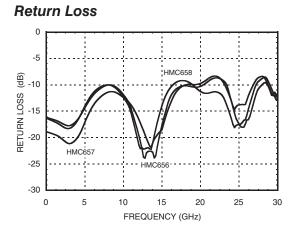
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.



HMC656LP2E TO HMC658LP2E

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





Absolute Maximum Ratings

Part Number	HMC656LP2E HMC657LP2E HMC658		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	ature -40 to +85			°C
ESD Sensitivity (HBM)	Class 1B	Class 1B	Class 1B	

v02.0112



ELECTROSTATIC SENSITIVE DEVICE OBSERVE HANDLING PRECAUTIONS

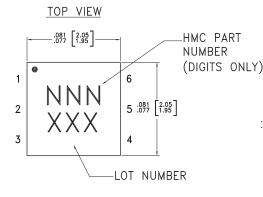
Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.



HMC656LP2E TO HMC658LP2E

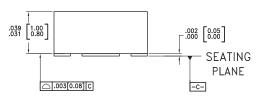
WIDEBAND FIXED ATTENUATOR FAMILY, DC - 25 GHz HMC656LP2E / HMC657LP2E / HMC658LP2E

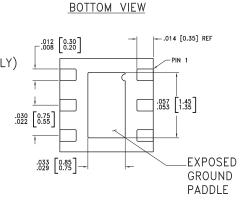
Outline Drawing



v02.0112

SIDE VIEW







- 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	RF1 RF2

Information furnished by Analog Devices is believed to be accurate and reliable. However, no responsibility is assumed by Analog Devices for its use, nor for any infringements of patents or other rights of third parties that may result from its use. Specifications subject to change without notice. No license is granted by implication or otherwise under any patent or patent rights of Analog Devices. Trademarks and registered trademarks are the property of their respective owners.

For price, delivery, and to place orders: Analog Devices, Inc., One Technology Way, P.O. Box 9106, Norwood, MA 02062-9106 Phone: 781-329-4700 • Order online at www.analog.com Application Support: Phone: 1-800-ANALOG-D