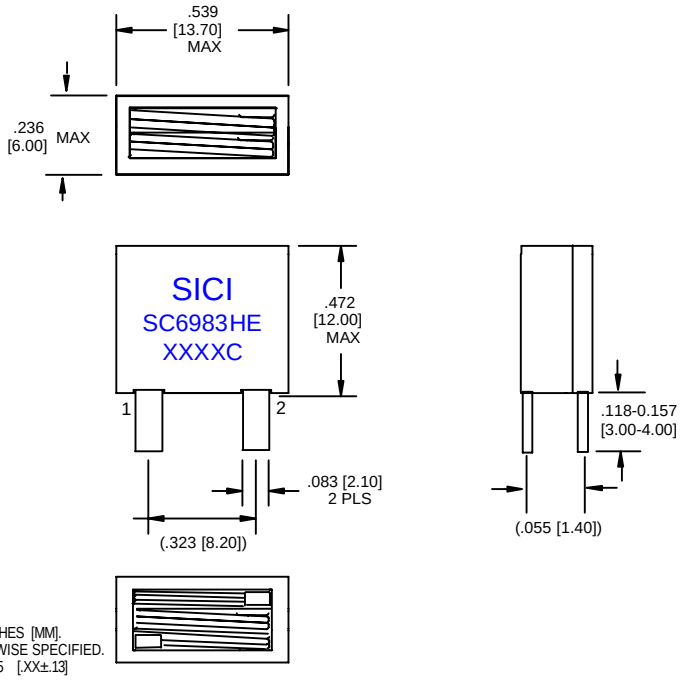
High Frequency Power Inductor

SC6983HE

FEATURES

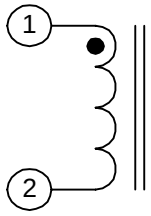
- High Current Handling Capability in the Smallest Footprint and Profile.
- Up to 2 MHz Operating Frequency.
- Extended Operating Temperature Range: -40ºC to 125ºC.
- Through Hole Package Capable of Handling the Most Aggressive SMT Assembly Process.

DRAWING

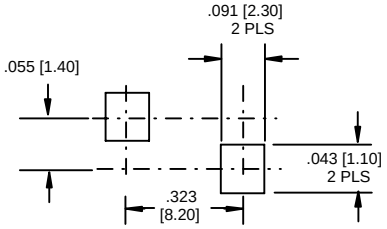


ALL DIMENSIONS GIVEN IN INCHES [MM].
TOLERANCES UNLESS OTHERWISE SPECIFIED.
LINEAR:.XX±.01 [.X±.25]XXX±.005 [.XX±.13]

SCHEMATIC



SUGGESTED PAD LAYOUT



ELECTRICAL CHARACTERISTICS @ 25ºC

Part Number	Inductance @ 0Adc[4]	Inductance @ Irated[4]	Irated[1]	DCR	MAX Saturation Current[2]			Temp. Rise Current[3]	Temp. Rise Factor[5]
RoHS	nH ±10%	nH MIN	ADC MAX	mOhms ±10%	ADC 25ºC	ADC 100ºC	ADC 125ºC	ADC MAX	
SC6983HE	680	619	40	0.98	40	33	31	43	0.04538

Notes:

1 - The rated current is the saturation current @ 25ºC.
2 - The I(Saturation) is the current at which the inductance drops by 20% maximum of its value at 0ADC. This current is measured at the stated ambient environment and by applying a short duration pulse current to the component, minimizing the self-heating effects.
3 - The I(Temp. Rise) is the current at which the temperature of the part increases by a maximum of 50ºC. This test is performed with the part mounted on a PCB with 0.250" wide, 0.004" thick copper traces and applying the DC current for a minimum of 30 minutes.
4 - Inductance is measured at 100 KHz and 1.0 Vrms.
5 - The additional Temperature Rise due to High ET (Voltage x Time) can be estimated using the following formula:

$$\text{Trise } (^{O}C) = \left(\frac{\text{Core Loss} + \text{DCR Loss}}{16.54} \right)^{0.833}$$

$$\text{DCR Loss} = \left(Idc^2 + \left(\frac{\triangle I}{2} \right)^2 \right) \times \text{DCR}$$

$$\text{Core Loss} = 0.005435 \times (F)^{1.84} \times (\text{Temp. Rise Factor} \times \triangle I)^{2.28}$$

$\triangle I$ = Delta I across the inductor

F = Switching Frequency (kHz)

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