Power Inductor
SMD Low Profile, High Current
AEC-Q200

PIW06-CM63

MERITEK

FEATURE

- Magnetic Shield Construction for Power Circuit.
- Large Current and Low DC Resistance
- Low profile power inductors
- Application: DC/DC Converter, Battery Powered Devices, Low Profile High Current Power Supply, Notebook/Server
- AEC-Q200 Compliant

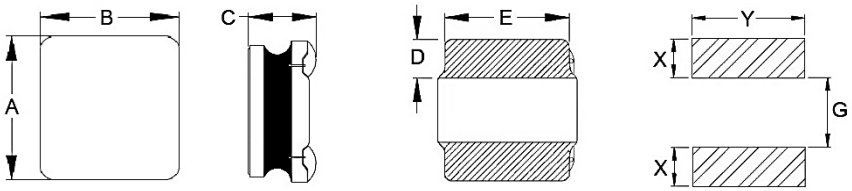
RoHS

ELECTRICAL CHARACTERISTICS

Part Number	Inductance (µH)	Tolerance (%)	Test Freq. (Hz)	I_{RMS} (A)		I_{SAT} (A)		DCR (mΩ)	
				Typ.	Max.	Typ.	Max.	Typ.	Max.
PIW06R47MCM63	0.47	±20	1V/1M	4.30	4.00	7.20	6.80	34	40.8
PIW06R68MCM63	0.68	±20	1V/1M	3.60	3.30	6.00	5.40	43	51.6
PIW061R0MCM63	1.00	±20	1V/1M	3.20	3.00	4.70	4.20	53	63.6
PIW061R5MCM63	1.50	±20	1V/1M	2.70	2.40	4.00	3.50	78	94
PIW062R2MCM63	2.20	±20	1V/1M	2.40	2.10	3.40	3.00	110	132
PIW063R3MCM63	3.30	±20	1V/1M	1.90	1.70	2.60	2.40	180	216
PIW064R7MCM63	4.70	±20	1V/1M	1.50	1.30	2.10	1.90	280	336

Notes:
1. All test data referenced to 25˚C ambient.
2. Saturation Current (Isat) based on inductance drop (ΔL/L0: ≦30%) approximately
3. Heat Rated Current (Irms) based on temperature rise (ΔT: 40 ˚C) approximately
4. Operating Temperature: -55ºC ~ +125ºC (Including Self-temperature rise)

DIMENSIONS



(Unit: mm)

Part Number	A	B	C Max	D	E	X	Y	G
PIW06-CM63	2.0 ±0.2	1.6 ±0.2	1.2	0.7 ±0.3	1.6 ±0.2	1.0	2.0	0.5

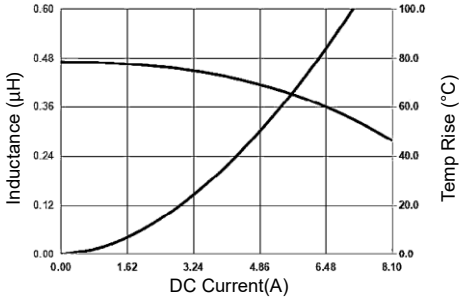
PART NUMBERING SYSTEM

PIW (1) **06** (2) **4R7M** (3) **C** (4) **M63** (5)

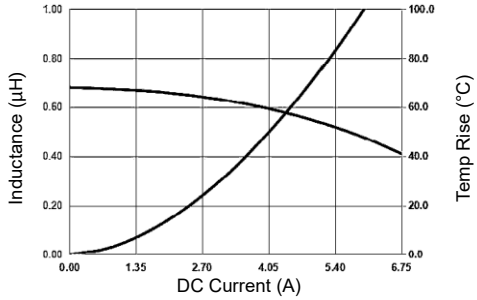
No	Item	Code	Description	
(1)	**Product Code**	PIW	Power Inductor Series, Wire Wound Type	
(2)	**Size Code**	06	0806, 2.0x1.6mm	L x W (mm)
(3)	**Inductance**	4R7M	4.7µH ±20% (M)	R47: 0.47µH, 2R2: 2.2µH
(4)	**Internal Code**	C	C: 1.2mm Height	A: 0.8mm, B: 1.0mm, D: 1.5mm
(5)	**Series Code**	M63	Surface Mount Shielded, Low Profile, High Current series, AEC-Q200 Compliant	

CHARACTERISTIC CURVES- PIW06-CM63

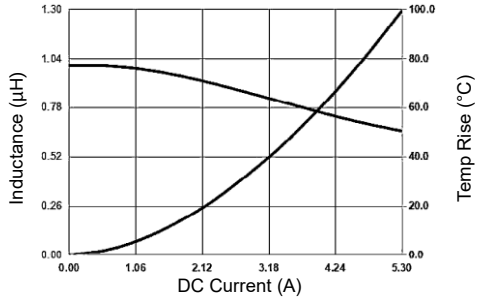
R47



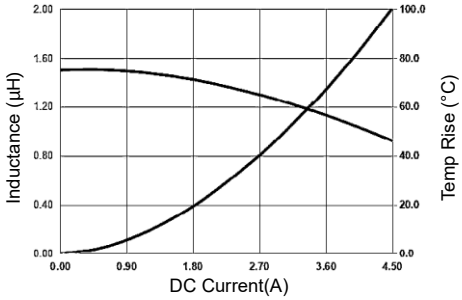
R68



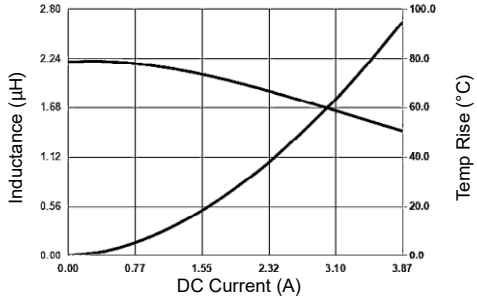
1R0



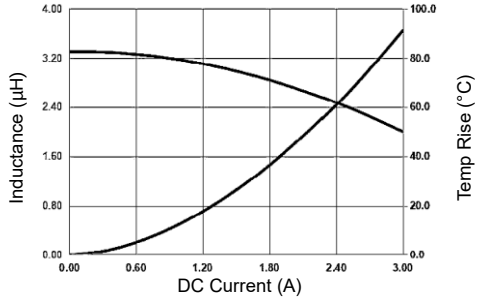
1R5



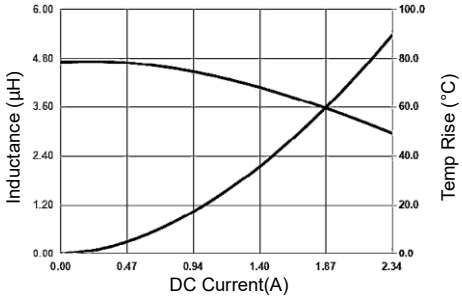
2R2



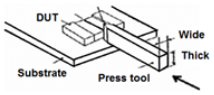
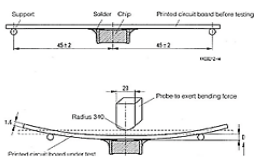
3R3



4R7



RELIABILITY TEST CONDITON AND REQUIREMENT

<table>
<tr><th>Item</th><th>Test Standards / Conditions / Equipment</th><th>Requirement</th></tr>
<tr><td>Inductance</td><td>HP4284A, CH11025, CH3302, CH1320, CH1320S, LCR Meter</td><td>Refer to specification</td></tr>
<tr><td>DC Resistance</td><td>CH16502, Agilent33420A Micro-Ohm Meter</td><td>Refer to specification</td></tr>
<tr><td>Mechanical Shock</td><td>
<table>
<tr><th>Type</th><th>Peak value (g's)</th><th>Normal duration (D) (ms)</th><th>Wave form</th><th>Velocity change (Vi) ft/sec</th></tr>
<tr><td>SMD</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
<tr><td>Lead</td><td>100</td><td>6</td><td>Half-sine</td><td>12.3</td></tr>
</table>
3 shocks in each direction along 3 perpendicular axes (18 shocks).</td><td>Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Solderability</td><td>Method B1, 4 Hrs at 155°C dry heat at 255°C±5°C
Test Time: 5 +0/-0.5 seconds.
Method D category 3. (steam aging 8 hours±15min) at 260°C±5°C
Test Time: 30+0/-0.5 seconds.</td><td>More than 95% of the terminal electrode should be covered with solder.</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>Solder temperature: 260±5°C for 10 seconds
Temperature ramp/immersion and emersion rate 25mm/s ±6 mm/s.
Completely cover the termination.
Number of cycles: 1 heat cycle</td><td rowspan="2">Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Vibration</td><td>Oscillation Frequency: 10～2K～10 Hz for 20 minutes
Equipment：Vibration checker
Total Amplitude:1.52mm ± 10%
Testing Time: 12 hours (20 minutes, 12 cycles each of 3 orientations)</td></tr>
<tr><td>High Temperature Exposure</td><td>Temperature: 125±2°C
Duration 1000Hrs Min
Measured at room temperature after placing for 24±2hrs</td><td rowspan="3">Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Biased Humidity</td><td>Humidity: 85±3% R.H. Temperature: 85°C±2°C
Duration: 1000Hrs Min
Measured at Room Temperature after placing for 24±2hrs</td></tr>
<tr><td>High Temperature Operational Life</td><td>Temperature: 125±2°C
Duration: 1000Hrs Min. with 100% rated current
Measured at Room Temperature after placing for 24±2Hrs</td></tr>
<tr><td>Temperature Cycling</td><td>Condition for 1 cycle
<table>
<tr><td>Step</td><td>1</td><td>2</td><td>3</td><td>4</td></tr>
<tr><td>Temperature</td><td>-55 ±2˚C</td><td>125 ±2˚C</td><td>125 ±2˚C</td><td>Low Temp</td></tr>
<tr><td>Duration</td><td>30min Min</td><td>1 min Max</td><td>30 min Min</td><td>1 min Max</td></tr>
</table>
Number of Cycle: 1000
Measured at room temperature after placing for 24±2hrs</td><td>Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>Thermal Shock</td><td>Condition for 1 cycle
<table>
<tr><td>Step</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Temperature</td><td>-55 ±2˚C</td><td>125 ±2˚C</td><td>125 ±2˚C</td></tr>
<tr><td>Duration</td><td>15±1min</td><td>20sec</td><td>15±1min</td></tr>
</table>
Number of cycles：300
Measured at room temperature after placing for 24±2 hrs.</td><td>Appearance: No damage
Inductance: within ±10% of initial value
Q: Shall not exceed the specification value
RDC: within ±15% of initial value and shall not exceed the specification value</td></tr>
<tr><td>ESD</td><td>AEC-Q200-002 HBM ESD, Contact Discharge Level: 4KV (Level 2)</td><td>Appearance: No damage</td></tr>
<tr><td>Resistance to Solvents</td><td>Add aqueous wash chemical - OKEM clean or equivalent.</td><td>Appearance：No damage</td></tr>
<tr><td>Terminal Strength</td><td>Component mounted on a PCB apply a force 1.8kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.
 
</td><td>Appearance：No damage</td></tr>
<tr><td>Board Flex</td><td>Place the 100x40mm FR4 board into a fixture with the component facing down. Apply a force which will bend the board (D) x = 2mm minimum. Duration: 60 (+5) seconds. The Force is to be applied only once to the board
  </td><td>Appearance：No damage</td></tr>
<tr><td>Flammability</td><td>Electrical Test not Required</td><td>V-0 or V-1 are acceptable.</td></tr>
</table>

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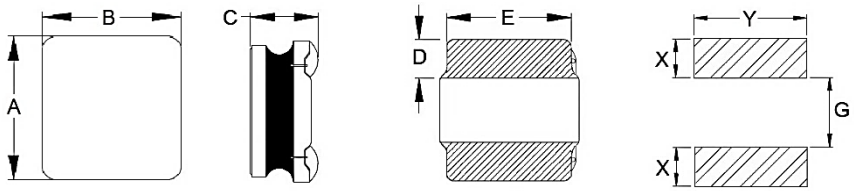
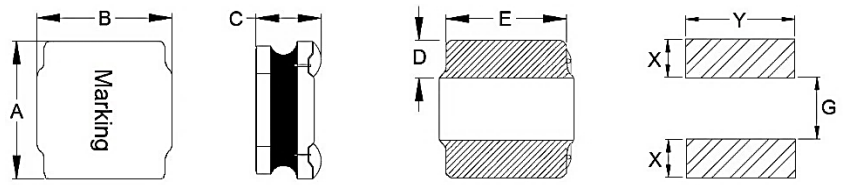
DIMENSIONS



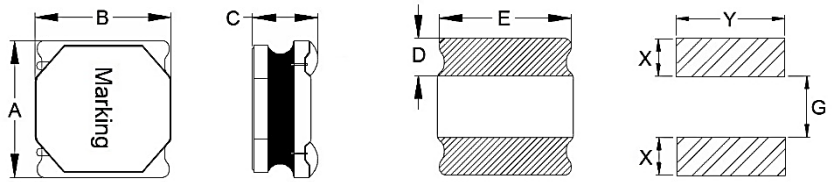
(Unit: mm)

Part Number	A	B	C Max	D	E	X	Y	G
PIW06-BM63	2.0 ±0.2	1.6 ±0.2	1.0	0.7 ±0.3	1.6 ±0.2	1.0	2.0	0.5
PIW06-CM63	2.0 ±0.2	1.6 ±0.2	1.2	0.7 ±0.3	1.6 ±0.2	1.0	2.0	0.5
PIW08-BM63	2.5 ±0.2	2.0 ±0.2	1.0	0.9 ±0.3	2.0 ±0.2	1.15	2.5	0.7
PIW08-CM63	2.5 ±0.2	2.0 ±0.2	1.2	0.9 ±0.3	2.0 ±0.2	1.15	2.5	0.7



(Unit: mm)

Part Number	A	B	C Max	D	E	X	Y	G
PIW-30CM63	3.0±0.2	3.0±0.2	1.2	0.9 ±0.3	2.7 ±0.3	1.3	3.5	0.9
PIW-30DM63	3.0±0.2	3.0±0.2	1.5	0.9 ±0.3	2.7 ±0.3	1.3	3.5	0.9

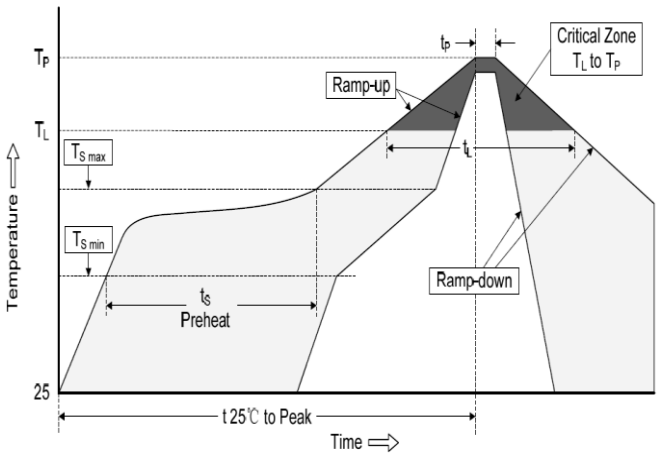


(Unit: mm)

Part Number	A	B	C Max	D	E	X	Y	G
PIW-40EM63	4.0±0.2	4.0±0.2	2.0	1.1 ±0.3	3.5 ±0.3	1.5	4.5	1.5

RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	**Temp. Min $T_{s(min)}$**	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) (t_s)	60 ~120 seconds
Average ramp up rate (Liquidus Temperature) (T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L (Ramp-up rate)		3°C/second max
Reflow	**Temp. (T_L)**	217°C
	Time (min. to max.) (t_L)	60 ~150 seconds
Peak Temperature (T_P)		See table below
Time within 5°C of actual peak Temperature (t_p)		10 seconds max
Ramp-down Rate		6°C/second max
Reflow Times		3 times max



Peak Temperature (T_P)			
Volume	**< 350mm³**	**350-2000mm³**	**> 2000mm³**
Thickness < 1.6mm	260°C	260°C	260°C
Thickness 1.6-2.5mm	260°C	250°C	245°C
Thickness ≥ 2.5mm	250°C	245°C	245°C

*Specifications subject to change without notice