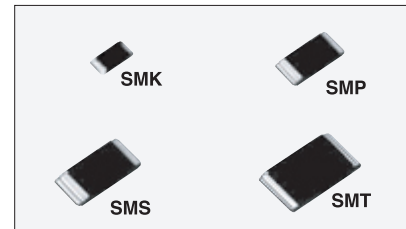


**ISA-PLAN SHUNT CHIP RESISTORS** **SMK, SMP, SMT, SMS**

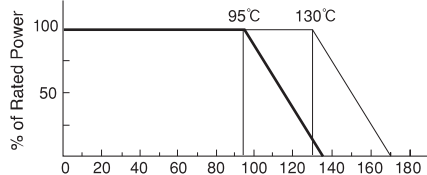
Type	Load Capacity (W)* [Free air]	Resistance Range (Ω)	Resistance Tolerance (%)	Temp. Coefficient (20°C ~ 60°C)	Operating Temp.(°C)	Solder Reflow	Internal Thermal Resistance (foil / contacts)
SMK	0.5 [0.1]	0.01~0.5	±1 ±2 <sup>※2</sup> ±5	±50ppm/°C	-55~+170	MAX.255°C (t<40sec)	80°C/W
SMP	1 [0.2]	0.005~1	±0.5 ±1 ±2 ±5	±50ppm/°C			40°C/W
SMT	3 [0.5]	0.004~2					13°C/W
SMS	2 [0.5]	0.005~1	±0.5 ±1 ±2 ±5	±50ppm/°C	-55~+170	MAX.255°C (t<40sec)	25°C/W



\*Referring to power derating curve. Proper measures for heat radiation should be taken.  
 ※2 R ≥ 25mΩ ±1%, ±2%

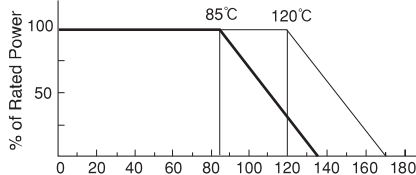


**Power Derating Curve SMK, SMP, SMT**



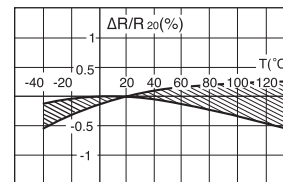
**CAUTION** Terminal Temperature (°C)

**Power Derating Curve SMS**

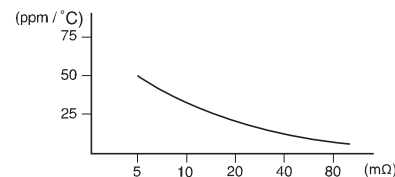


**CAUTION** Terminal Temperature (°C)

**Resistance Change Versus Temp.**

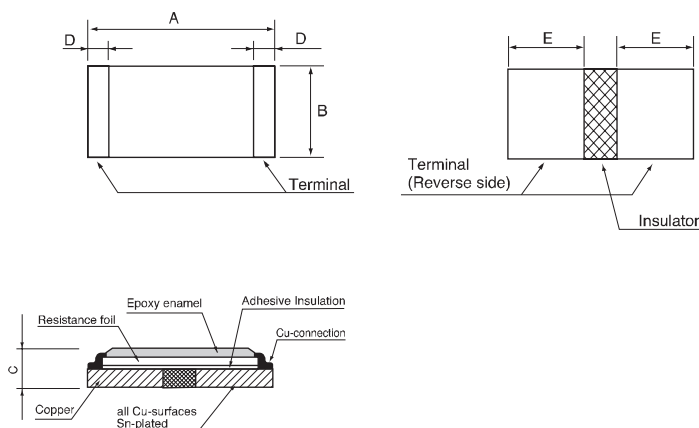


**Temperature Coefficient (Low Resistance Values) SMP, SMS, SMT**



**Dimensions (mm)**

SMK, SMP, SMS, SMT

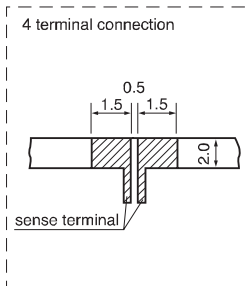


Type	Dimensions (mm)					Weight (g)
	A	B	C	D	E	
SMK	3.05	1.52	0.6	1.0	1.28	0.05
SMP	5.08	2.54	0.7	1.0	2.14	0.08
SMS	6.35	3.05	0.8	1.0	2.72	0.1
SMT	7.1	4.2	0.8	1.0	3.1	0.13

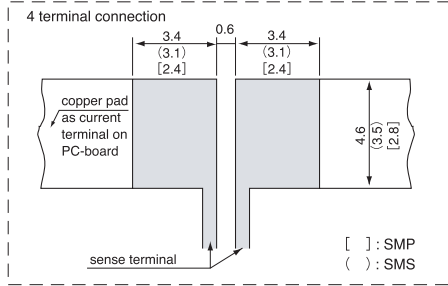
**Performance**

Parameters	Test Condition	Specification	Typical Test Data
Thermal Shock	-65°C, 25°C, 125°C, 25°C 25cycles	±0.2%	±0.05%
Over Load	5 × Wattage Rating (Free Air) 5sec	±0.2%	±0.1%
Resistance to Solvents	IPA 3min	No Damage	No Damage
Low Temp. Storage and Operation	MIL-R-26E	±0.1%	±0.05%
Resistance to Soldering Heat	260°C 10sec	±0.2%	±0.05%
Moisture Resistance	Near 100%RH, +25°C, +65°C, -10°C 10cycles (10days)	±0.1%	±0.05%
Shock	50g's, 11ms	±0.2%	±0.1%
Vibration, High Frequency	MIL-STD-202 Method 204D-B	±0.2%	±0.1%
Load Life (Terminal Temp. Max. 95°C ※3)	Wattage Rating (1.5hr ON-0.5hr OFF) 2000hr	±0.5%	±0.1%
Load Life (Terminal Temp. Max. 130°C ※4)	Wattage Rating (1.5hr ON-0.5hr OFF) 2000hr	±1%	±0.5%
Storage Life at Elevated Temp.	MIL-STD-202 method 108A-F	±0.3%	±0.1%
High Temperature Exposure	140°C 2000hr	±0.5%	±0.2%
Current Noise	MIL-STD-202 method 308	±0.01%	none
Voltage Coefficient	MIL-STD-202 method 309	linearity error less than 120dB	
Thermal EMF	0~100°C	-3μV/°C MAX	-2 μV/°C
Frequency Characteristic	Inductance (10mΩ)	<20nH	3 nH

**Proposal for PCB-Layout Type SMK (Solder Reflow)**



**Proposal for PCB-Layout Type SMP, SMS, SMT (Solder Reflow)**



**How to order**

**SMT 10mΩ ±1%**  
 Type Resistance Tolerance

● Standard Resistance E-06 Series

● Taping Specification

SMK : DIN EN60286-3 8mm 12500 pcs 4 5 6.8 (mΩ) ±1%  
 SMP : DIN EN60286-3 12mm 10000 pcs 10 15 22 33 47 68 (mΩ) ±1%  
 SMS : DIN EN60286-3 12mm 5000 pcs 100 150 220 330 470 (mΩ) ±1%  
 SMT : DIN EN60286-3 12mm 5000 pcs

※3 SMS : Terminal Temp. Max. 85°C

※4 SMS : Terminal Temp. Max. 120°C

● Standard Resistance (Stock) SMT

