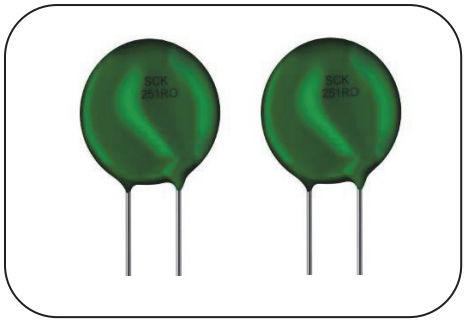
NTC Thermistor：SCK Series

Power Thermistor for Limiting Inrush Current

■ Features



1. RoHS & Halogen Free (HF) compliant
2. Body size: Φ5mm ~ Φ30mm
3. Radial lead resin coated
4. High power rating
5. Wide resistance range
6. Cost effective
7. Operating temperature range:
   Φ5mm: -40℃~+150℃
   Φ8~ Φ10mm: -40℃~+170℃
   Φ13mm~ Φ30mm: -40℃~+200℃
8. Agency recognition: UL / cUL / TUV / CSA / CQC

■ Recommended Applications

1. Switch mode power supply
2. Electric motor
3. Transformer
4. Adapter
5. Projector
6. Halogen lamp
7. LED driver circuit

■ Part Number Code

- Φ5mm~ Φ15mm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

Product Type	
SCK	THINKING NTC Thermistor SCK Series

Body Size	
05	Φ5mm
08	Φ8mm
10	Φ10mm
13	Φ13mm
15	Φ15mm

Zero Power Resistance at 25℃ (R_{25})	
0R5	0.5Ω
2R5	2.5Ω
08	8Ω
20	20Ω
120	120Ω

Max Steady State Current at 25℃	
X3	0.3A
2X	2.5A
8	8A
10	10A

Tolerance of R_{25}	
L	±15%
M	±20%
N	±25%

Appearance	
S	Straight lead
F	Y kink lead
T	L kink lead

Optional Suffix	
Y	RoHS & HF Compliant

- Φ20mm~ Φ30mm

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

Product Type	
SCK	THINKING NTC Thermistor SCK Series

Body Size	
20	Φ20mm
25	Φ25mm
30	Φ30mm

Zero Power Resistance at 25℃ (R_{25})
R_{25}＜10Ω 0R7:0.7Ω 2R5:2.5Ω
R_{25}≧10Ω 100:10Ω 470:47Ω 471:470Ω

Tolerance of R_{25}	
L	±15%
M	±20%
N	±25%

Appearance	
S	Straight lead
F	Y kink lead
T	L kink lead

Packaging	
B	Bulk

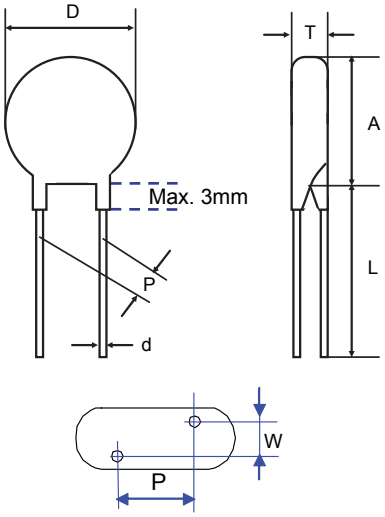
Optional Suffix	
Y	RoHS & HF Compliant (For SCK05 ~ SCK20 use)
H	RoHS & HF Compliant (For SCK25 and SCK30 use)

NTC Thermistor：SCK Series

Power Thermistor for Limiting Inrush Current

■ Structure and Dimensions

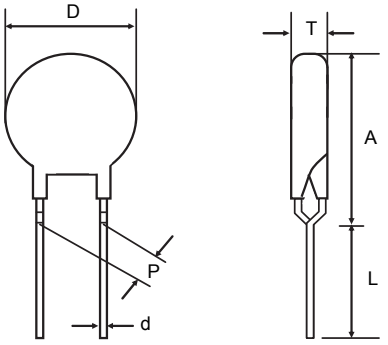
S Type (Straight Lead)



(Unit: mm)

Series	Dmax.	P.	d	Amax.	Lmin.	Tmax.	W
SCK05	6.5	4±0.5	0.8±0.02	6.5	31	5	1.9±0.2
SCK08	9.5	5±0.5	0.8±0.02	9.5	31	5	2.1±0.3
SCK10	11.5	5±0.5	0.8±0.02	11.5	31	5	2.1±0.3
SCK13	14.5	7.5±0.5	0.8±0.02	14.5	30	6	2.3±0.3
SCK15	16.5	7.5±0.5	1.0±0.02	16.5	29	6	2.5±0.3
SCK20	21.5	7.5±0.5	1.0±0.02	21.5	26	6	2.6±0.3
SCK25	29	7.5±1	1.0±0.02	29.0	25	6	3.1±0.5
SCK30	36	7.5±1	1.0±0.02	36.0	23	6	3.1±0.5

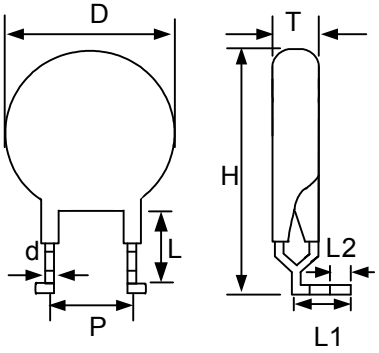
F Type (Y Kink Lead)



(Unit: mm)

Series	Dmax.	P	d	Amax.	Lmin.	Tmax.
SCK05	6.5	4±0.5	0.8±0.02	11.0	29	5
SCK08	9.5	5±0.5	0.8±0.02	13.0	29	5
SCK10	11.5	5±0.5	0.8±0.02	15.0	29	5
SCK13	14.5	7.5±0.5	0.8±0.02	17.5	27	6
SCK15	16.5	7.5±0.5	1±0.02	19.0	26	6
SCK20	21.5	7.5±0.5	1±0.02	24.5	25	6
SCK25	29	7.5±1	1±0.02	35.0	22	6
SCK30	36	7.5±1	1±0.02	42.0	22	6

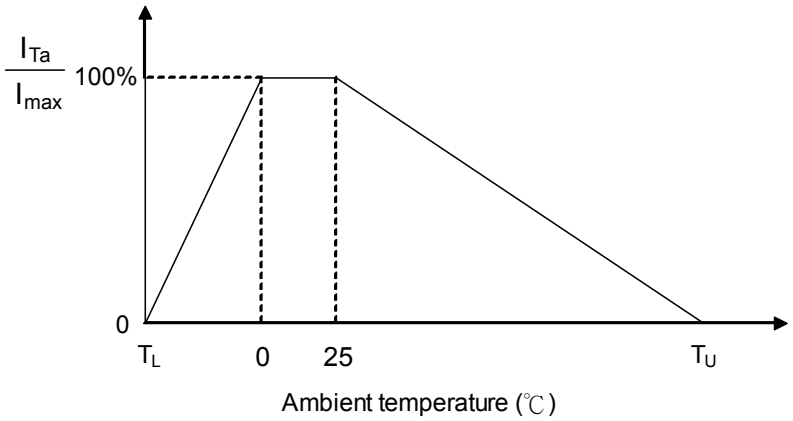
T Type (Y Kink 90° Bend and Outer Kink Lead)



(Unit: mm)

Series	Dmax.	P	d	Tmax.	L	Hmax.	L1	L2
SCK08	9.5	5±0.5	0.8±0.02	5	5.0±0.5	15	7.8±1.0	3.5±0.5
SCK10	11.5	5±0.5	0.8±0.02	5	5.0±0.5	17	7.8±1.0	3.5±0.5
SCK13	14.5	7.5±0.5	0.8±0.02	6	5.0±0.5	19	7.8±1.0	3.5±0.5
SCK15	16.5	7.5±0.5	1.0±0.02	6	4.5±0.5	21	9.0±1.0	3.5±0.5
SCK20	21.5	7.5±0.5	1.0±0.02	6	4.5±0.5	26	9.0±1.0	3.5±0.5

■ Max. Current Derating Curve



T_U: Maximum operating temperature (℃)

T_L: Minimum operating temperature (℃)

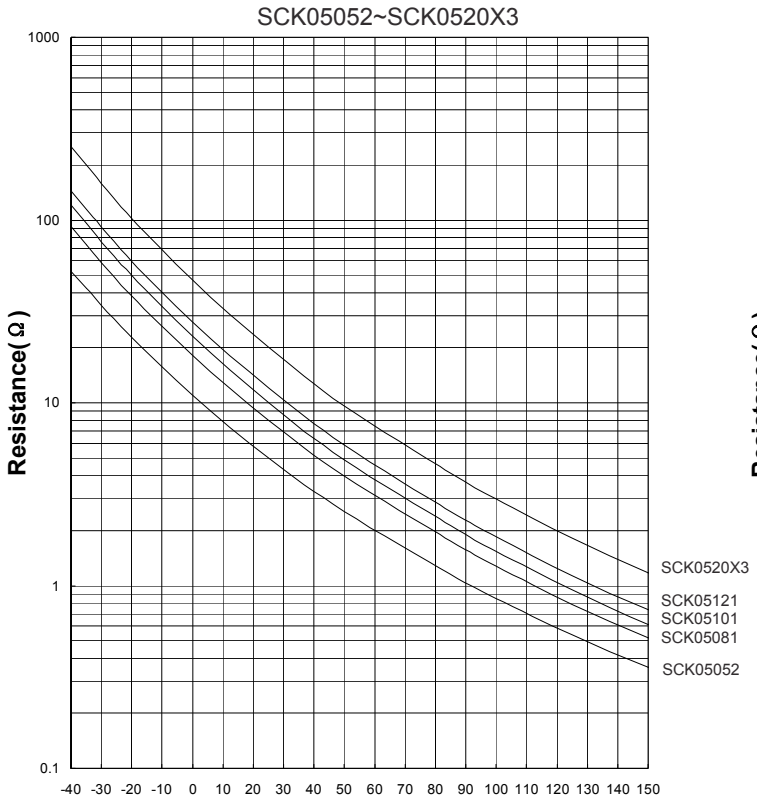
For example:

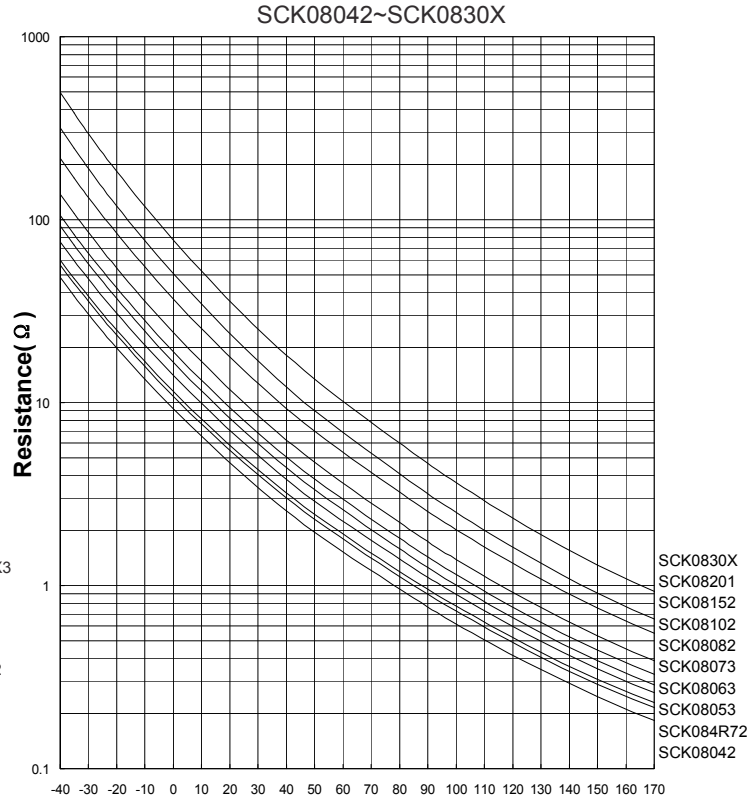
Ambient temperature(Ta) = 60℃

Maximum operating temperature(T_U) = 200℃

I_{Ta} = [1-(Ta-25)/(Tu-25)]×Imax = 80%Imax

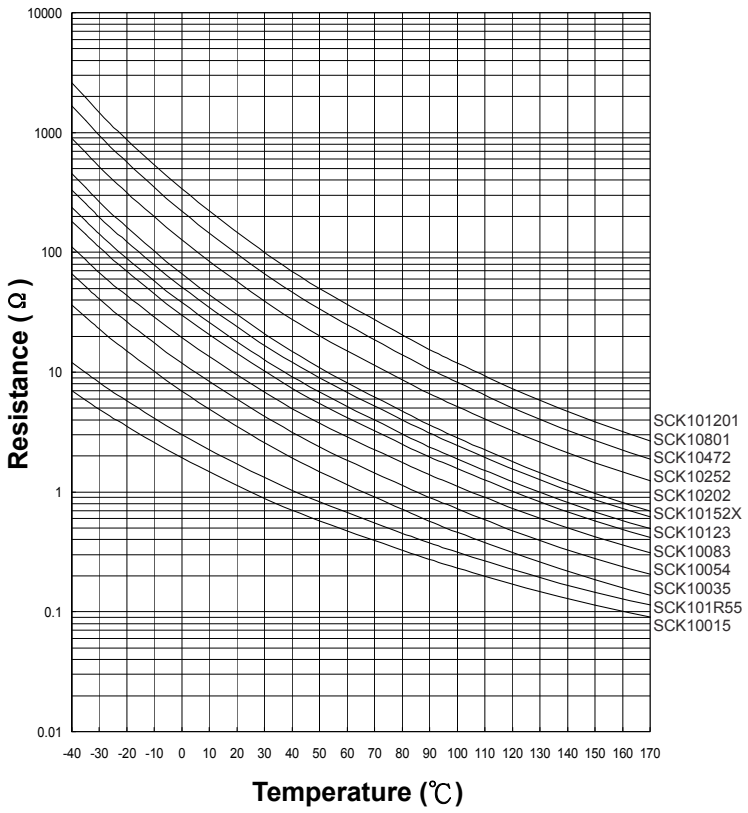
■ R-T Characteristic Curves



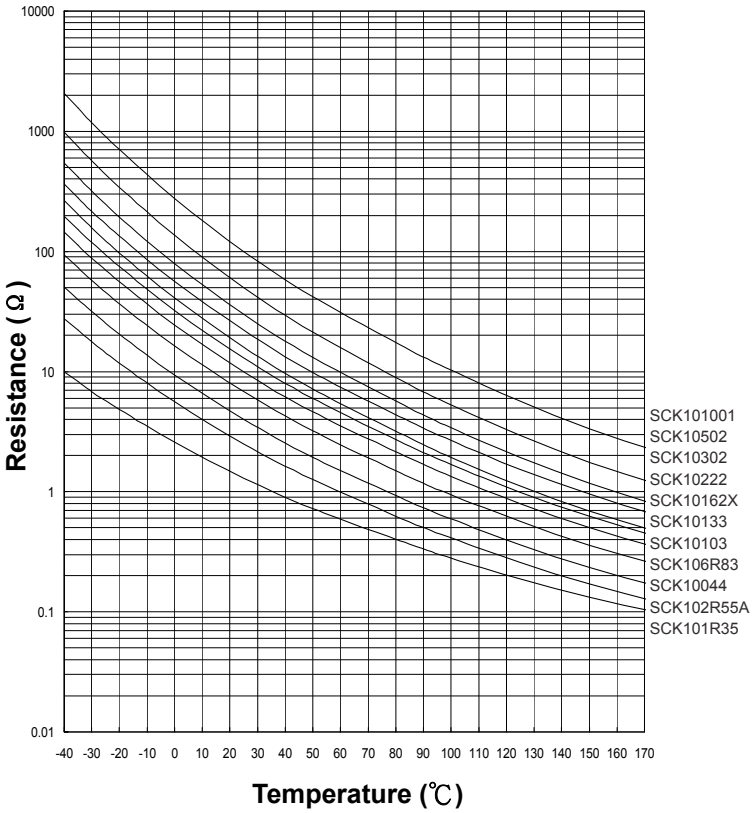


■ R-T Characteristic Curves

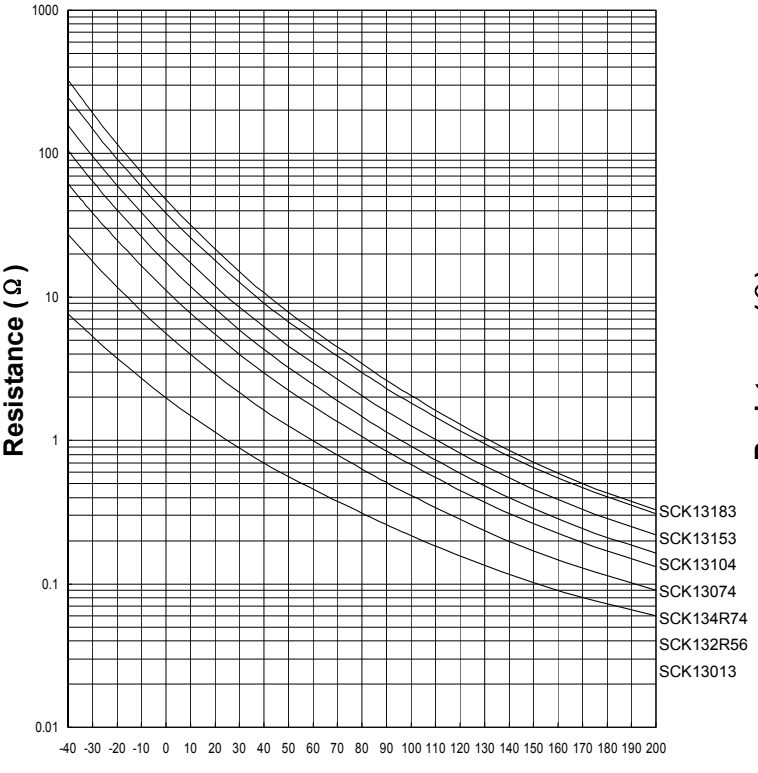
SCK10015~SCK101201



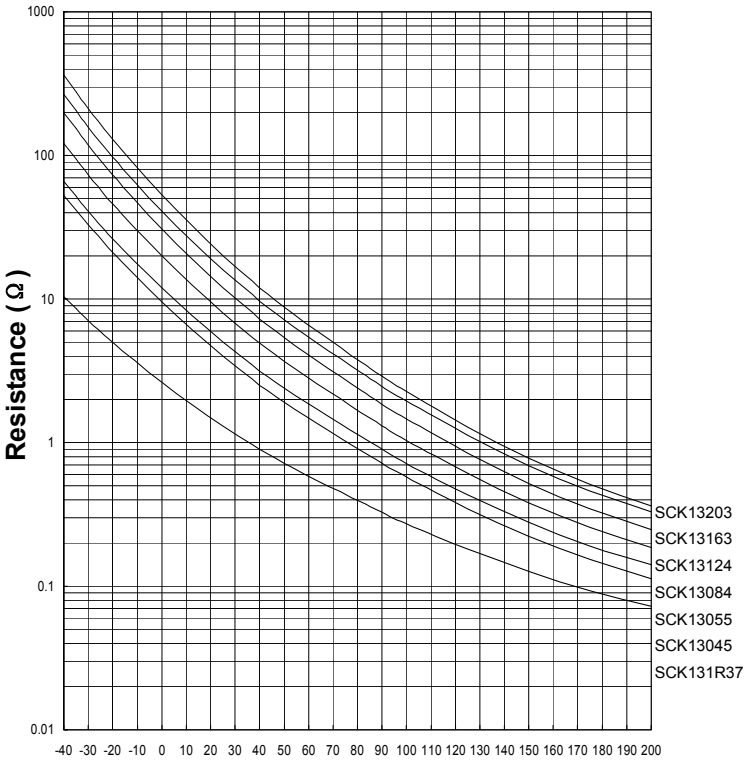
SCK101R35~SCK101001



SCK13013~SCK13183

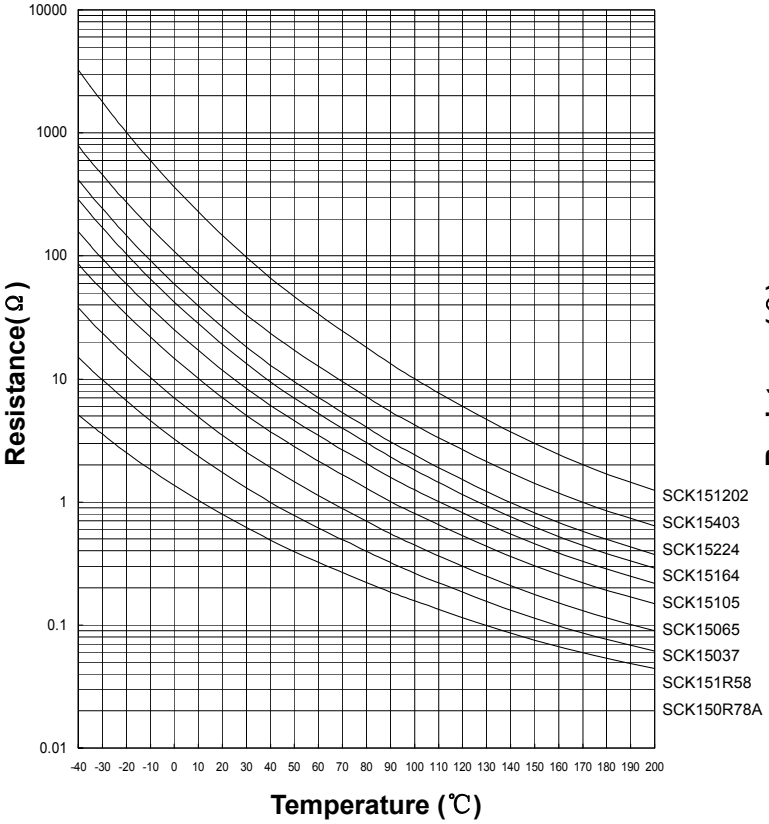


SCK131R37~SCK13203

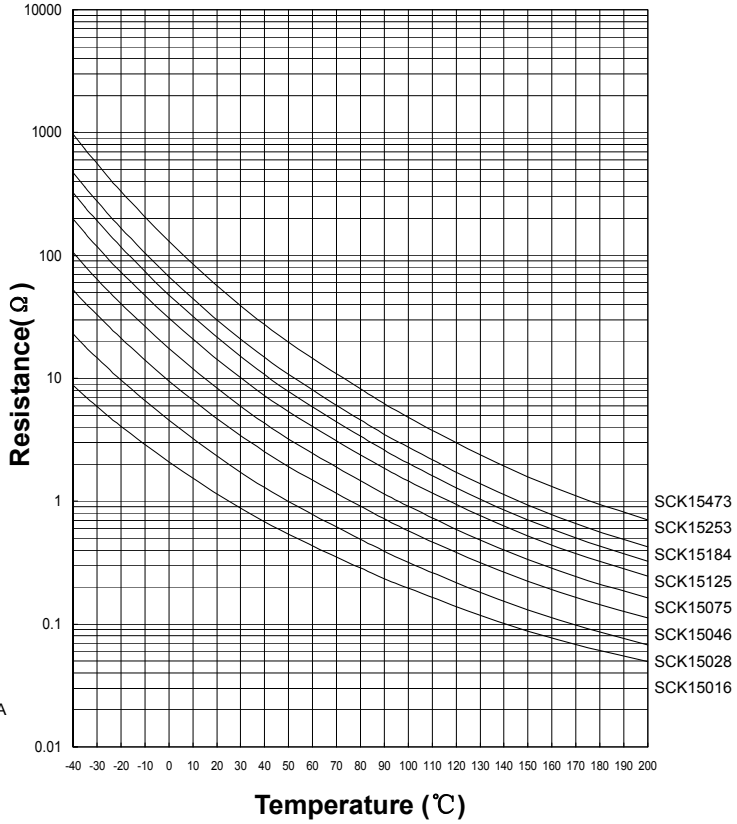


■ R-T Characteristic Curves

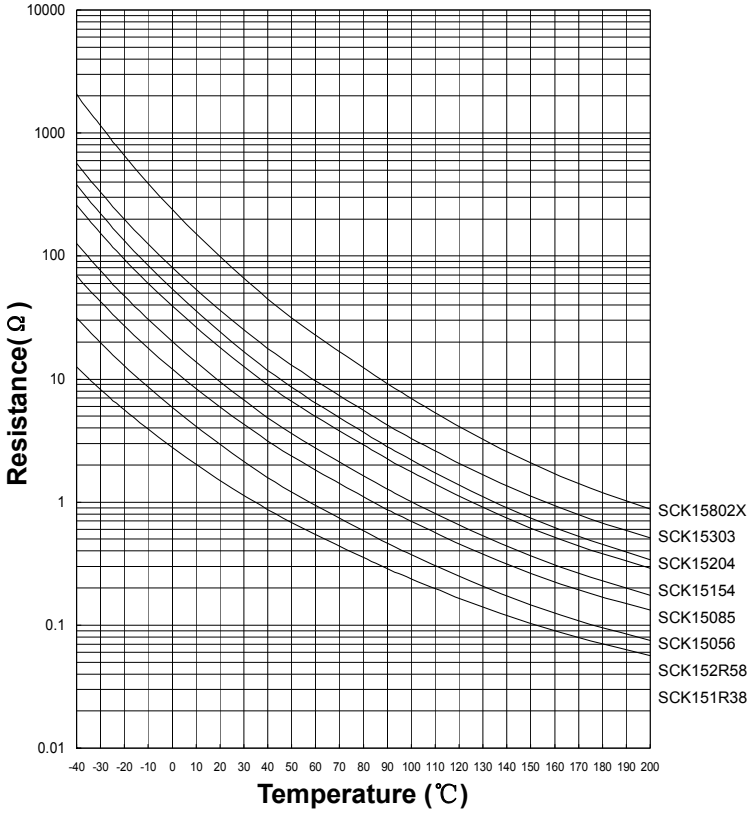
SCK150R78A~SCK151202



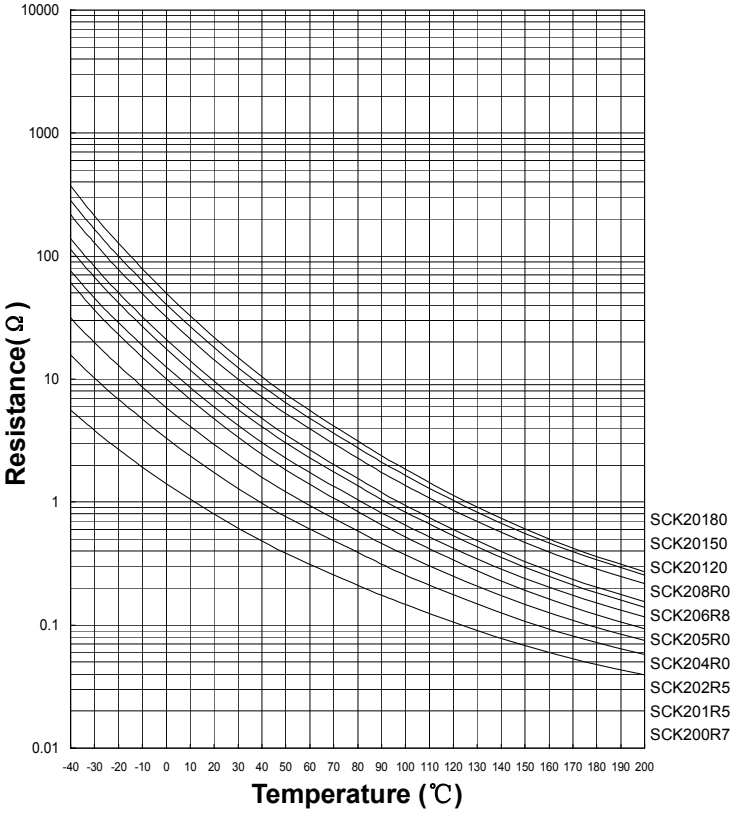
SCK15016~SCK15473



SCK151R38~SCK15802X

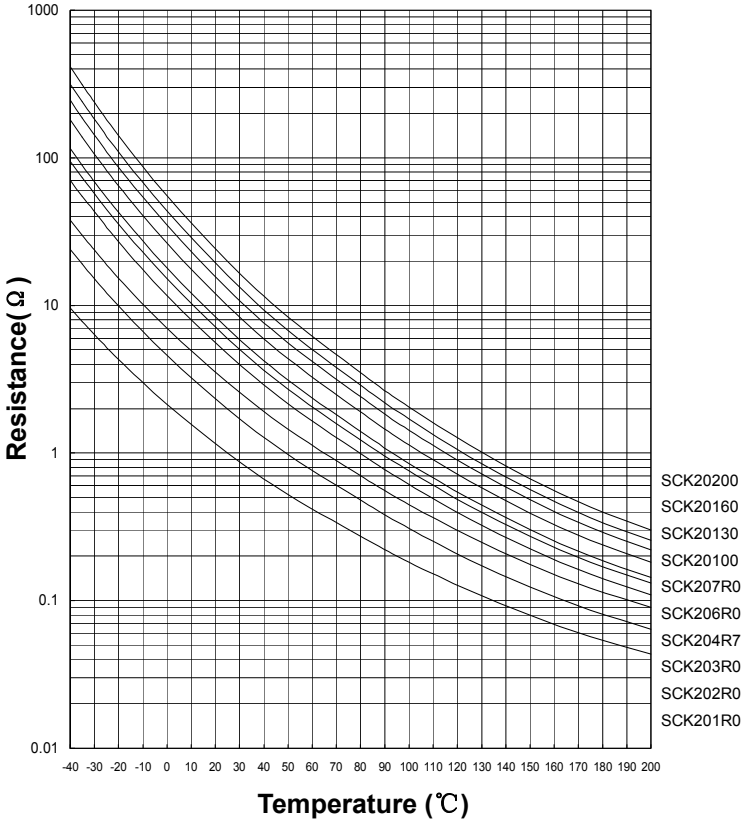


SCK200R7~SCK20180

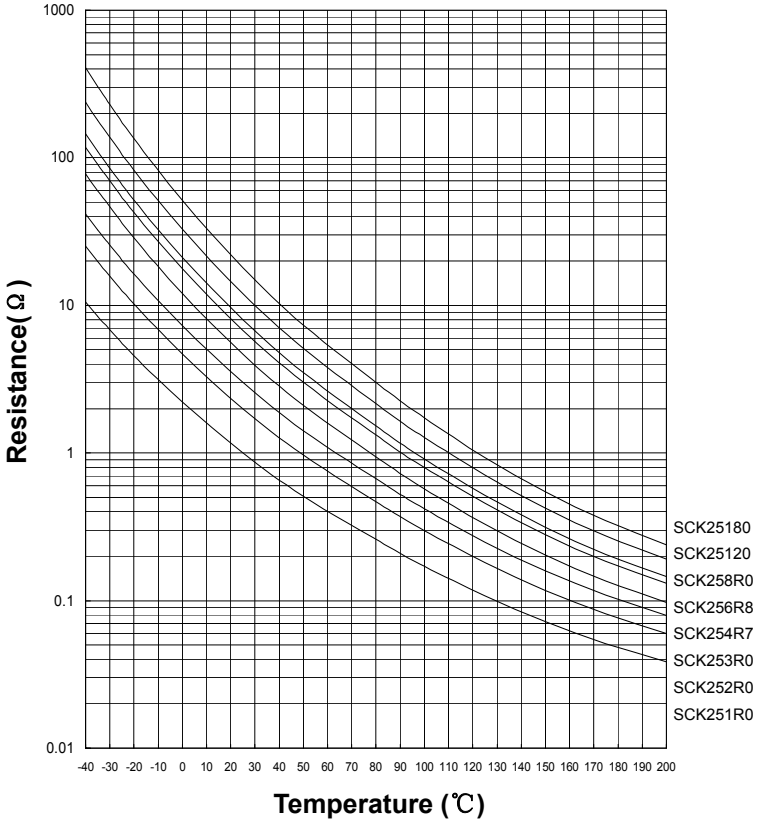


■ R-T Characteristic Curves

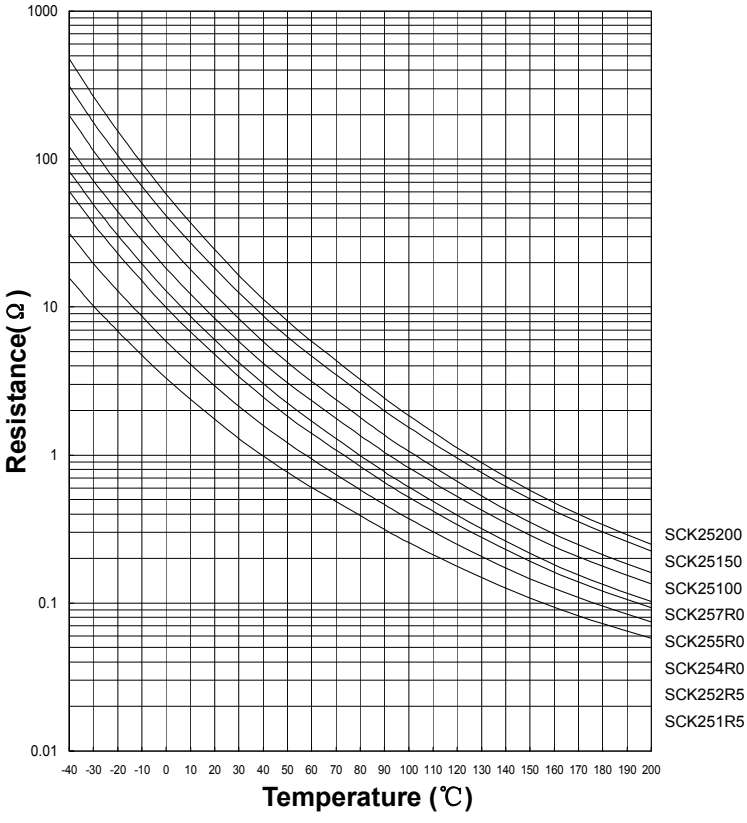
SCK201R0~SCK20200



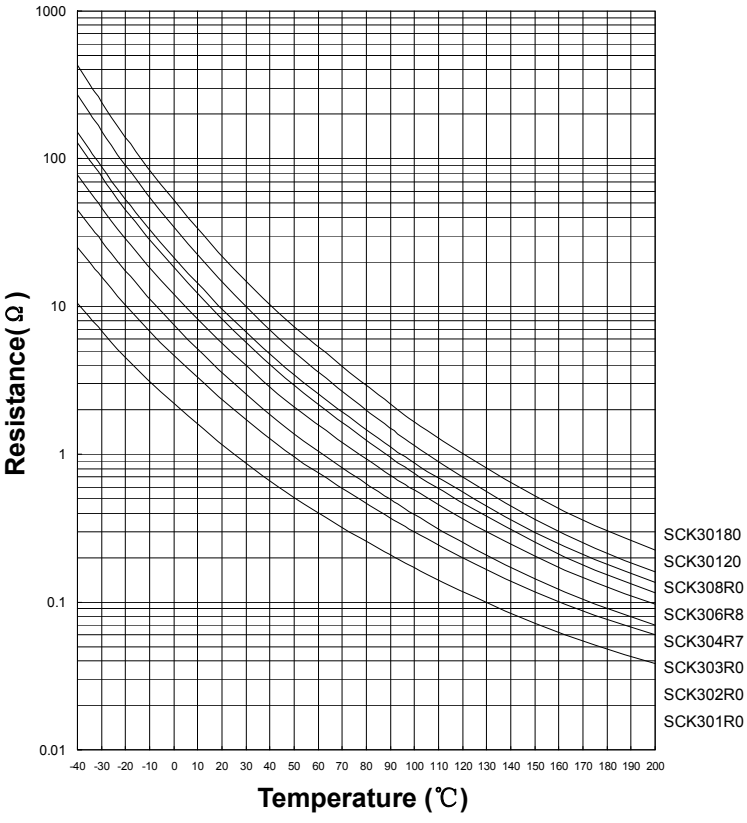
SCK251R0~SCK25180



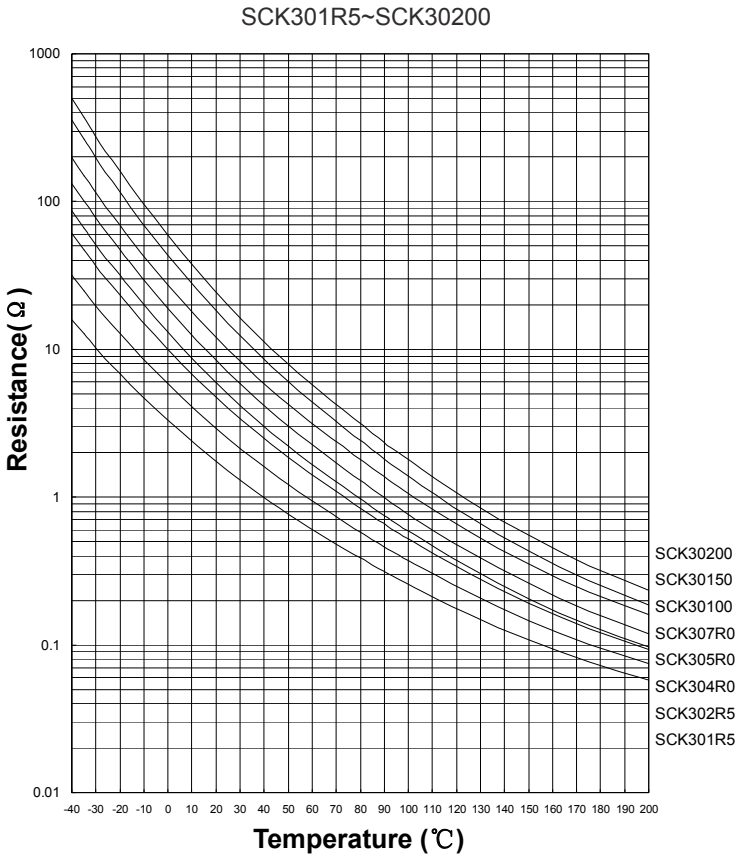
SCK251R5~SCK25200



SCK301R0~SCK30180

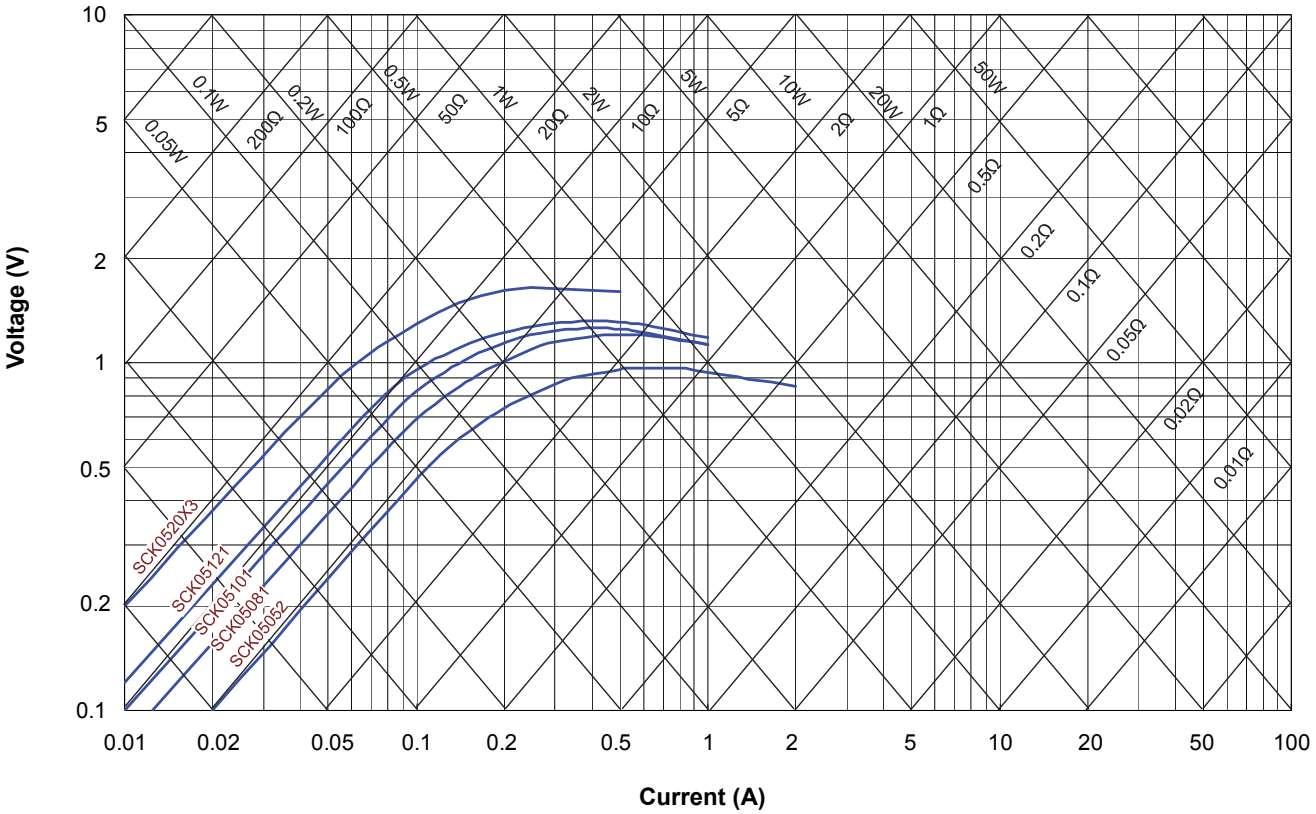


■ R-T Characteristic Curves

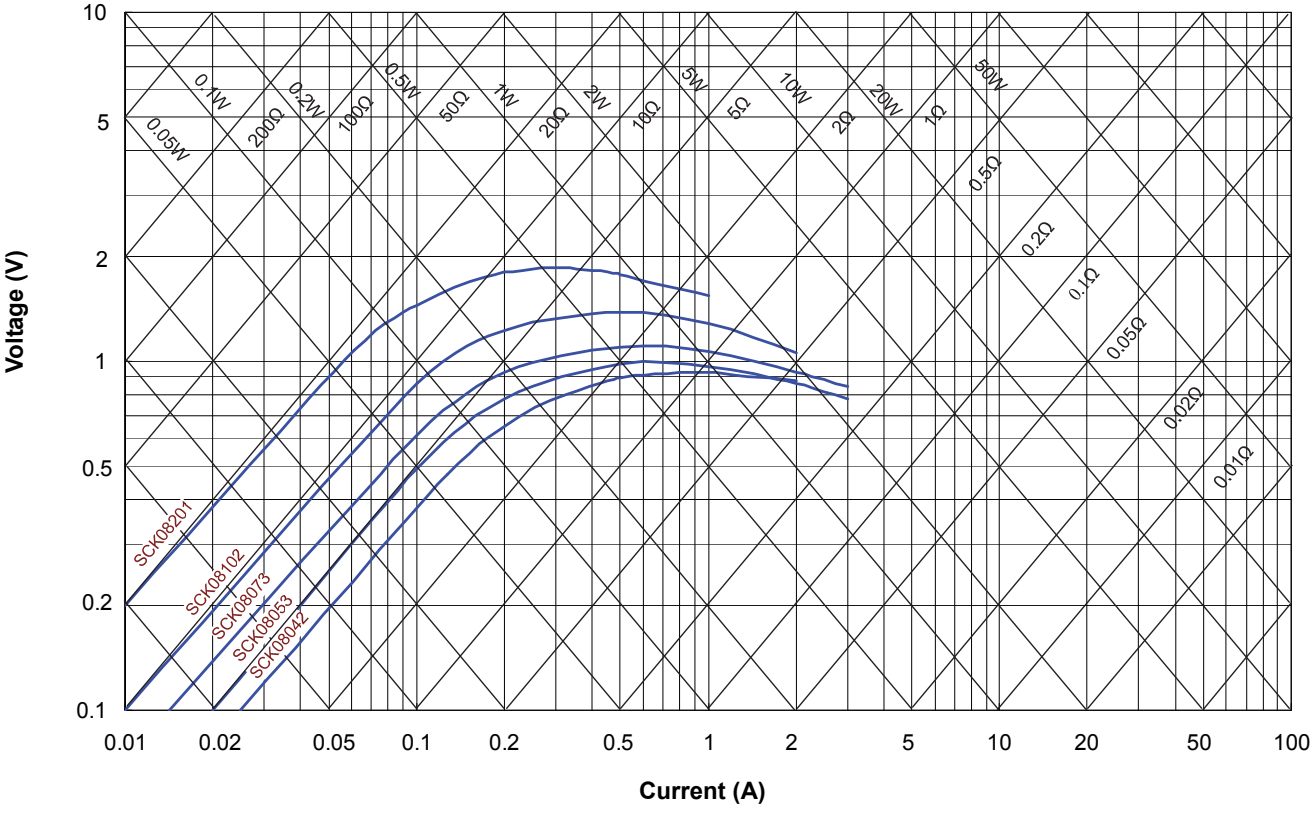


■ V-I Characteristic Curves (representative)

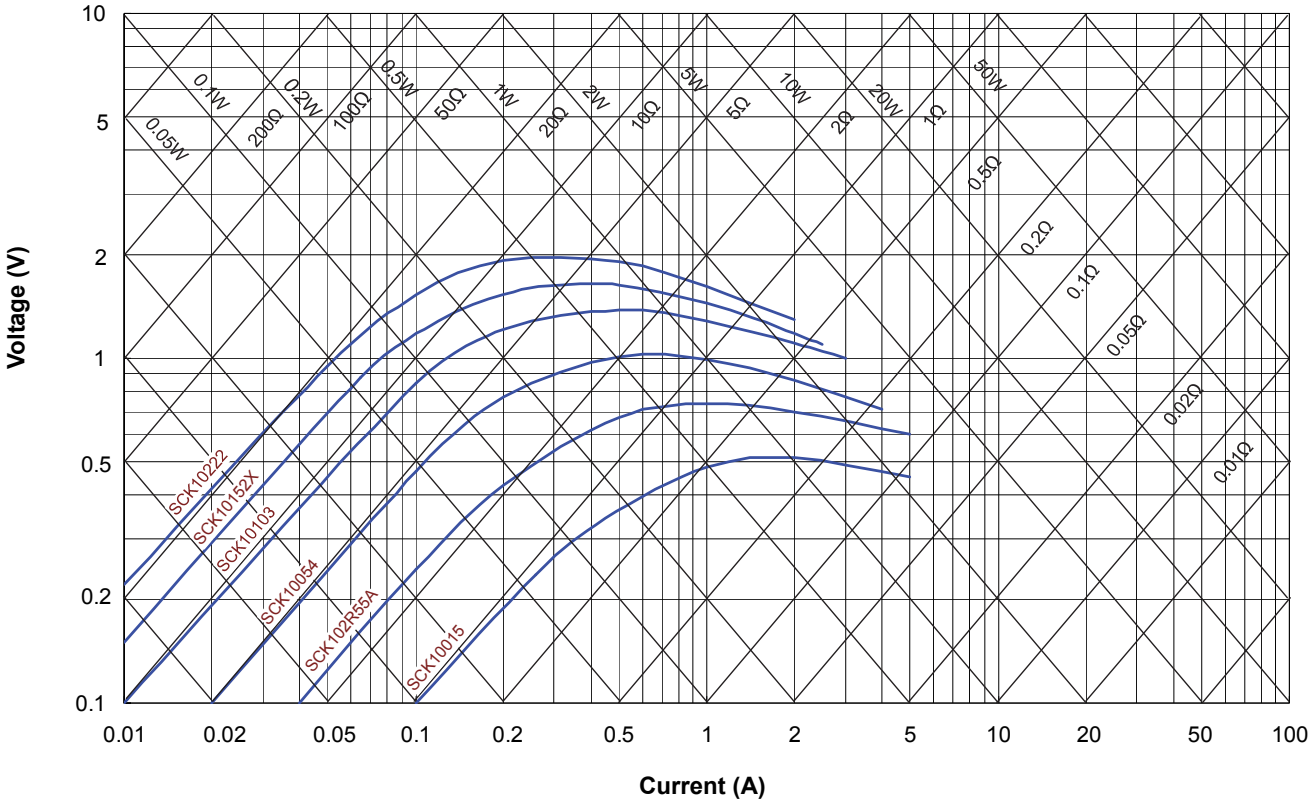
SCK05052~SCK0520X3



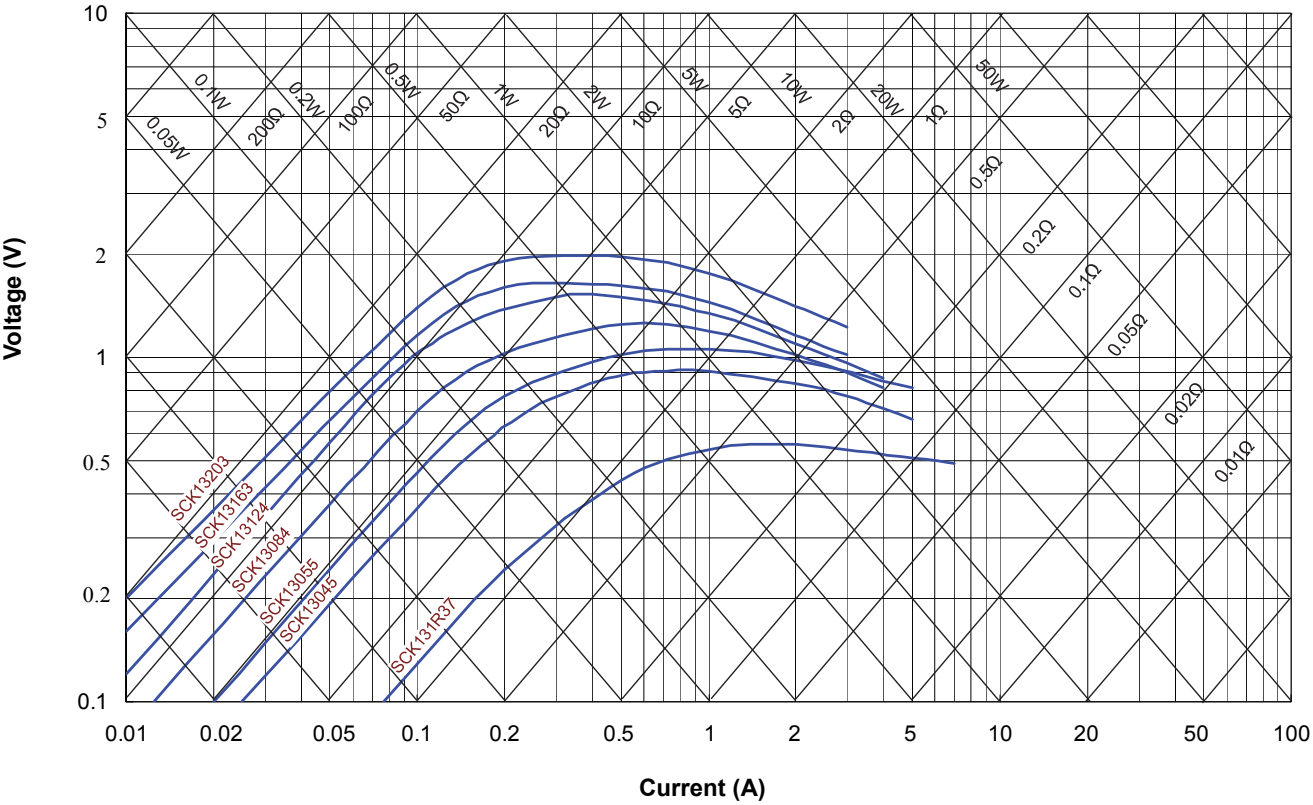
SCK08042~SCK08201



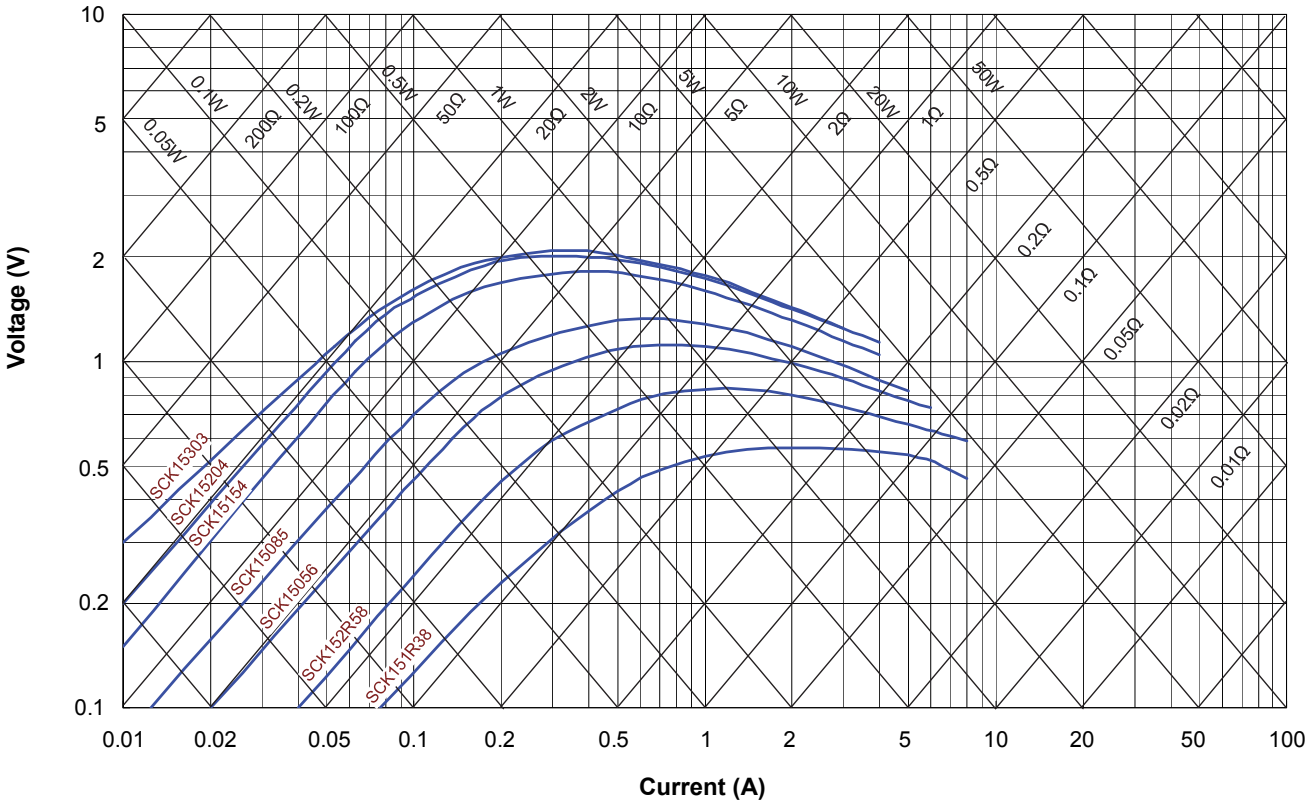
SCK10015~SCK10222



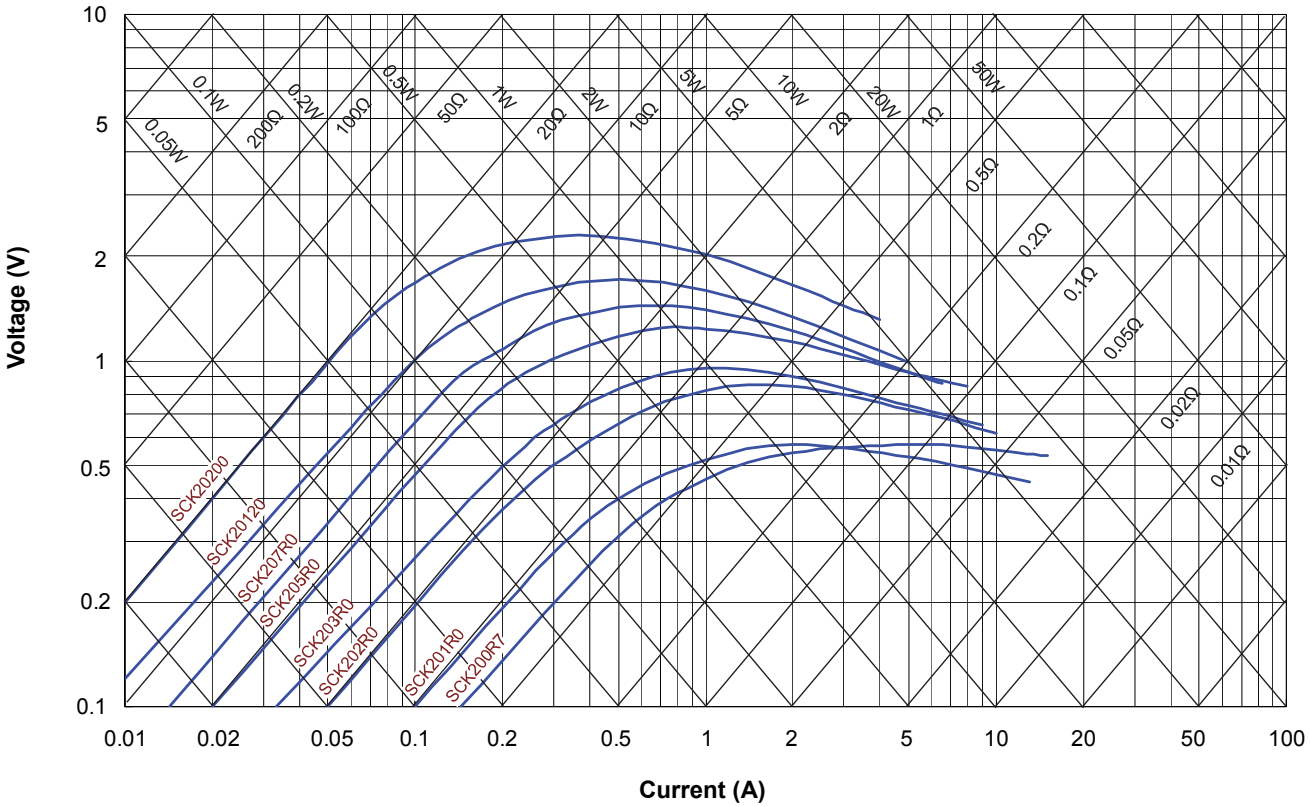
SCK131R37~SCK13203



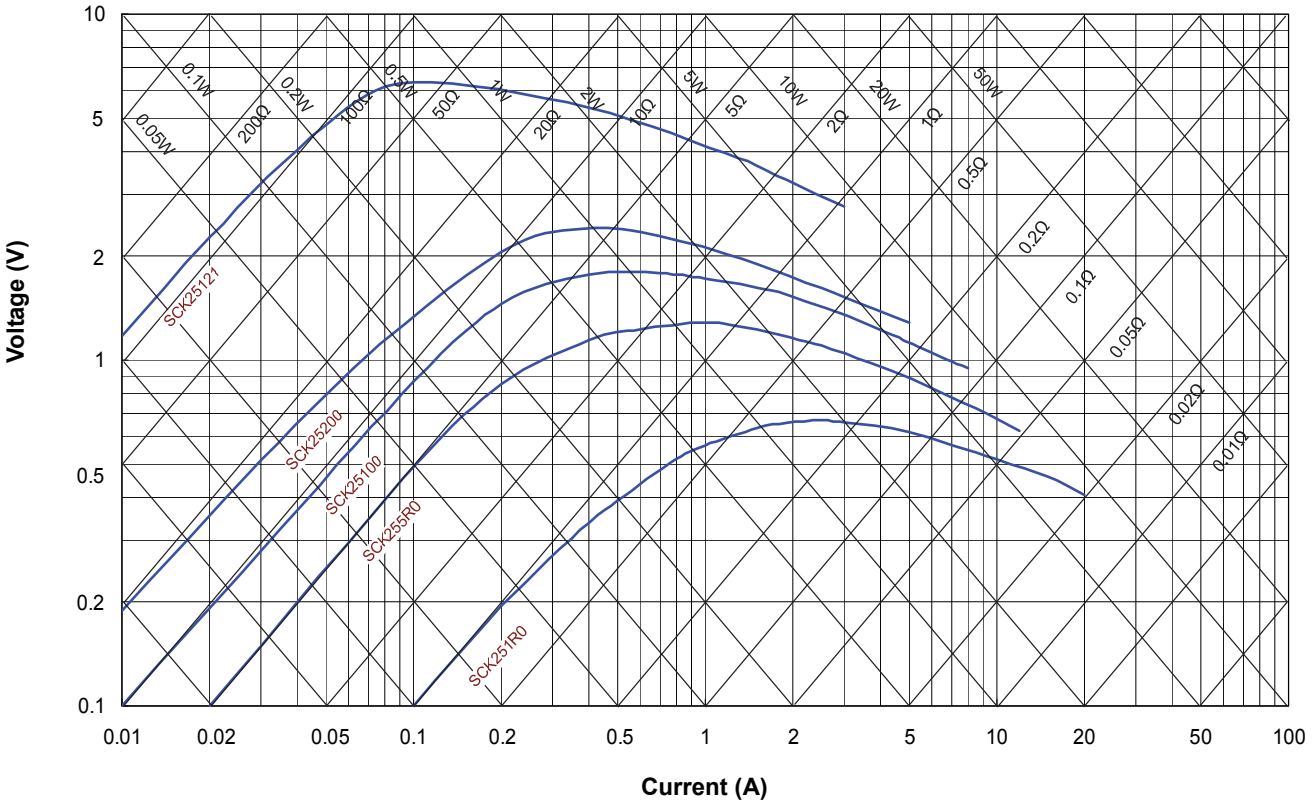
SCK151R38~SCK15303



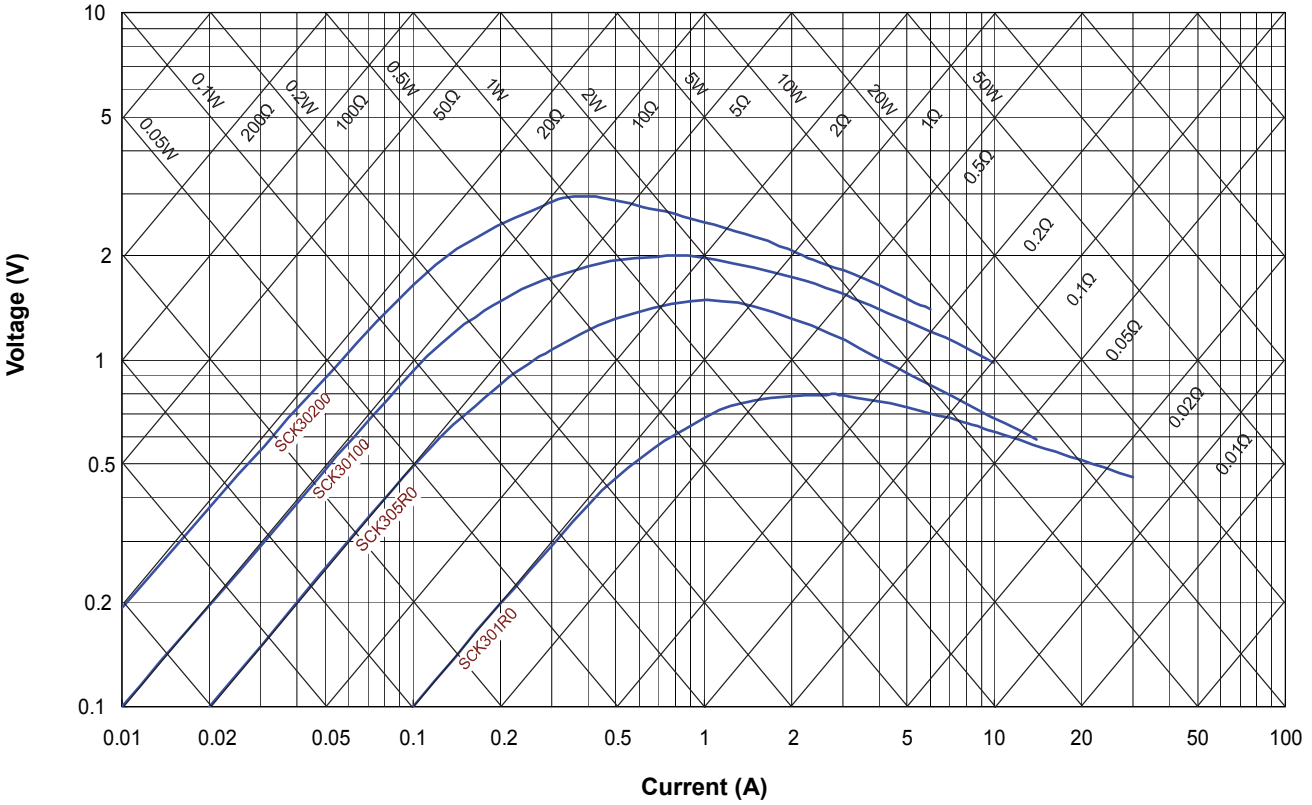
SCK200R7~SCK20200



SCK251R0~SCK25121

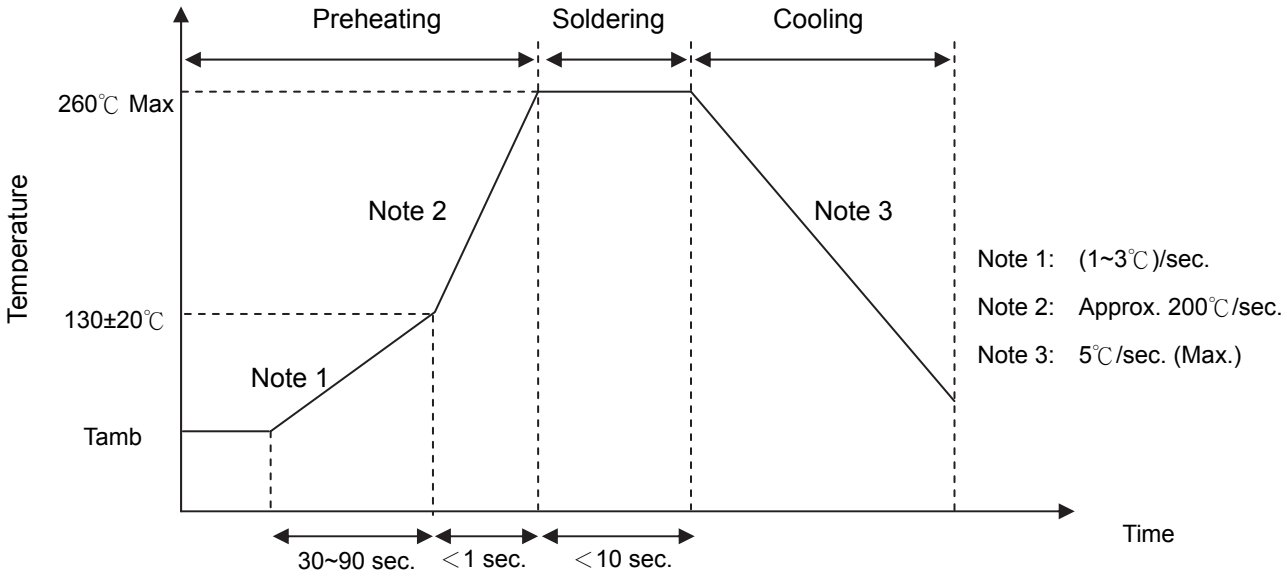


SCK301R0~SCK30200



■ Soldering Recommendation

● Wave Soldering Profile



● Recommended Reworking Conditions with Soldering Iron

Item	Condition
Temperature of Soldering Iron-tip	360℃ (max.)
Soldering Time	3 sec. (max.)
Distance from Thermistor	2 mm (min.)

■ Reliability

<table>
<tr><th>Item</th><th>Standard</th><th>Test conditions / Methods</th><th>Specifications</th></tr>
<tr><td>Tensile Strength of Terminals</td><td>IEC 60068-2-21</td><td>Gradually apply the specified force and keep the unit fixed for 10±1 sec.
<table><tr><th>Terminal diameter (mm)</th><th>Force (Kg)</th></tr><tr><td>0.5<d≦0.80</td><td>1.0</td></tr><tr><td>0.8<d≦1.25</td><td>2.0</td></tr></table></td><td>$\lvert \triangle R_{25}/R_{25} \rvert \leqq 10\ \%$</td></tr>
<tr><td>Solderability</td><td>IEC 60068-2-20</td><td>245 ±3℃, 3 ± 0.3 sec</td><td>At least 95% of terminal electrode is covered by new solder</td></tr>
<tr><td>Resistance to Soldering Heat</td><td>IEC 60068-2-20</td><td>260 ± 3℃, 10 ± 1 sec</td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 10\ \%$</td></tr>
<tr><td>High Temperature Storage</td><td>IEC 60068-2-2</td><td>Tu ± 5 ℃ , 1000± 24 hrs</td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$</td></tr>
<tr><td>Damp Heat, Steady State</td><td>IEC 60068-2-78</td><td>40 ± 2℃, 90~95% RH, 1000 ± 24 hrs</td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$</td></tr>
<tr><td>Rapid Change of Temperature</td><td>IEC 60068-2-14</td><td>The conditions shown below shall be repeated 5 cycles.
<table><tr><th>Step</th><th>Temperature (℃)</th><th>Period (minutes)</th></tr><tr><td>1</td><td>T_L ± 5</td><td>30 ± 3</td></tr><tr><td>2</td><td>Room temperature</td><td>5 ± 3</td></tr><tr><td>3</td><td>T_U ± 5</td><td>30 ± 3</td></tr><tr><td>4</td><td>Room temperature</td><td>5 ± 3</td></tr></table></td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$</td></tr>
<tr><td>Max. Current</td><td>IEC 60539-1 4.26.1</td><td>25 ± 5℃, Imax. , 1000± 24 hrs</td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$</td></tr>
<tr><td>Endurance</td><td>Specification Standard</td><td>25 ± 5℃, Imax. , C_{th}, 1min ON / 5 mins OFF x 1000 cycles
C_{th}= Capacitance at 240 Vac</td><td>No visible damage
$\lvert \triangle R_{25}/R_{25} \rvert \leqq 20\ \%$</td></tr>
<tr><td>Insulation Test</td><td>MIL-STD-202F -Method 302</td><td>1000 V_{DC} , 1 min</td><td>≧500 MΩ</td></tr>
</table>

■ Packaging

● Taping Specification

S (Straight lead) Type

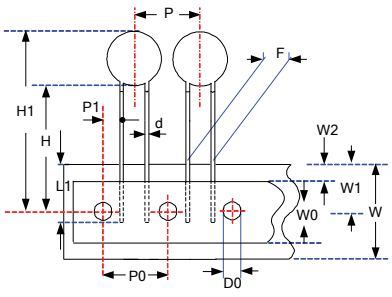


Figure A

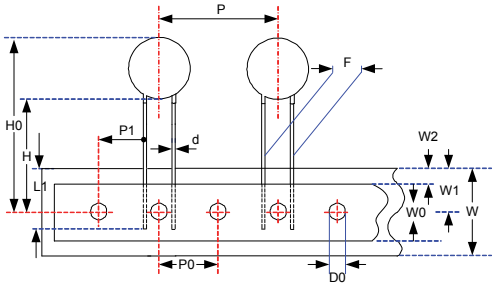


Figure B

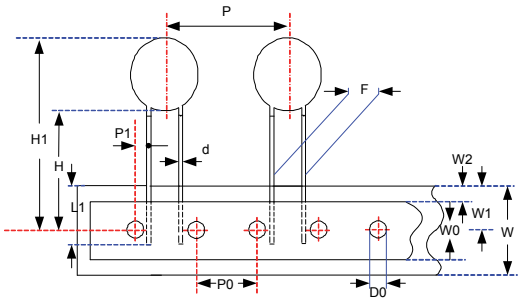
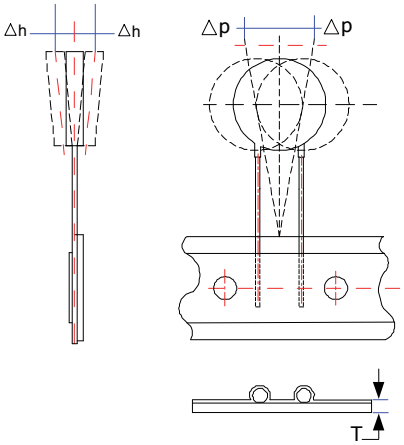
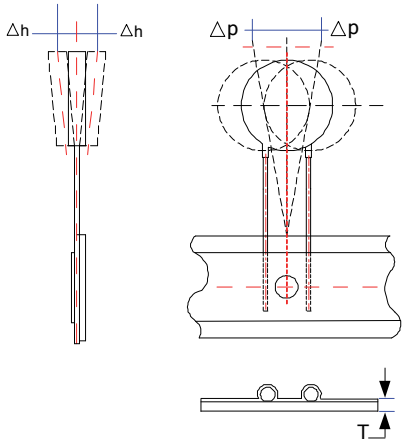


Figure C





(Unit: mm)

Taping Dimension	Disc Size	P_0	F	P	P_1	H	H_1	d	W_0	W_1	W_2	W	△P	△h	L_1	D_0	T	Figure
		±0.3	±0.5	±1	±0.7	+2 /-0	Max.	±0.02	±1	+0.75 /-0.5	Max	+1/ -0.5	Max	Max.	Min	±0.2	±0.2	
P_0:12.7	05	12.7	4.0	12.7	4.35	18	28	0.8	12	9	3	18	1	2	9	4	0.6	A
	08	12.7	5.0	12.7	3.85	18	30	0.8	12	9	3	18	1	2	9	4	0.6	A
	10	12.7	5.0	12.7	3.85	18	32	0.8	12	9	3	18	1	2	9	4	0.6	A
	13	12.7	7.5	25.4	8.95	18	35	0.8	12	9	3	18	1	2	9	4	0.6	B
	15	12.7	7.5	25.4	8.95	18	37	1.0	12	9	3	18	1	2	9	4	0.6	B
	20	12.7	7.5	25.4	8.95	18	42	1.0	12	9	3	18	1	2	9	4	0.6	B
P_0:15.0	05	15.0	4.0	15.0	5.50	18	28	0.8	12	9	3	18	1	2	9	4	0.6	A
	08	15.0	5.0	15.0	5.00	18	30	0.8	12	9	3	18	1	2	9	4	0.6	A
	10	15.0	5.0	15.0	5.00	18	32	0.8	12	9	3	18	1	2	9	4	0.6	A
	13	15.0	7.5	15.0	3.75	18	35	0.8	12	9	3	18	1	2	9	4	0.6	A
	15	15.0	7.5	30.0	3.75	18	37	1.0	12	9	3	18	1	2	9	4	0.6	C
	20	15.0	7.5	30.0	3.75	18	42	1.0	12	9	3	18	1	2	9	4	0.6	C

NTC Thermistor：SCK Series

Power Thermistor for Limiting Inrush Current

F Type (Y kink lead)

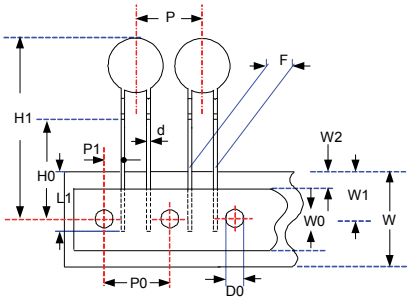


Figure A

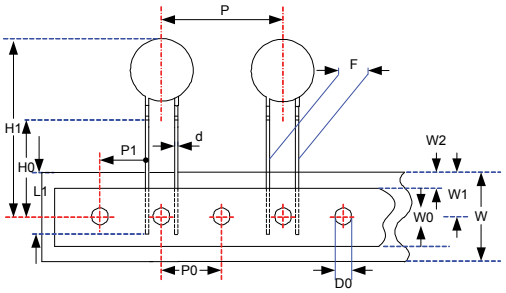


Figure B

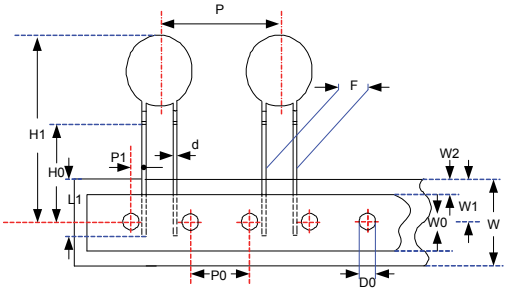
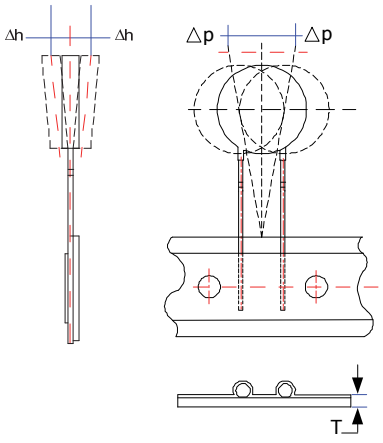
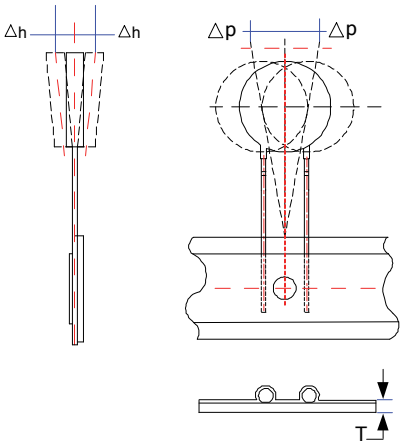


Figure C





(Unit: mm)

Taping Dimension	Disc Size	P_0	F	P	P_1	H_0	H_1	d	W_0	W_1	W_2	W	△P	△h	L_1	D_0	T	Figure
		±0.3	±0.5	±1	±0.7	±0.5	Max.	±0.02	±1	+0.75 /-0.5	Max.	+1/ -0.5	Max.	Max.	Min	±0.2	±0.2	
P_0:12.7	05	12.7	4.0	12.7	4.35	16	28	0.8	12	9	3	18	1	2	9	4	0.6	A
	08	12.7	5.0	12.7	3.85	16	30	0.8	12	9	3	18	1	2	9	4	0.6	A
	10	12.7	5.0	12.7	3.85	16	32	0.8	12	9	3	18	1	2	9	4	0.6	A
	13	12.7	7.5	25.4	8.95	16	35	0.8	12	9	3	18	1	2	9	4	0.6	B
	15	12.7	7.5	25.4	8.95	16	37	1.0	12	9	3	18	1	2	9	4	0.6	B
	20	12.7	7.5	25.4	8.95	16	42	1.0	12	9	3	18	1	2	9	4	0.6	B
P_0:15.0	05	15.0	4.0	15.0	5.50	16	28	0.8	12	9	3	18	1	2	9	4	0.6	A
	08	15.0	5.0	15.0	5.00	16	30	0.8	12	9	3	18	1	2	9	4	0.6	A
	10	15.0	5.0	15.0	5.00	16	32	0.8	12	9	3	18	1	2	9	4	0.6	A
	13	15.0	7.5	15.0	3.75	16	35	0.8	12	9	3	18	1	2	9	4	0.6	A
	15	15.0	7.5	30.0	3.75	16	37	1.0	12	9	3	18	1	2	9	4	0.6	C
	20	15.0	7.5	30.0	3.75	16	42	1.0	12	9	3	18	1	2	9	4	0.6	C

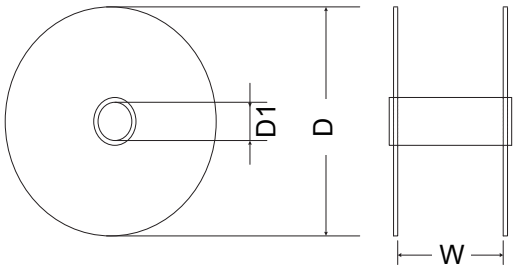
■ Quantity

● Bulk Packing

Series	Standard Lead Type Quantity (pcs/bag)	Cut Lead Type Quantity (pcs/bag)	L kink Type Quantity (pcs/bag)
SCK05	250	500	---
SCK08	250	250	200
SCK10	200	250	200
SCK13	100	200	100
SCK15	100	100	100
SCK20	500 (pcs/box)	50	50
SCK25	168 (pcs/box)	168 (pcs/box)	---
SCK30	168 (pcs/box)	168 (pcs/box)	---

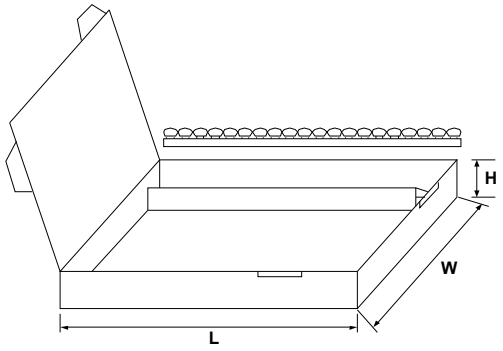
● Reel Packing

Series	D (mm)	D1 (mm)	W (mm)	Quantity (pcs/reel)
SCK05	340±10	31±1	46±1	2,500
SCK08				1,500
SCK10				1,500
SCK13				750
SCK15			52±1	750
SCK20				500



● Ammo Packing

Series	Quantity (pcs/box)
SCK05	1,000
SCK08	1,000
SCK10	1,000
SCK13	500 (P_0 12.7mm) 1,000 (P_0 15.0mm)
SCK15	500
SCK20	500



(Unit: mm)

Body Size	L	W	H
Φ5~Φ20	348	275	60

■ Warehouse Storage Conditions of Products

- Storage Conditions:
  1. Storage Temperature: -10℃~+40℃
  2. Relative Humidity: ≦75%RH
  3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage: 1 year