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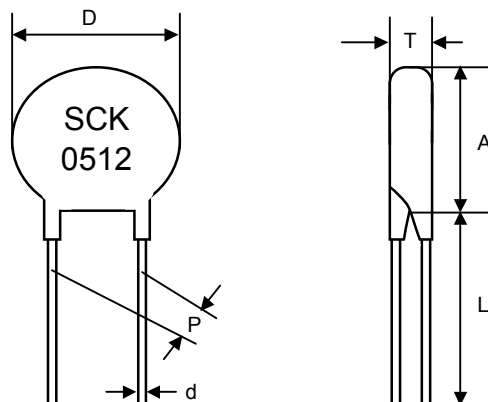
Part Number Code

Example :

SCK **20** **05** **12** **M** **S** **Y**
 (1) (2) (3) (4) (5) (6) (7)

No.	Item	Digit	Specification
(1)	Product Type	SCK	Thinking NTC thermistor SCK type
(2)	Body Size	20	φ 20 mm
(3)	Zero Power Resistance at 25°C (R ₂₅)	05	5Ω
(4)	Max. Steady State Current at 25°C	12	I _{max} =12A
(5)	Tolerance of R ₂₅	M	± 20%
(6)	Appearance	S	Straight lead
(7)	Optional Suffix	Y	RoHS+HF compliance

Structure and Dimensions



(unit : mm)

Body Size	D max.	P	d	A max.	L min.	T max.
ϕ 20mm	21.5	7.5 ± 1	1 ± 0.02	21.5	26	6

Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R_{25}	Max. Steady State Current at 25°C	Residual Resistance at 25°C I_{max}	Max. Power Rating at 25°C
	$R_{25}(\Omega)$	(\pm %)	$I_{max}(A)$	$R_{I_{max}}(\Omega)$	$P_{max}(W)$
SCK200512MSY	5	20	12	0.066	4.9

Part No.	Dissipation Factor	Thermal Time Constant	Capacitance at 240Vac	Operating Temperature Range
	δ (mW/°C)	τ (sec.)	(μF)	$T_L \sim T_U$ (°C)
SCK200512MSY	Approx. 28	Approx. 113	820	-40 ~ +200

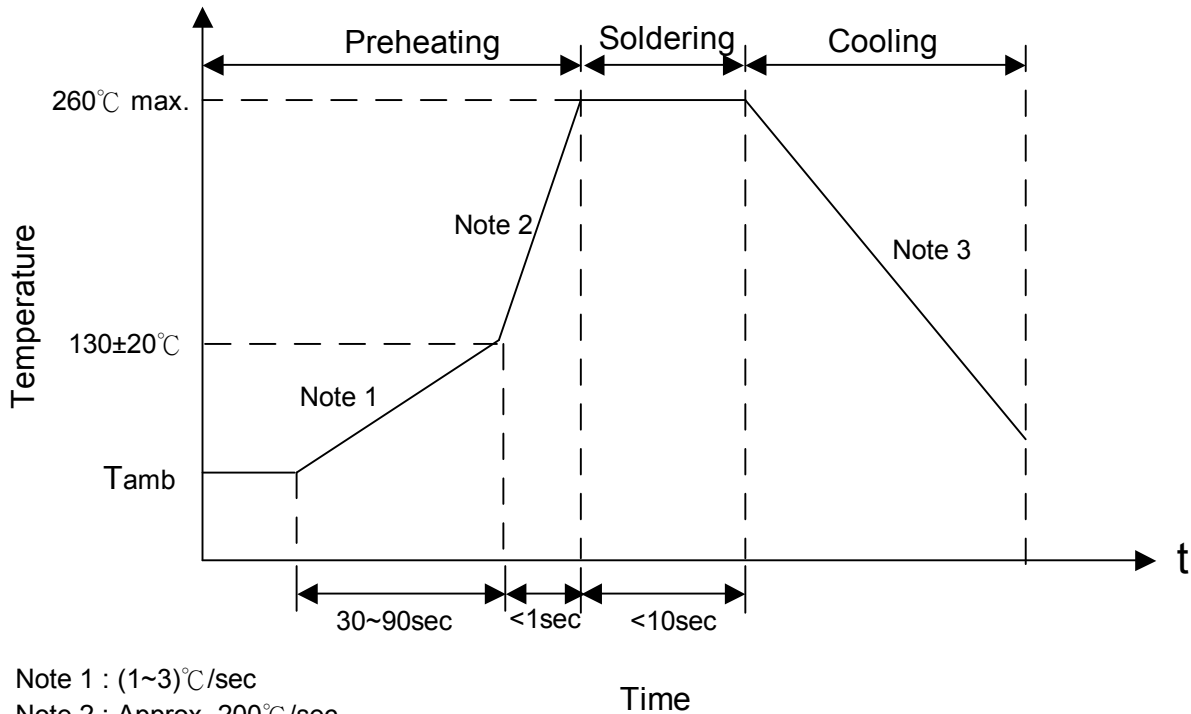
Reliability

Item	Standard	Test conditions / Methods	Specifications															
Tensile Strength of Terminals	IEC60068-2-21	Gradually applying the force specified and keeping the unit fixed for 10±1 sec. <table style="margin-left: auto; margin-right: auto;"> <tr> <td style="text-align: center;">Terminal diameter (mm)</td> <td style="text-align: center;">Force (Kg)</td> </tr> <tr> <td style="text-align: center;">$0.5 < d \leq 0.8$</td> <td style="text-align: center;">1.0</td> </tr> <tr> <td style="text-align: center;">$0.8 < d \leq 1.25$</td> <td style="text-align: center;">2.0</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	$0.5 < d \leq 0.8$	1.0	$0.8 < d \leq 1.25$	2.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
$0.5 < d \leq 0.8$	1.0																	
$0.8 < d \leq 1.25$	2.0																	
Solderability	IEC60068-2-20	235 ± 5 °C , 2 ± 0.5 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC60068-2-20	260 ± 5 °C , 10 ± 1 sec	No visible damage $\Delta R_{25}/R_{25}$ ≤ 10%															
High Temperature Storage	IEC60068-2-2	Tu ± 5 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 20%															
Damp Heat, Steady State	IEC60068-2-3	40 ± 2 °C , 90 ~ 95 % RH , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 20%															
Rapid Change of Temperature	IEC60068-2-14	The conditions shown below shall be repeated 5 cycles <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">T_L ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">2</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> <tr> <td style="text-align: center;">3</td> <td style="text-align: center;">T_u ± 5</td> <td style="text-align: center;">30 ± 3</td> </tr> <tr> <td style="text-align: center;">4</td> <td style="text-align: center;">Room temperature</td> <td style="text-align: center;">5 ± 3</td> </tr> </tbody> </table>	Step	Temperature (°C)	Period (minutes)	1	T _L ± 5	30 ± 3	2	Room temperature	5 ± 3	3	T _u ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage $\Delta R_{25}/R_{25}$ ≤ 20%
Step	Temperature (°C)	Period (minutes)																
1	T _L ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	T _u ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Life Test	IEC60539-1 4.26.1	25 ± 5 °C , I _{max.} , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 20%															
Endurance	UL1434	25±5°C, I _{max.} , C _T , 1min ON / 5 min OFF x1000 cycles C _T =Capacitance at 240Vac	No visible damage $\Delta R_{25}/R_{25}$ ≤ 20%															
Insulation	MIL-STD-202F-Method 302	1000 V _{DC} 1 min	No visible damage ≥ 500 MΩ															

Products have been tested at Thinking Electronic Industrial Co., Ltd. Laboratory recognized by UL (Underwriters Laboratories Inc.) under CTD (Client Test Data Program).

Soldering Recommendation

■ Wave Soldering Profile



Note 1 : (1~3)°C/sec

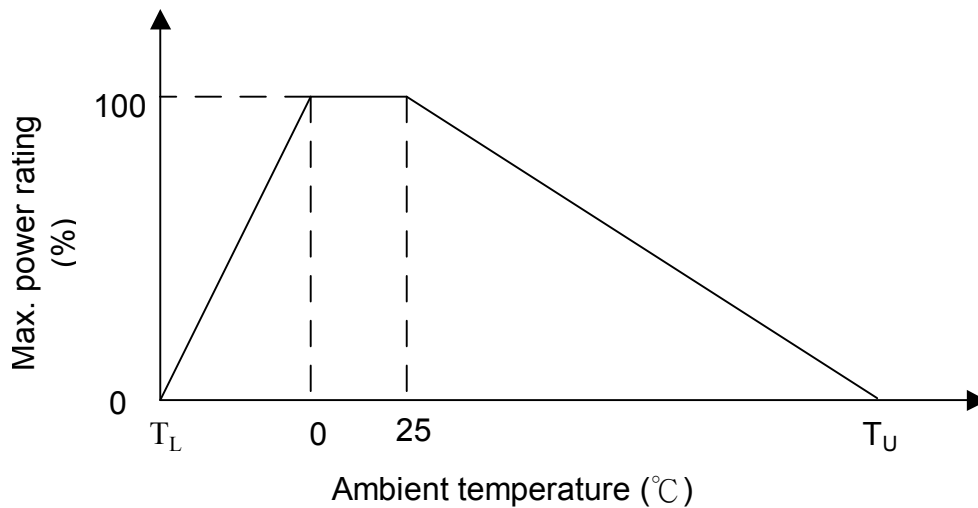
Note 2 : Approx. 200°C/sec

Note 3 : 5°C/sec max

■ Recommended Reworking Conditions with Soldering Iron

Item	Conditions
Temperature of Soldering Iron-tip	360°C (max.)
Soldering Time	3 sec (max.)
Distance From Thermistor	2 mm (min.)

Power Derating Curve



Note: T_L = Minimum operating temperature (°C)

T_U = Maximum operating temperature (°C)

For example :

Ambient temperature(T_a) = 55°C

Maximum operating temperature(T_u) = 200°C

$P_{T_a} = (T_u - T_a) / (T_u - 25) \times P_{max} = 82\% P_{max}$

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2002/95/EC.

Storage Conditions of Products

(I) Storage Conditions :

- 1.Storage Temperature : -10°C ~ +40°C
- 2.Relative Humidity : $\leq 75\%RH$
- 3.Keep away from corrosive atmosphere and sunlight.

(II) Period of Storage : 1 year

Safety Approvals



* UL 1434 / cUL recognized (File # E138827)



* CQC GB6663-86 recognized (File # CQC04001011942)

* CQC GB6663-86 recognized (File # CQC04001011963)

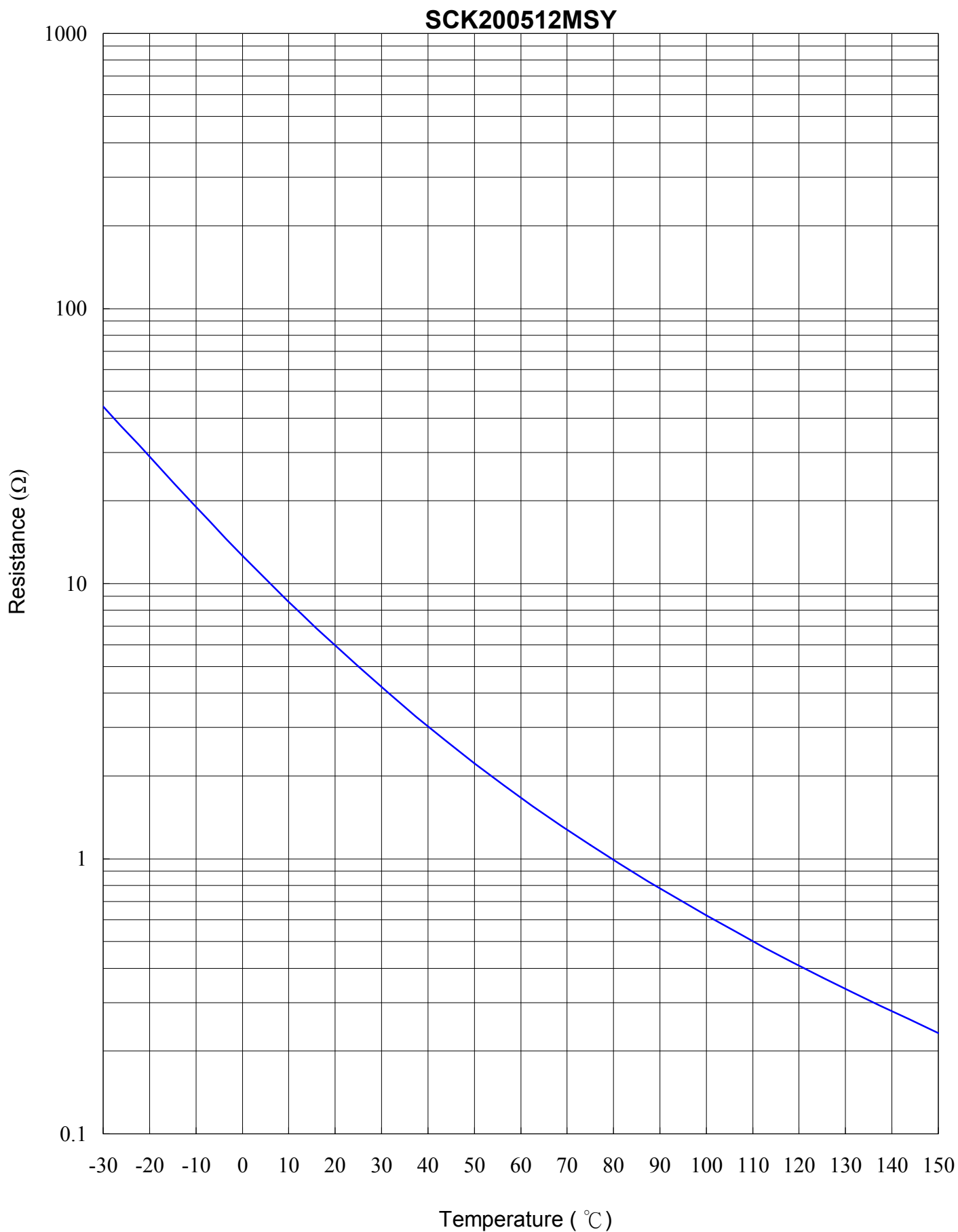
Certificates

- (1) TS 16949 certificate
- (2) ISO 9001 certificate

Test Report

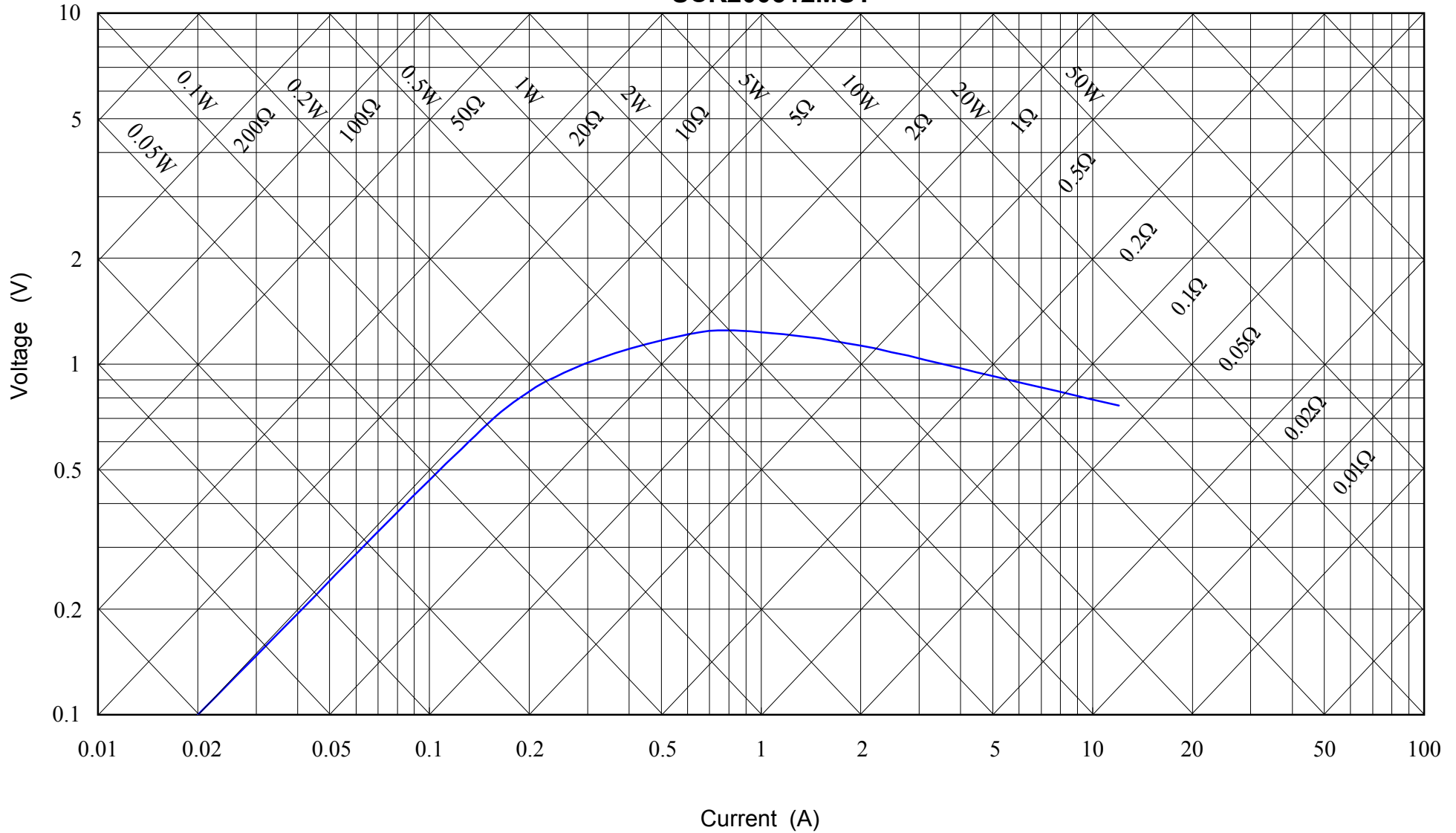
- (1) RoHS test report
- (2) Halogen-free test report

R-T Characteristic Curve



V-I characteristic curve (Ambient $T_a=25\text{ }^\circ\text{C}$)

SCK200512MSY



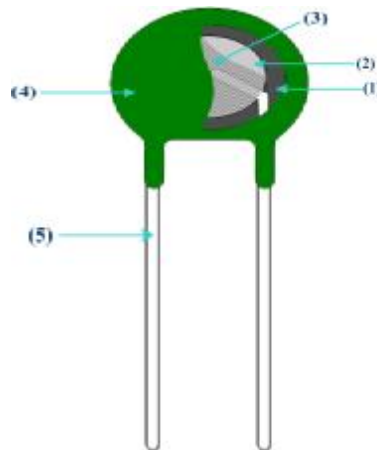
Material Safety Data Sheet

1. Product and Company Identification

Product name : NTC thermistor SCK series
Product Use : Use for electronic component
Supplier Information : THINKING ELECTRONIC INDUSTRIAL CO.,LTD <ul style="list-style-type: none"> • Kaohsiung Factory : No.51, Kaifa Road, Nantze Export Processing Zone, Kaohsiung City 81170, Taiwan Tel : 886-7-9616668 Fax : 886-7-9616698 • Changzhou Factory : Wujin High & New Tech Ind. Development Zone, Hutang, Wujin, Changzhou City, Jiangsu 213161, China Tel : 86-519-6578999 Fax : 86-519-6558643 • Dong Guan Factory : Chiao-Tou Tsun. Sha-Tao Hsiang. Chang-An Town. Dong-Guan City, Guang-Dong, China Tel : 86-769-85542016 Fax : 86-769-85546890

2. Composition, Information on Ingredients

SCK Series Structure



NO	Component	Material	WT (%)							
			5Φ	8Φ	10Φ	13Φ	15Φ	20Φ	25Φ	30Φ
(1)	Ceramic Disc	Mn、Co、Ni、Cu... Oxides	15.50	35.20	38.90	50.90	52.39	58.40	66.30	66.70
(2)	Electrode	Ag	0.15	0.15	0.40	0.46	0.39	0.49	0.90	1.10
(3)	Solder	97Sn-1Ag-2Cu	4.55	4.63	4.80	4.74	4.42	3.23	5.10	4.80
(4)	Coating	Silicon Resin	16.90	22.00	22.70	22.10	21.45	26.28	19.40	21.80
(5)	Lead	Sn-Cu	62.90	38.02	33.20	21.80	21.35	11.60	8.30	5.60

3. Hazards Identification

Emergency Overview : Harmful if swallowed.
Potential Health Effects : --
Ingestion : May be fatal if swallowed.
Chronic : --

4. First-Aid Measures

No risk on skin contact or inhalation.

Ingestion : 1.Washing the oral cavity with water.

2.Vomit and get medical acid imediately.

3.If the sufferer stop breathing, should be use artificial breathe; if stop heartbeat, should be used CPR.

Protection of First-aiders : Take protection gloves to avoid touching the Pollutant

Notes to Physician : --

5. Fire-Fighting Measures

Extinguishing Media : In case of fire, use carbon dioxide, dry chemical and form.

Fire and Explosion Hazards : Silicon Resin will crack when it occur fire accident, and bring methanol, formaldehyde,Silica steam.

Special Firefighting Procedures : --

Special Equipment for the Protection of Firefighters : Should take protective equipment, clothing and air inspirator.

6. Accidental Release Measures

Personal Precautions : The worker Should take protective equipment.

Environmental Precautions : 1.Use with adequate ventilation.

2.Remove all sources of ignition.

7. Handling and Storage

Handling : 1.Use with adequate ventilation.

2.Wash thoroughly after handling before reuse..

Storage : 1.Store in a cool, dry place.

2.Avoid extruding and shocking.

3. Keep away from sources of ignition.

4.The store area should have enough extinguish equipment.

8. Exposure Controls/Personal Protection

Exposure limit : --

Personal Protective Equipment :

- Hand Protection : Wear appropriate protective gloves to prevent skin exposure.
- Eye Protection : Wear appropriate protective eyeglasses

9. Physical and Chemical Properties

Physical State : Stable solid	Form : Disk type
Color : Green	Odor : a little propane-like
pH : -	Boiling Point/Boiling Range : -
Decomposition Temperature : -	Flash Point : -
Auto Ignition Temperature : -	Explosion Properties : -
Vapor pressure : -	Vapor density : -
Density : -	Solubility in water : none

10. Stability and Reactivity

Chemical Stability : Stable under normal temperature and pressures.

Conditions to Avoid : Ignition sources, exposure to moist air or water.

Materials to Avoid : Strong acids and strong oxidizers.

Hazardous Decomposition Products on heating : --

11. Toxicological Information

Acute toxicity : --

Local effects : --

Sensitization : --

Chronic Toxicity or Long Term Toxicity : --

Specific effects : --

12. Ecological Information

Possible Environmental Effects, Behavior and Fate :

1. Can't be solve spontaneously in atmosphere.
2. Can't be solve spontaneously in water.
3. Can't be solve spontaneously in soil.

13. Disposal Considerations

Recommended Methods for Safe and Environmentally Preferred Disposal :

1. Should separate product into lead, coating and main body.
2. The part of coating can mixture with combustible solution, and incinerate by chemistry inci
3. The part of lead is copper mostly, and classified as metal is reclaimable.
4. The main body is metal oxide, processing like general waste.

14. Transport Information

Not classified as dangerous or hazardous for transporting.

15. Regulatory Information

Applicable Regulations :

1. Labor safety and Health Action.
2. Waste Disposal Action.
3. Water Pollution Control Action.

16. Other Information

Revision Date : Mar. 01, 2008

Tabulation : R&D Div.

Address : No.51, Kaifa Road, Nantze Export Processing Zone, Kaohsiung City 81170, Taiwan

Telephone : 886-7-9616668

UL 1434 certificate

XGPU2.E138827 - Thermistor-type Devices - Component

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-106	120/240	6.0	6.0	4000/1000	1(200), 4
-0120	120/240	20.0	20.0	3280/820	1(200), 4
-2R512	120/240	12.0	12.0	3280/820	1(190), 4
-2R515	120/240	15.0	15.0	3280/820	1(200), 4
-0510	120/240	10.0	10.0	3280/820	1(190), 4
-0512	120/240	12.0	12.0	3280/820	1(200), 4
-0710	120/240	10.0	10.0	3280/820	1(200), 4
-108	120/240	8.0	8.0	3280/820	1(200), 4
-206	120/240	6.0	6.0	2720/680	1(200), 4
SCK20 f/b -0R7	120/240	15	15	4000/1000	1(200),4,#
-1R0	120/240	13	13	4000/1000	1(200),4,#
-1R3	120/240	11.5	11.5	4000/1000	1(200),4,#
-1R5	120/240	10.5	10.5	4000/1000	1(200),4,#
-2R0	120/240	10.0	10.0	4000/1000	1(200),4,#
-2R2	120/240	9.5	9.5	4000/1000	1(200),4,#
-2R5	120/240	9.0	9.0	4000/1000	1(200),4,#
-3R0	120/240	8.5	8.5	4000/1000	1(200),4,#
-4R0	120/240	8.0	8.0	4000/1000	1(200),4,#
-4R7	120/240	7.5	7.5	4000/1000	1(200),4,#
-5R0	120/240	7.5	7.5	4000/1000	1(200),4,#
-6R0	120/240	7.0	7.0	4000/1000	1(200),4,#
-6R8	120/240	6.5	6.5	4000/1000	1(200),4,#
-7R0	120/240	6.5	6.5	4000/1000	1(200),4,#
-8R0	120/240	6.0	6.0	4000/1000	1(200),4,#
-100	120/240	5.5	5.5	4000/1000	1(200),4,#
-120	120/240	5.0	5.0	4000/1000	1(200),4,#
-130	120/240	5.0	5.0	4000/1000	1(200),4,#
-150	120/240	4.5	4.5	4000/1000	1(200),4,#
-160	120/240	4.5	4.5	4000/1000	1(200),4,#
-180	120/240	4.0	4.0	4000/1000	1(200),4,#
-200	120/240	4.0	4.0	4000/1000	1(200),4,#
SCK22 f/b -0R5	120/240	18.0	18.0	4000/1000	1(200),4,#
-0R7	120/240	16.0	16.0	4000/1000	1(200),4,#
-1R0	120/240	14.0	14.0	4000/1000	1(200),4,#
-1R3	120/240	12.0	12.0	4000/1000	1(200),4,#
-1R5	120/240	11.5	11.5	4000/1000	1(200),4,#
-2R0	120/240	11.0	11.0	4000/1000	1(200),4,#
-2R2	120/240	10.5	10.5	4000/1000	1(200),4,#
-2R5	120/240	10.0	10.0	4000/1000	1(200),4,#
-3R0	120/240	10.0	10.0	4000/1000	1(200),4,#

cUL certificate

XGPU8.E138827 - Thermistor-type Devices Certified for Canada - Component

第 4 頁，共 25 頁

-106	120/240	6.0	6.0	4000/1000	1(200), 4
-0120	120/240	20.0	20.0	3280/820	1(200), 4
-2R512	120/240	12.0	12.0	3280/820	1(190), 4
-2R515	120/240	15.0	15.0	3280/820	1(200), 4
-0510	120/240	10.0	10.0	3280/820	1(190), 4
-0512	120/240	12.0	12.0	3280/820	1(200), 4
-0710	120/240	10.0	10.0	3280/820	1(200), 4
-108	120/240	8.0	8.0	3280/820	1(200), 4
-206	120/240	6.0	6.0	2720/680	1(200), 4
SCK20 f/b -OR7	120/240	15	15	4000/1000	1(200),4,#
-1R0	120/240	13	13	4000/1000	1(200),4,#
-1R3	120/240	11.5	11.5	4000/1000	1(200),4,#
-1R5	120/240	10.5	10.5	4000/1000	1(200),4,#
-2R0	120/240	10.0	10.0	4000/1000	1(200),4,#
-2R2	120/240	9.5	9.5	4000/1000	1(200),4,#
-2R5	120/240	9.0	9.0	4000/1000	1(200),4,#
-3R0	120/240	8.5	8.5	4000/1000	1(200),4,#
-4R0	120/240	8.0	8.0	4000/1000	1(200),4,#
-4R7	120/240	7.5	7.5	4000/1000	1(200),4,#
-5R0	120/240	7.5	7.5	4000/1000	1(200),4,#
-6R0	120/240	7.0	7.0	4000/1000	1(200),4,#
-6R8	120/240	6.5	6.5	4000/1000	1(200),4,#
-7R0	120/240	6.5	6.5	4000/1000	1(200),4,#
-8R0	120/240	6.0	6.0	4000/1000	1(200),4,#
-100	120/240	5.5	5.5	4000/1000	1(200),4,#
-120	120/240	5.0	5.0	4000/1000	1(200),4,#
-130	120/240	5.0	5.0	4000/1000	1(200),4,#
-150	120/240	4.5	4.5	4000/1000	1(200),4,#
-160	120/240	4.5	4.5	4000/1000	1(200),4,#
-180	120/240	4.0	4.0	4000/1000	1(200),4,#
-200	120/240	4.0	4.0	4000/1000	1(200),4,#
SCK22 f/b -OR5	120/240	18.0	18.0	4000/1000	1(200),4,#
-OR7	120/240	16.0	16.0	4000/1000	1(200),4,#
-1R0	120/240	14.0	14.0	4000/1000	1(200),4,#
-1R3	120/240	12.0	12.0	4000/1000	1(200),4,#
-1R5	120/240	11.5	11.5	4000/1000	1(200),4,#
-2R0	120/240	11.0	11.0	4000/1000	1(200),4,#
-2R2	120/240	10.5	10.5	4000/1000	1(200),4,#
-2R5	120/240	10.0	10.0	4000/1000	1(200),4,#
-3R0	120/240	10.0	10.0	4000/1000	1(200),4,#

CQC GB6663-86 certificate

PRODUCT CERTIFICATE

No.: CQC04001011942

NAME AND ADDRESS OF THE APPLICANT

Thinking Electronic Industrial Co., Ltd.
21, Lane 373, Min Tzu 1st Rd, San-Ming Dist, Kaohsiung, Taiwan

NAME AND ADDRESS OF THE MANUFACTURER

Thinking Electronic Industrial Co., Ltd.
21, Lane 373, Min Tzu 1st Rd, San-Ming Dist, Kaohsiung, Taiwan

NAME AND ADDRESS OF THE FACTORY

WELKIN ELECTRONIC INDUSTRIAL CO., LTD. (V002925)
SHA-TAO HSIANG CHANG-AN TOWN DONG GUAN CITY GUANG-DONG CHINA

NAME, MODEL AND SPECIFICATION

NTC Thermistor
SCK型 外径: $\phi 20 \pm 1\text{mm}$ 电阻值: $0.7\Omega\text{-}20\Omega$ 40/200/21

THE STANDARDS AND TECHNICAL REQUIREMENTS FOR THE PRODUCTS

GB6663-86

CERTIFICATION MODEL

Type Testing of the Product + Initial Factory Inspection + Follow up Factory Inspection

This is to certify that the above mentioned products have qualified for the requirements of
implementation rules for CQC mark certification.The validity of the certificate depend on the follow up inspection by the certification body at
regular intervals.

President :

Li Huailin



CHINA QUALITY CERTIFICATION CENTRE

A10 Chaoyangmenwaidajie Beijing 100020 P.R.China

<http://www.cqc.com.cn>

A 0020514

CQC GB6663-86 certificate**PRODUCT CERTIFICATE**

No.: CQC04001011963

NAME AND ADDRESS OF THE APPLICANTThinking Electronic Industrial Co., Ltd.
21,Lane 373,Min Tzu 1st Rd,San-Ming Dist,Kaohsiung,Taiwan**NAME AND ADDRESS OF THE MANUFACTURER**Thinking Electronic Industrial Co., Ltd.
21,Lane 373,Min Tzu 1st Rd,San-Ming Dist,Kaohsiung,Taiwan**NAME AND ADDRESS OF THE FACTORY**THINKING(CHANGZHOU)ELECTRONIC CO., LTD. (V002926)
WUJIN HIGH&NEW-TECH INDUSTRY DEVELOPMENT ZONE,WUJIN CHANGZHOU JIANGSU
CHINA**NAME, MODEL AND SPECIFICATION**NTC Thermistor
SCK型 外径: $\phi 20 \pm 1\text{mm}$ 电阻值: $0.7\Omega\text{-}20\Omega$ 40/200/21**THE STANDARDS AND TECHNICAL REQUIREMENTS FOR THE PRODUCTS**

GB6663-86

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This is to certify that the above mentioned products have qualified for the requirements of
implementation rules for CQC mark certification.

The validity of the certificate depend on the follow up inspection by the certification body at
regular intervals.

President :

Handwritten signature of Li Huailin in black ink.

Li Huailin

**CHINA QUALITY CERTIFICATION CENTRE**

A10 Chaoyangmenwaidajie Beijing 100020 P.R.China

<http://www.cqc.com.cn>**A 0020507**