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SPECIFICATION FOR APPROVAL

CUSTOMER	全緯
CERTIFIED MODEL/TYPE	TTC-203
PART NO.	TTC05203KSY(RoHS)
APPLICATION	
CUSTOMER P/N	
ISSUE DATE	Aug.02,2016
REV. NO.	
REV. DATE	

FOR CUSTOMER APPROVAL	CHECKED BY
	柳麗君
	APPROVED BY
	陳振東





REVISED RECORD SHEET

REV. NO	REV. DATE	REVISED CONTENT



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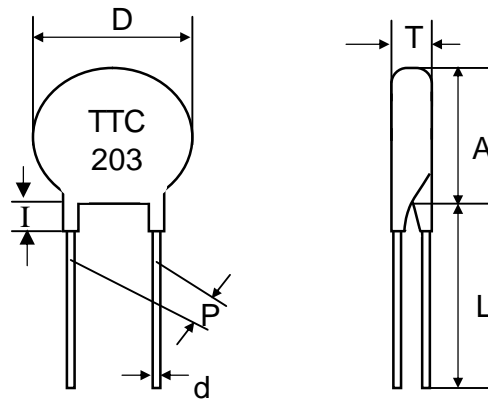
Part Number Code

Example :

TTC **05** **203** **K** **S** **Y**
(1) (2) (3) (4) (5) (6)

No.	Item	Digit	Specification
(1)	Product Type	TTC	Thinking NTC thermistor TTC type
(2)	Body Size	05	φ 5 mm
(3)	Zero Power Resistance at 25°C (R ₂₅)	203	$20 \times 10^3 = 20 \text{ K}\Omega$
(4)	Tolerance of R ₂₅	K	±10%
(5)	Appearance	S	Straight Lead
(6)	Optional Suffix	Y	RoHS compliance

Structure and Dimensions



(unit : mm)

Body Size	D max.	P	d	l max.	A max.	L min.	T max.
φ 5mm	6.5	3.5±0.5	0.5±0.02	3	6.5	31	5

Electrical Characteristics

Part No.	Zero Power Resistance at 25°C	Tolerance of R ₂₅	B _{25/50} Value	Max. Power Rating at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range
	R ₂₅ (KΩ)	(± %)	(K)	P _{max} (mW)	δ (mW/°C)	τ (sec.)	T _L ~T _U (°C)
TTC05203KSY	20	10	4250	450	Approx. 4.5	Approx. 20	-30 ~+125



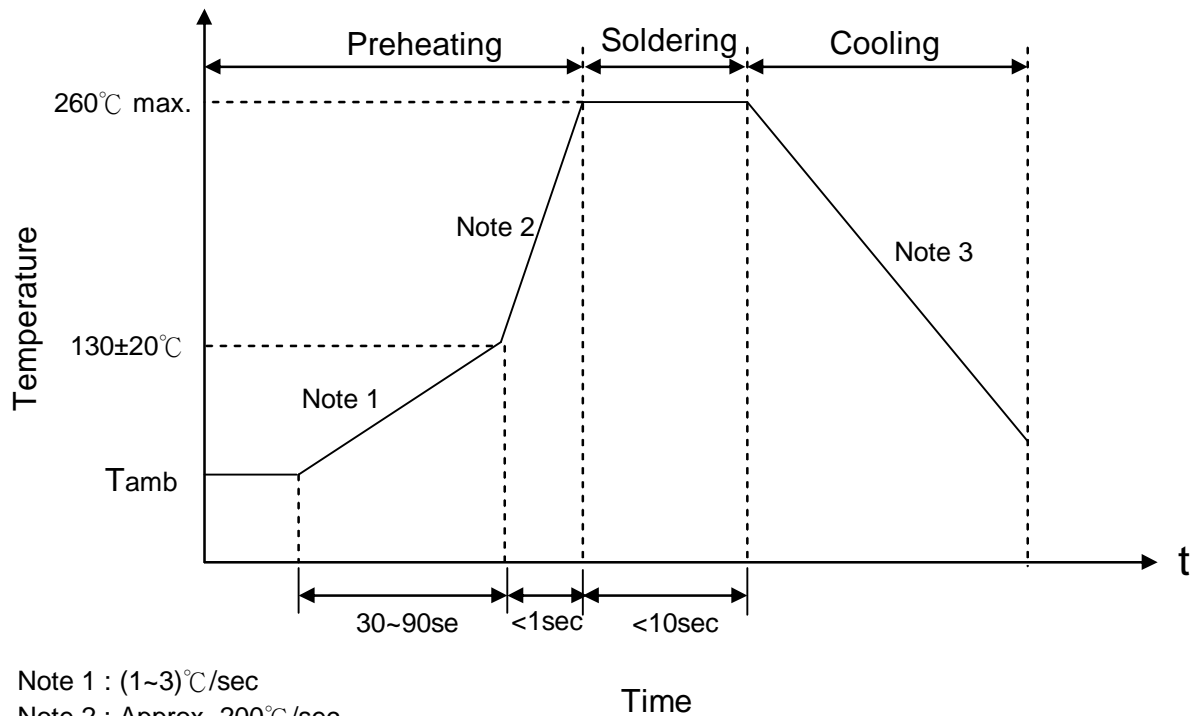
Reliability

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;">$0.3 < d \leq 0.5$</td> <td style="text-align: center;">0.5</td> </tr> <tr> <td style="text-align: center;">$0.5 < d \leq 0.8$</td> <td style="text-align: center;">1.0</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.5	$0.5 < d \leq 0.8$	1.0	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.5																	
$0.5 < d \leq 0.8$	1.0																	
Bending Strength of Terminals	IEC60068-2-21	Hold specimen and apply the force specified below to each lead. Bend the specimen to 90°, then return to the original position. Repeat the procedure in the opposite direction. <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;">$0.3 < d \leq 0.5$</td> <td style="text-align: center;">0.25</td> </tr> <tr> <td style="text-align: center;">$0.5 < d \leq 0.8$</td> <td style="text-align: center;">0.50</td> </tr> </table>	Terminal diameter (mm)	Force (Kg)	$0.3 < d \leq 0.5$	0.25	$0.5 < d \leq 0.8$	0.50	No visible damage									
Terminal diameter (mm)	Force (Kg)																	
$0.3 < d \leq 0.5$	0.25																	
$0.5 < d \leq 0.8$	0.50																	
Solderability	IEC60068-2-20	245 ± 3 °C , 3 ± 0.3 sec	At least 95% of terminal electrode is covered by new solder															
Resistance to Soldering Heat	IEC60068-2-20	260 ± 3 °C , 10 ± 1 sec	No visible damage $\Delta R_{25}/R_{25}$ ≤ 3 %															
High Temperature Storage	IEC60068-2-2	125 ± 5 °C , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 5 %															
Damp Heat, Steady State	IEC 60068-2-78	40 ± 2°C , 90 ~ 95 % RH , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 3 %															
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;">-30 ± 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;">125 ± 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	-30 ± 5	30 ± 3	2	Room temperature	5 ± 3	3	125 ± 5	30 ± 3	4	Room temperature	5 ± 3	No visible damage $\Delta R_{25}/R_{25}$ ≤ 3 %
Step	Temperature (°C)	Period (minutes)																
1	-30 ± 5	30 ± 3																
2	Room temperature	5 ± 3																
3	125 ± 5	30 ± 3																
4	Room temperature	5 ± 3																
Max. Power Dissipation	IEC60539-1 4.26.3	25 ± 5 °C , Pmax. , 1000 ± 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ ≤ 5 %															
Insulation test	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 CTDIP (Client Test Data Program).

Soldering Recommendation

Wave Soldering Profile



Note 1 : (1~3)°C/sec

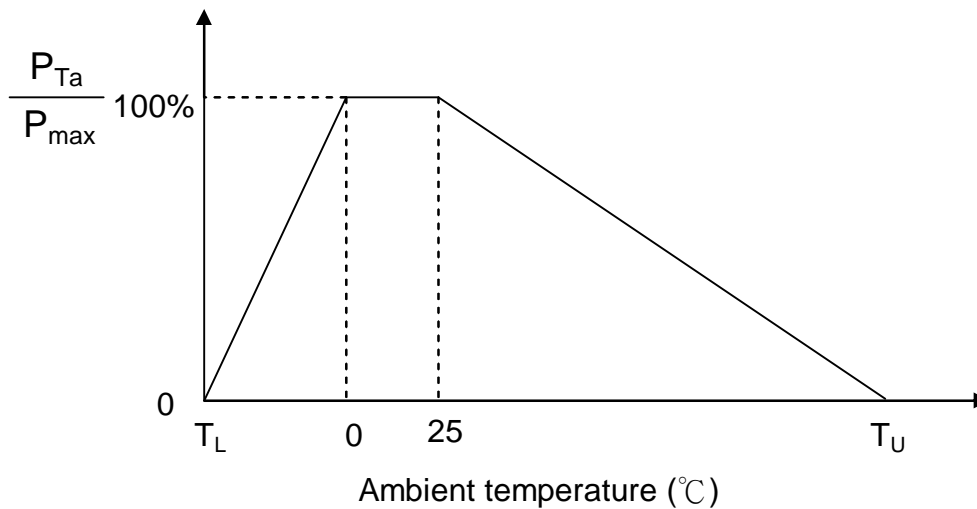
Note 2 : Approx. 200°C/sec

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.)

Max. Power Dissipation 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) = 125°C

$P_{Ta} = (T_u - T_a) / (T_u - 25) \times P_{max} = 70\% P_{max}$

RoHS Compliant Declaration

We hereby declare that the components delivered to your company are compliant with RoHS directive 2011/65/EU.

Warehouse 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 (Certified Model/Type : TTC-203)

* UL 1434 / cUL recognized (File # E138827)



* CSA recognized (File # 97495)



* TUV recognized (File # R 50050155)



* CQC GB/T 6663.1-2007 recognized (File # CQC05001011994)

* CQC GB6663-86 recognized (File # CQC05001011991)

Certificates

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

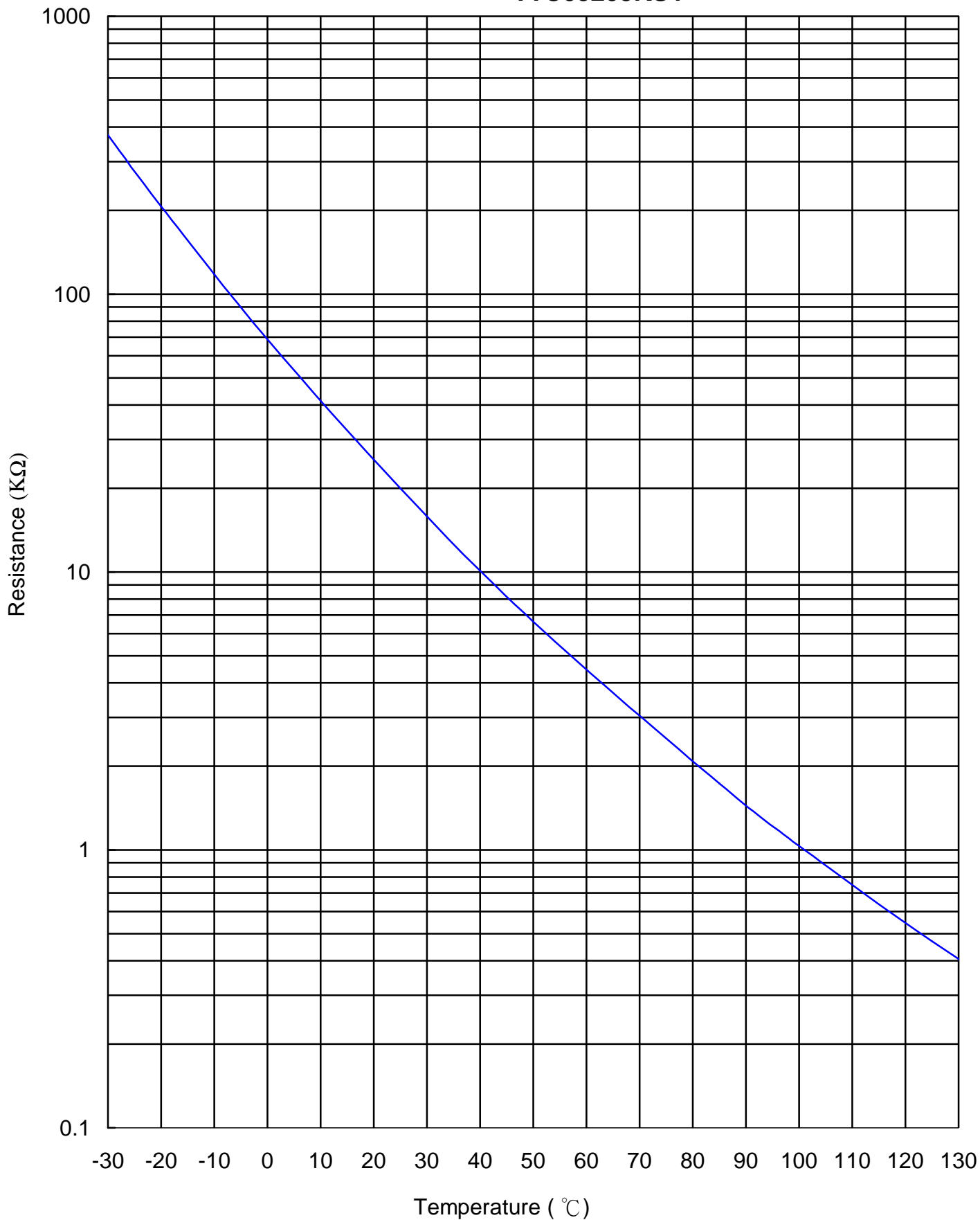
Test Report

- (1) RoHS test report



R-T Characteristic Curve

TTC05203KSY



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

TTC05203KSY

