

Glass Encapsulated Type for Temperature Sensing/Compensation

■ Features

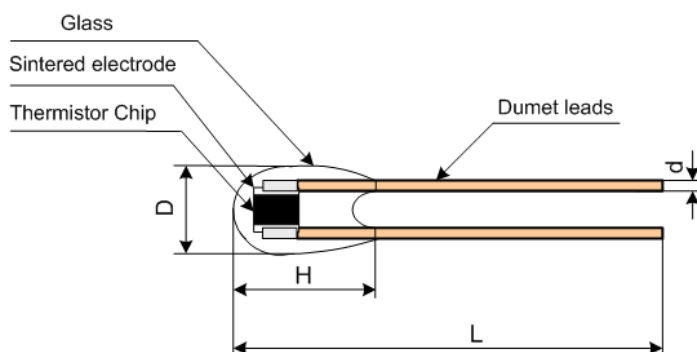
1. RoHS compliant
2. Glass-encapsulated and heat-resistive
3. Body size: $\Phi 2.5\text{mm}$
4. Operating temperature range: $-40^{\circ}\text{C} \sim +250^{\circ}\text{C}$
5. Agency recognition: UL / cUL



■ Recommended Applications

1. Home appliances
2. Automotive electronics

■ Structure and Dimensions



(Unit: mm)

Series	D	H	L	d
TGMA	2.5 ± 0.2	3.8 ± 0.5	≥ 40	0.30 ± 0.02

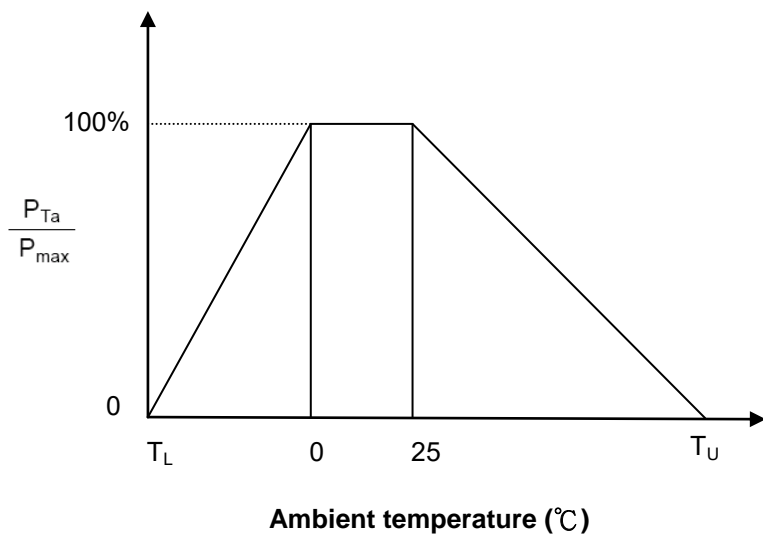
■ Electrical Characteristics

Part No.	Zero Power Resistance	B Value	RT Curve	Max. Power Dissipation at 25°C	Dissipation Factor	Thermal Time Constant	Operating Temperature Range	Safety Approvals	
	(KΩ)			(K)				--	P _{max} (mW)
TGMAA503F3993DA6	R100=3.3K±2%	B0/100=3970±3%	A	7	Approx. 1.4	Approx. 14	-40 ~ +250	√	√
TGMAA503F3993DA5	R100=3.3K±3%							√	√
TGMAA503F3993DA1	R100=3.3K±5%							√	√
TGMAA503G4013DA1	R25=50K±2%							√	√
TGMAA503H4013DA1	R25=50K±3%							√	√
TGMAA503J4013DA1	R25=50K±5%							√	√
TGMAA104G4113DA1	R25=100K±2%	B100/200=4300±3%	B					√	√
TGMAA104H4113DA1	R25=100K±3%							√	√
TGMAA104J4113DA1	R25=100K±5%							√	√
TGMAA104F4113DA2	R200=0.55K±2%							√	√
TGMAA104F4113DA3	R200=0.55K±3%							√	√
TGMAA104F4113DA5	R200=0.55K±5%							√	√
TGMAA103G39HAD	R25=10K±2%	B25/85= 3975±1.5%	C	√	√				
TGMAA103H39HAD	R25=10K±3%			√	√				
TGMAA103J39HAD	R25=10K±5%			√	√				

Note 1: Special specifications are available upon request.

Note 2: UL/cUL File No: E138827

■ Max. Power Dissipation Derating Curve



T_U : Maximum operating temperature (°C)

T_L : Minimum operating temperature (°C)

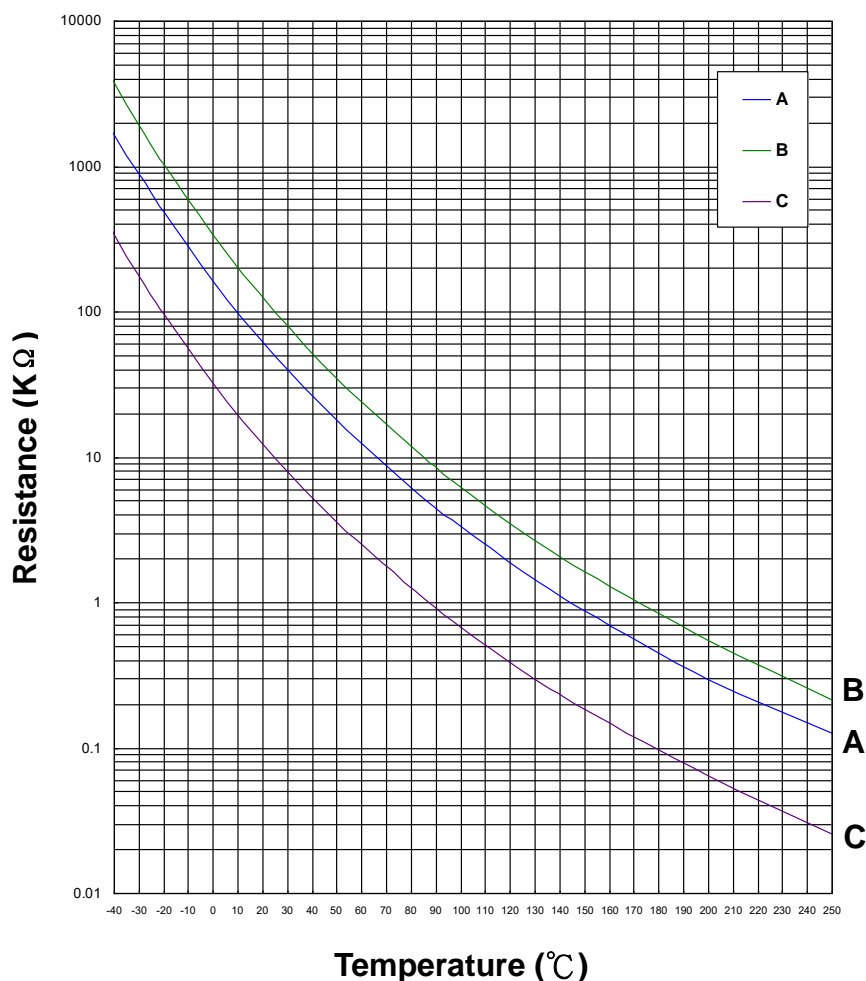
For example:

Ambient temperature (T_a) = 60°C

Maximum operating temperature (T_U) = 200°C

$P_{Ta} = (T_U - T_a) / (T_U - 25) \times P_{max} = 80\% P_{max}$

■ R-T Characteristic Curves (representative)



■ Reliability

Item	Standard	Test conditions / Methods	Specifications															
High Temperature Storage	IEC 60068-2-2	$T_U \pm 5^\circ\text{C}$, 1000 \pm 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 5\%$															
Damp Heat, Steady State	IEC 60068-2-78	$40 \pm 2^\circ\text{C}$, 90~95% RH, 1000 \pm 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 3\%$															
Rapid Change of Temperature	IEC 60068-2-14	The conditions shown below shall be repeated 5 cycles. <table border="1" data-bbox="496 600 1185 857"> <thead> <tr> <th>Step</th> <th>Temperature ($^\circ\text{C}$)</th> <th>Period (minutes)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>$T_L \pm 5$</td> <td>30 ± 3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>5 ± 3</td> </tr> <tr> <td>3</td> <td>$T_U \pm 5$</td> <td>30 ± 3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>5 ± 3</td> </tr> </tbody> </table>	Step	Temperature ($^\circ\text{C}$)	Period (minutes)	1	$T_L \pm 5$	30 ± 3	2	Room temperature	5 ± 3	3	$T_U \pm 5$	30 ± 3	4	Room temperature	5 ± 3	No visible damage $\Delta R_{25}/R_{25}$ $\leq 3\%$
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4	Room temperature	5 ± 3																
Max. Power Dissipation	IEC 60539-1 4.26.3	$25 \pm 5^\circ\text{C}$, Pmax. X 1000 \pm 24 hrs	No visible damage $\Delta R_{25}/R_{25}$ $\leq 5\%$															

■ Warehouse Storage Conditions of Products

- Storage Conditions :
 1. Storage Temperature: $-10^\circ\text{C} \sim +40^\circ\text{C}$
 2. Relative Humidity: $\leq 75\%RH$
 3. Keep away from corrosive atmosphere and sunlight.
- Period of Storage : 1 year