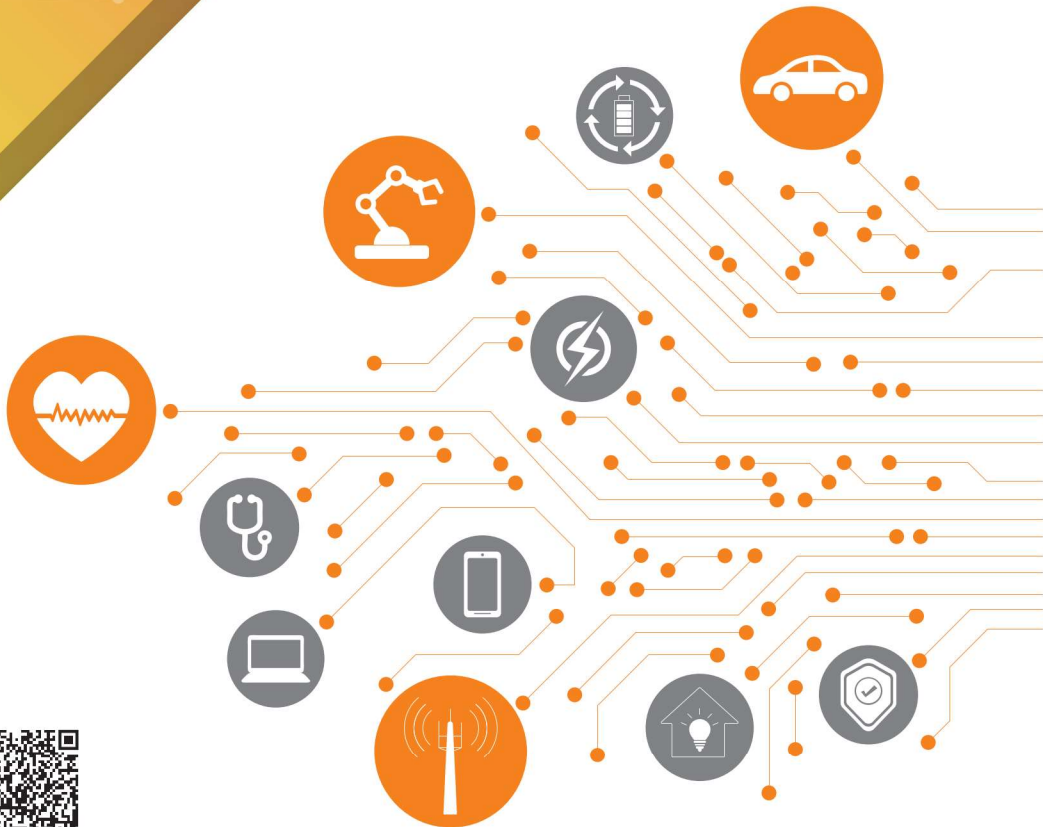


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Products for Over-Temperature Protection

NTC Thermistor

TTC3/TTC05 Series (Lead Type)



Size (mm)	Φ3, Φ5
R25 (Ω)	0.9K~470K
B25/50, B25/85 (K)	2400~5200
Tolerance of R25 & B (±%)	1, 2, 3, 5, 10, 15
Operating Temperature (°C)	-40/-30 ~ +125



Automotive grade product of this series is available

TTS Series (Epoxy Bead Type)



Size (mm)	Φ1.8, Φ2.6
R25 (Ω)	2K~470K
B25/50, B25/85 (K)	3380~4570
Tolerance of R25 & B (±%)	1, 2, 3, 5
Operating Temperature (°C)	-40 ~ +100

TTF Series (Insulation Film Type)



Size (mm)	3.6 x10/25/50
R25 (Ω)	5K~100K
B25/85 (K)	3435~4080
Tolerance of R25 & B (±%)	1, 2, 3, 5
Operating Temperature (°C)	-40 ~ +100

DHT Series (Glass Axial Type)



Size (mm)	Φ2 x 4
R25 (Ω)	5K~200K
B25/50, B25/85 (K)	3435~4350
Tolerance of R25 & B (±%)	1, 2, 3, 5, 10
Operating Temperature (°C)	-40 ~ +200

TGM Series (Glass Encapsulated Type)



Size (mm)	Φ2.5
R25, R100, R200 (Ω)	550~100K
B0/100, B25/85, B100/200(K)	3970~4300
Tolerance of R & B (±%)	1.5, 2, 3, 5
Operating Temperature (°C)	-40 ~ +250

INT Series (High Precision Type)



Size (mm)	Φ2.4
R25 (Ω)	1K~30K
Accuracy (0~70°C)	±0.1, ±0.2, ±0.5
Operating Temperature (°C)	-40 ~ +100

TSM Series (SMD Type) / TSM-H Series (High Temperature SMD Type)



Size	TSM Series: 0201, 0402, 0603, 0805 TSM-H Series: 0402, 0603, 0805
R25 (Ω)	1K~470K
B25/50, B25/85 (K)	3380~4750
Tolerance of R25 & B (±%)	0.5, 0.75, 1, 2, 3, 5, 10
Operating Temperature(°C)	TSM Series: -40 ~ +125 TSM-H Series: -40 ~ +150



Automotive grade product of this series is available

CPTC - Ceramic PTC Thermistor

TPM-S Series (SMD Type)



Size (mm)	0402, 0603, 0805
R25 (Ω)	1~680
Max. Voltage (Vdc)	24, 32
Sensing Temperature (°C)	+65 ~ +135



Automotive grade product of this series is available

PTL/PTM Series (Leaded/Metal Terminal Type)



Max. R25 (Ω)	100, 330
Max. Voltage (Vdc)	16, 30
Sensing Temperature (°C)	+55 ~ +140

NTC Thermistor Sensor

Customizable cable lengths, R/T characteristics, and connectors are available



Automotive grade products are available



NTSE Series (Epoxy Coating Type)



Feature	1. Small size 2. Short response time 3. Good quality at fair price
Recommended Application	Battery, notebook computer, fan

NTSA Series (Screw-On Type)



Feature	Fast and simple screw-on installation
Recommended Application	Power, UPS

NTSF Series (Metal Case Type)



Feature	1. NTC thermistor potted into metal case 2. Suitable for corrosive environments (suds, water) 3. Fast heat transfer
Recommended Application	Household appliances, oven, cooking table, washing machine, microwave oven, etc

NTSG Series (Plastic Case Type)



Feature	1. NTC thermistor molded in plastic case 2. Highly resistant to water / moisture 3. Highly resistant to high withstand voltage
Recommended Application	Air conditioner, freezer, dishwasher

NTSH Series (Multiple-Sensor Structure)



Feature	Two or more NTC thermistor sensors assembled with connector
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NTSB Series (Customizable Structure)



Feature	Customizable structure
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Products for Over-Current Protection

NTC Thermistor

SCK Series (Inrush Current Limiter)



Size (mm)	Φ5~Φ30
R25 (Ω)	0.7~120
Tolerance of R25 (±%)	15, 20, 25
I _{max} (A)	0.3~30

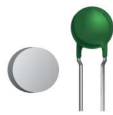
SCH Series (High Power Type Inrush Current Limiter)



Size (mm)	Φ20, Φ25, Φ30
R25 (Ω)	0.7~120
Tolerance of R25 (±%)	15, 20
I _{max} (A)	3~38

CPTC - Ceramic PTC Thermistor

PPD/PPL Series for Overload Protection (Disc/Lead Type)



R25 (Ω)	1.1~10K
Rated Voltage (Vac)	24~1000
I _n (mA)	5~870
I _{trip} (mA)	10~1750

TPM-P Series for Overload Protection (SMD Type)



Size	0603, 0805, 1210
R25 (Ω)	15~1500
V _{max} (Vdc)	20~400
I _n (mA)	10~90
I _{trip} (mA)	21~180

PPL Series for Telecom Application (Lead Type)



R25 (Ω)	7~50
V _{max} (Vac)	250, 300
I _n (mA)	60~180
I _{trip} (mA)	165~540

PPL Series for Telecom Application (Twin SMD Type)



R25 (Ω)	10~50
V _{max} (Vac)	250, 300
I _n (mA)	60~130
I _{trip} (mA)	165~390

PPL Series for Inrush Current Limiting (Dip Type)



R25 (Ω)	10~1000
V _{max} (Vac)	270~500

Automotive grade product of this series is available

PSB Series for Inrush Current Limiting (Case Type)



R25 (Ω)	10~100
V _{max} (Vac)	140~560

PPTC - Polymer PTC Resettable Fuse

KMC Series (SMD Type)



Size	0603, 0805, 1206, 1812
V _{max} (Vdc)	6~60
I _{hold} (A)	0.05~3
I _{trip} (A)	0.15~5

Automotive grade product of this series is available

KLM Series (SMD Type)



Size	0603, 0805, 1206, 1210, 1812
V _{max} (Vdc)	6, 12
I _{hold} (A)	0.5~7.5
I _{trip} (A)	1~15

KMH Series (SMD Type)



Size	0603, 0805, 1206, 1210, 1812
V _{max} (Vdc)	9~60
I _{hold} (A)	0.05~1.75
I _{trip} (A)	0.25~7

KMH series is automotive grade product

KRG006/016/030/060/072 Series (Lead Type)



V _{max} (Vdc)	6, 16, 30, 60, 72
I _{hold} (A)	0.05~15
I _{trip} (A)	0.1~25.5

Automotive grade product of this series is available

KRL Series (Lead Type)



V _{max} (Vac)	120, 240
I _{hold} (A)	0.05~3
I _{trip} (A)	0.12~6

KRT Series for Telecom Application (Lead Type)



V _{max} (Vdc)	100, 250
V _{interrupt} (Vdc)	250, 600
I _{hold} (A)	0.08~0.4
I _{trip} (A)	0.16~1

KRH Series (Lead Type)



V _{max} (Vdc)	16, 32
I _{hold} (A)	0.5~15
I _{trip} (A)	1~33

KRH series is automotive grade product

Products for Over-Voltage Protection

Varistor - Zinc Oxide Varistor

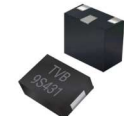
TVM-B Series (SMD Type)



Size	0402, 0603, 0805, 1206, 1210, 1812, 2220, 3025
Varistor Voltage (V)	8~100
Vac (V)	4~60
Vdc (V)	5.5~85
I _{max} (@8/20us) (A)	10~1.2K

Automotive grade product of this series is available

TVB/TVB-T Series (Plastic Encapsulated Type)



Size	3225, 4032, 4941, 5548, 6255
Varistor Voltage (V)	18~750
Vac (V)	11~465
Vdc (V)	14~615
I _{max} (@8/20us) (A)	150~4.5K

TVR Series (Lead Wire Type)



Size (mm)	Φ5~Φ20
Varistor Voltage (V)	18~1800
Vac (V)	11~1000
Vdc (V)	14~1465
I _{max} (@8/20us) (A)	100~6.5K

TVR-U Series (Ultra High Surge Series of Lead Wire Type)



Size (mm)	Φ10, Φ14
Varistor Voltage (V)	240~1100
Vac (V)	150~680
Vdc (V)	200~895
I _{max} (@8/20us) (A)	6K, 10K

TVR-D Series (High Surge Series of Lead Wire Type)



Size (mm)	Φ7~Φ20
Varistor Voltage (V)	180~1100
Vac (V)	115~680
Vdc (V)	150~895
I _{max} (@8/20us) (A)	1.8K~13K

TVR-V Series (Medium Surge Series of Lead Wire Type)



Size (mm)	Φ10, Φ14
Varistor Voltage (V)	200~1100
Vac (V)	130~680
Vdc (V)	170~895
I _{max} (@8/20us) (A)	3.5K, 6K

TVR-M Series (High Temperature Series of Lead Wire Type)

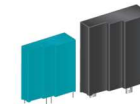


Size (mm)	Φ5~Φ20
Varistor Voltage (V)	200~750
Vac (V)	130~465
Vdc (V)	170~615
I _{max} (@8/20us) (A)	0.4K~10K

Automotive grade product of this series is available

Varistor - Zinc Oxide Varistor

TVT Series (Thermally Protected Varistor)



Size (mm)	14x14, 25x25
Varistor Voltage (V)	82~1400
Surge Operating Duty Test (@8/20us) (In) (A)	2.5K, 3K, 10K
I _{max} (@8/20us) (A)	5K, 6K, 20K, 25K

TVT-AK&BK Series (High Temperature Thermally Protected Varistor)



Size (mm)	Φ14, Φ20, Φ25
Varistor Voltage (V)	82~1800
Vac (V)	50~1000
Vdc (V)	65~1462
I _{max} (@8/20us) (A)	5K~20K

TVA-G Series (Lead Wire Type)



Size (mm)	Φ25, Φ32, Φ40
Varistor Voltage (V)	200~1800
Vac (V)	130~1000
Vdc (V)	170~1465
I _{max} (@8/20us) (A)	15K~40K

TVA-Q Series (Terminal Type)



Size (mm)	Φ25~Φ60, 34x34
Varistor Voltage (V)	200~1800
Vac (V)	130~1000
Vdc (V)	170~1465
I _{max} (@8/20us) (A)	25K~80K

TVA-T Series (Terminal Type with Parallel Connection)



Size (mm)	34x34
Varistor Voltage (V)	200~1200
Vac (V)	130~750
Vdc (V)	170~980
I _{max} (@8/20us) (A)	80K

TVA-B Series (Case Type)



Size (mm)	Φ25, Φ32, Φ34
Varistor Voltage (V)	200~1800
Vac (V)	130~1000
Vdc (V)	170~1465
I _{max} (@8/20us) (A)	25K~50K

TVA22 Series (Strap Type)



Size (mm)	22x25
Varistor Voltage (V)	82~1200
Vac (V)	50~750
Vdc (V)	65~980
I _{max} (@8/20us) (A)	25K

Products for Over-Voltage Protection

TVS Diode

SMF-Y/SM4F-Y Series (SMD Type)



Package	SOD-123FL
Peak Pulse Power Dissipation (W)	200, 400
Reverse Standoff Voltage (V)	5~200

SMAF-Y Series (SMD Low Profile Type)



Package	SMA-FL
Peak Pulse Power Dissipation (W)	400
Reverse Standoff Voltage (V)	5~200

SMAJ-Y/P4SMA-Y Series (SMD Type)



Package	DO-214AC
Peak Pulse Power Dissipation (W)	400
Reverse Standoff Voltage (V)	5~467

SMBJ-Y/P6SMB-Y Series (SMD Type)



Package	DO-214AA
Peak Pulse Power Dissipation (W)	600
Reverse Standoff Voltage (V)	5~468

SMCJ-Y/1.5SMC-Y/SMDJ-Y /5.0SMDJ-Y Series (SMD Type)



Package	DO-214AB
Peak Pulse Power Dissipation (W)	1500, 3000, 5000
Reverse Standoff Voltage (V)	5~459

P4KE-Y Series (Axial Leaded Type)



Package	DO-41
Peak Pulse Power Dissipation (W)	400
Reverse Standoff Voltage (V)	5.8~467

P6KE-Y Series (Axial Leaded Type)



Package	DO-15
Peak Pulse Power Dissipation (W)	600
Reverse Standoff Voltage (V)	5.8~467

1.5KE-Y Series (Axial Leaded Type)



Package	DO-27
Peak Pulse Power Dissipation (W)	1500
Reverse Standoff Voltage (V)	5.8~467

TVS Diode

3KP-Y/5KP-Y/15KP-Y Series (Axial Leaded Type)



Package	P600
Peak Pulse Power Dissipation (W)	3000, 5000, 15000
Reverse Standoff Voltage (V)	5~280

SM8S Series (SMD Type)



Package	DO-218AB
Peak Pulse Power Dissipation (W)	6600
Reverse Standoff Voltage (V)	64

SM8S series is automotive grade product

Thyristor Surge Suppressor

TSSxxxxTA Series (SMD Type)



Package	DO-214AC
Peak Pulse Current (A)	75
Median Voltage (V)	008~230

TSSxxxxSB/TSSxxxxSC Series (SMD Type)



Package	DO-214AA
Peak Pulse Current (A)	75, 100
Median Voltage (V)	030~350

Spark Gap Protector

SPGA Series (Axial Lead Type)



Size (mm)	Φ2.6x6.5
DC Spark-over Voltage (V)	160~600
Insulation Resistance (IR) (MΩ)	100
Insulation Resistance (DC) (V)	50~250

SPCC Series (Axial Leadwire Type)



Size (mm)	Φ2.6x4.3
DC Spark-over Voltage (V)	140~600
Insulation Resistance (IR) (MΩ)	100
Insulation Resistance (DC) (V)	50~250

SPCC Series (No Lead Type)



Size (mm)	Φ2.6x5
DC Spark-over Voltage (V)	140~200
Insulation Resistance (IR) (MΩ)	100
Insulation Resistance (DC) (V)	50~100

Products for Over-Voltage Protection

Gas Discharge Tube

GS2/GS22Y Series (SMD Type)



Size (mm)	3.2x1.6x1.6
DC Spark-Over Voltage (V)	150~600
Impulse Discharge Current (8/20us@10times) (A)	0.5K

GF32R/GF32Y Series (SMD Type)



Size (mm)	4.5x3.2x2.7
DC Spark-Over Voltage (V)	90~600
Impulse Discharge Current (8/20us@10times) (A)	2K, 3K

GF4/GF6 Series (SMD 2-Electrode Type)



Size (mm)	Φ3.5x4, Φ4.2x4, Φ6.2x4.2
DC Spark-Over Voltage (V)	75~1200
Impulse Discharge Current (8/20us@10times) (A)	2K, 3K, 5K

GD52Y-M Series (2-Electrode Type)



Size (mm)	Φ5.4x4
DC Spark-Over Voltage (V)	90~600
Impulse Discharge Current (8/20us@10times) (A)	2.5K

GF52Y-C Series (SMD 2-Electrode Square Type)



Size (mm)	5x5x4.2
DC Spark-Over Voltage (V)	90~1000
Impulse Discharge Current (8/20us@10times) (A)	2.5K, 5K

GPF3Y-C Series (SMD 3-Electrode Square Type)



Size (mm)	5x5x7.6
DC Spark-Over Voltage (V)	90~600
Impulse Discharge Current (8/20us@10times) (A)	10K

GQF/GPF3Y-M Series (SMD 3-Electrode Type)



Size (mm)	Φ5x7.2, Φ5x7.6
DC Spark-Over Voltage (V)	75~1100
Impulse Discharge Current (8/20us@10times) (A)	5K, 10K

GC/GD Series (2-Electrode Type)



Size (mm)	Φ5.5x6, Φ8x6, Φ8x8, Φ8x10
DC Spark-Over Voltage (V)	70~6000
Impulse Discharge Current (8/20us@10times) (A)	1.5K~20K

Gas Discharge Tube

GRC Series (High Voltage and Surge Series of 2-Electrode Type)



Size (mm)	Φ8x6, Φ8x7.9
DC Spark-Over Voltage (V)	280~6500
Impulse Discharge Current (8/20us@10times) (A)	5K

GB/GC Series (3-Electrode Type)



Size (mm)	Φ6x8, Φ8x10
DC Spark-Over Voltage (V)	75~600
Impulse Discharge Current (8/20us@10times) (A)	5K, 10K, 20K

G12D8A/G12D12/G12D17/G12D18 Series (2-Electrode Type)



Size (mm)	Φ11.8x8, Φ11.8x12, Φ11.8x17, Φ11.8x18
DC Spark-Over Voltage (V)	230~2200
Impulse Discharge Current (8/20us@10times) (A)	20K, 30K, 40K

G16D5A Series (2-Electrode Type)



Size (mm)	Φ15.5x5
DC Spark-Over Voltage (V)	500~800
Impulse Discharge Current (8/20us@10times) (A)	20K

G20D5F Series (2-Electrode Type)



Size (mm)	Φ20x5.5
DC Spark-Over Voltage (V)	150~1000
Impulse Discharge Current (8/20us@10times) (A)	40K

G25D10/25D10-H Series (2-Electrode Type)



Size (mm)	Φ25x10
DC Spark-Over Voltage (V)	500~800
Impulse Discharge Current (8/20us@10times) (A)	60K, 80K

G25D21 Series (2-Electrode Type)



Size (mm)	Φ25x21
DC Spark-Over Voltage (V)	500~800
Impulse Discharge Current (8/20us@10times) (A)	80K

G30D12 Series (2-Electrode Type)




Size (mm)	Φ30x12
DC Spark-Over Voltage (V)	500~800
Impulse Discharge Current (8/20us@10times) (A)	100K


Products for Over-Voltage Protection

ESD Protector


TVM-G Series (SMD Type)

	Size	0201, 0402, 0603, 0805
	Vdc (V)	5.5~42
	Capacitance (PF)	3~990


LCP Series (SMD Type)

	Size	0402, 0603
	Vdc (V)	3.3~30
	Max. Capacitance (PF)	0.2


YExSD32 Series (SMD Type)

	Package	SOD-323
	Vdc (V)	3~36
	Capacitance (PF)	0.3~950


YExSD52 Series (SMD Type)

	Package	SOD-523FL
	Vdc (V)	3~36
	Capacitance (PF)	0.5~240


YEDSD92 Series (SMD Type)

	Package	SOD-923
	Vdc (V)	5
	Capacitance (PF)	15


YExST23 Series (SMD Type)

	Package	SOT-23
	Vdc (V)	2.8~36
	Capacitance (PF)	0.25~320

YExST26 Series (SMD Type)


	Package	SOT-23-6
	Vdc (V)	3.3~24
	Capacitance (PF)	0.15~1.5

YEUST14 Series (SMD Type)


	Package	SOT-143
	Vdc (V)	5
	Capacitance (PF)	0.6

ESD Protector


YExD062 Series (SMD Type)

	Package	DFN0603-2
	Vdc (V)	2.5~24
	Capacitance (PF)	0.2~20

YExD102 Series (SMD Type)

	Package	DFN1006-2
	Vdc (V)	3.3~36
	Capacitance (PF)	0.3~450

YEU25CA Series (SMD Type)


	Package	DFN2510-10L
	Vdc (V)	3.3~5
	Capacitance (PF)	0.15~0.45

Products for Specific Applications

CPTC - Ceramic PTC Thermistor


Motor Starter


Application: Air conditioner, freezer, refrigerator, etc

	PSA Series (Disc Type)	
	R25 (Ω)	4.7~68
	Vmax (Vac)	160~430
	Imax (A)	4~12

Heater

Application: Heater, dryer

	PHC/PHR Series (Circle/Rectangular Type)	
	R25 (Ω)	2~12K
	Rated Voltage (Vdc)	12~800
	Surface Temperature (°C)	85~280

 Automotive grade product of this series is available

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Products for Over-Temperature Protection



NTC Thermistor



Ceramic PTC Thermistor



NTC Thermistor Sensor



NTC Thermistor-SCK & SCH Series



Ceramic PTC Thermistor



PPTC-Polymer PTC Resettable Fuse

Products for Over-Voltage Protection



Varistor-Zinc Oxide Varistor



ESD Protector



Gas Discharge Tube



TVS Diode



Spark Gap Protector



Thyristor Surge Suppressor