



The DNA of tech.™

NON-LINEAR RESISTORS

Resistive Products

NTC Thermistors Sensors



Product Family		Size and Encapsulant	Lead Wire or Termination Characteristics	Res. Range R_{25} (Ω)	Tol. \pm % or \pm K at 25°C	$B_{25/85}$ (K)	$B_{25/85}$ Tol. (\pm %)	Temp. Range (°C)	AEC-Q200 Compliant	HALOGEN FREE	RoHS Pb-free available	SPICE model	3D Models	FAUS	
SMD	NTCS	0805 (2012 metric)	Ni barrier + tinned on T & R, glass protected	1k to 680k	1 to 5	3370 to 4125	1 to 3	-40 to +150	x	x		x	x	x	
		0603 (1608 metric)		1k to 100k		3170 to 4100			x	x		x	x	x	
	NTCS...SMT	0402 (1005 metric)	+ enhanced stability	4.7k to 100k	1	3490 to 4075	1		x	x		x	x	x	
		0402, 0603, 0805		100k to 210k		3590			x		x	x			
	NTHS	1206 (3216 metric)	Ni barrier + tinned on T & R, glass protected	6k to 330k	3 to 10 (\pm 1 to \pm 10 Curve 1)	Curve 2: 3486 Curve 11: 3715 Curve 1-5: 3974 Curve 17: 4073	3	-40 to +125		x					
		0805 (2012 metric)		4.7k to 350k						x					
0603 (1608 metric)		6.8k to 350k							x						
0402 (1005 metric)		10k to 350k							x						
NTCC200/300	2 mm x 2 mm x 0.7 mm	Ag / Au metallized bondable die	4.7k to 20k	1 to 5	3435 to 3865	1	-55 to +175	x	x	x	x	x			
	NTCCC200E4C90008	2 mm x 2 mm x 0.7 mm	Ag metallized bondable die	5063	\pm 2 K	3435	1	-55 to +175	x	x	x	x	x		
NTCC201	2 mm x 2 mm x 0.6/0.7 mm	Enhanced Ag metallized bondable die	4.7k to 20k	1 to 5	3435 to 3865	1	-55 to +175	x	x	x	x	x			
NTCSMELF	SOD80 glass	Tinned dummet on T & R	10k to 100k	5	3977	1.3	-40 to +150		x						
Leaded (Through-Hole)	NTCLE100	3.8 mm epoxy (5 mm)	Tinned Cu 0.6 mm ...B0: Bulk 1E pitch ...T1: T & R 1E pitch ...T2: T & R 2E pitch	3.3 to 2k	2 to 5	2880 to 3560	0.5 to 3	-40 to +125			x	x	x	x	
			2.2k to 10k	3977		0.75				x	x	x	x		
			10k to 470k	3740 to 4570		1.5				x	x	x	x		
	NTCLE203	3.4 mm epoxy	Tinned Ni 0.4 mm	2k to 470k	1 to 5	3528 to 4570	0.5 to 2	-40 to +125			x	x	x	x	
	NTCLE203..SB0	4 mm epoxy	Tinned Ni 0.5 mm (T & R available)	2060 to 2800	0.5 K	3528 to 4090	0.5 to 0.75	-55 to +150	x				x		x
				3k to 10k		3984	0.5								
				30k		3935	0.75								
	NTCLE213	2.5 mm epoxy	Tinned Ni 0.4 mm (T & R long leads available)	2.1k	1 to 5	3511	0.5	-55 to +150	x				x	x	
10k				3435 to 3984		0.5 to 1.0									
12k to 100k				3740 to 4190		0.75 to 1.5									
NTCLE300...SB(A)	2.4 mm epoxy	ETFE AWG30 tinned Ni	3.0 to 10k	\pm 0.5 K	3977	0.75	-40 to +125	x		x		x			
NTCLE301	2.40 mm epoxy	PEEK AWG30 SP Ni	2.1k to 10k	1 to 5	3435 to 3984	0.5 to 1.0	-55 to 150	x							
NTCLE305	1.60 mm epoxy	ETFE AWG32 SP Ni	2060 to 10k	0.5 K	3511 to 3984	0.5 to 1	-40 to 125	x		x					



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Leaded (Through-Hole)	NTCLE317E4 NEW	1.6 mm epoxy	PEEK AWG32 SP NiFe	10k	0.5 K	3984	0.5	-55 to +150	x		x	x	x		
	NTCLE350E4 NEW	2.4 mm epoxy	PEEK AWG32 SP NiFe	2.1k to 30k	1 to 5	3435 to 3984	0.5 to 1.0	-55 to +185	x	x		x	x		
	NTCLG100E2	SOD27 glass	Tinned CCSW 0.56 mm bulk / T & R	10k to 220k	5	3797 to 3977	1.3 to 3	-40 to +200		x					
Sensor Assemblies	NTCLE400	6 mm epoxy	UL-2468 PVC AWG24	2.2k to 100k	3	3977 to 4190	0.75 to 1.5	-40 to +85			x				
	NTCLE413	3 mm epoxy	UL-2651 PVC AWG30	4.7k to 100k	1 to 5	3435 to 4190	0.5 to 1.5	-40 to +105			x				
	NTCLE428		UL-1061 PVC AWG30								x				
	NTCLP100	Brass pipe 6 mm	UL-2468 PVC AWG24	2.2k to 100k	3	3977 to 4190	0.75 to 1.5	-40 to +85			x		x		
	NTCLP4 11/12/13	Pipe 6 mm	UL-2651 PVC AWG26/24/22	4.7k to 100k	1 to 5	3435 to 4190	0.5 to 1.5	-40 to +105							
	NTCLP450	Pipe 3.2 mm	UL-2651 PVC AWG30	100k	3	4190	1.5							x	
	NTCALUG01A	Stud #3, #4, #5, #6, screw M3, M3.5	PTFE AWG24 TP Cu	4.7k to 100k	1 to 5	3435 to 4190	0.5 to 1.5	-55 to +150	x		x	x	x	x	x
	NTCALUG02A		PEEK AWG30 SP Ni		1 to 3			-55 to +125							
	NTCALUG03A/39A	Stud #1, #2, #3, #4, screw M2, M3	ETFE AWG32 SP Ni		2 to 5			3435 to 3984							
	NTCALUG91A	Stud #8, screw M4	PTFE AWG24 SP Cu	10k	2 to 3	3435 to 3984	0.5 to 1	-55 to +150	x		x	x	x	x	x
NTCALUG54A	Stud #10, screw M5	PTFE AWG24 SP Cu	10k	2 to 3	3435 to 3984	0.5 to 1	-55 to +150	x		x	x	x	x	x	
NTCALUG85A	Stud #1/4, screw M6	PTFE AWG24 SP Cu	10k	2	3435 to 3984	0.5 to 1	-55 to +150	x		x	x	x	x	x	
NTCALUG01T	Stud #3, #4, #5, #6, screw M3, M3.5	ETFE AWG26 SP Cu	10k	2	3984	0.5	-55 to +150	x		x	x	x	x	x	
NTCASCW	Anodized alu, screw M4	Tinned Cu 0.6 mm, tinned Ni 0.5 mm	1k to 470k	1 to 5	3528 to 4570	0.5 to 2.5	-40 to +100						x	x	
NTCACAP	ABS cap diameter 7 mm to 9 mm	Tinned, AWG22 to AWG30, single or double insulated	2.7k to 10k	1, 2	3984	0.5	-55 to +60						x	x	
NTCAIMME3	SS304 or SS316, pipe 2.5 to 3.9 mm (brass collar)	UL-2651 PVC AWG30	10k	3	3984	1.0	-25 to +105						x		







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


NON-LINEAR RESISTORS

Resistive Products

PTC Power Thermistors

	Product Family	Size and Encapsulant	Lead Wire or Termination Characteristics	Res. Range R_{25} (Ω)	Tol. (\pm %) at 25°C	Max. Voltage (V_{RMS}) / (V_{DC})	$I_{hold} - I_{max.}$ (A_{RMS}) / E_m (J)	Temp. Range (°C)	AEC-Q200 Compliant	HALOGEN FREE	SPICE model available	RoHS	UL	
SMD	 PTCTZ, PTCCZ, SMD Lead-frame	D6.4, D7.2, D7.8 mm, 10 mm pitch silicone	Tin-plated P-bronze leadframe, T & R	2 to 500	± 10 to ± 20	16 to 600	I_h 0.05 - 0.5 I_m 0.7 - 10	-40 to +85	x					
Leaded (Through-Hole)	 PTCCL...D/E Overload 30 V / 60 V PTCCL...F Overload 145 V PTCCL...H Overload 265 V	D5 to D21 mm, silicone coated	Tinned CCSW 0.6 mm / 0.5 mm bulk 2E pitch / T & R	0.3 to 50	± 20	30, 60	I_h 0.09 - 2.0 I_m 0.8 - 23	-40 to +85					x	
				1.3 to 50		145	I_h 0.05 - 1.0 I_m 0.2 - 13						0 to +70	x
				2.1 to 5k		265	I_h 0.01 - 0.8 I_m 0.08 - 5.5						x	
	 PTCCL...S/T/V Overload ≥ 600 V	PTCCL...H..SBE series	Tinned CCSW/Cu 0.6 mm / 0.5 mm bulk 2E pitch / T & R	400 to 5k	± 20 to ± 25	600 to 1000	I_h 0.01 - 0.03 I_m 0.1 - 0.5	-10 to +55			x	x	x	
	 PTCEL, Inrush-Current Limiting	PTCEL13 series, D13 mm, silicone coated	Tinned CCSW 0.6 mm bulk 2E pitch / T & R	60 to 1k	± 30	350 to 600 500 to 850	I_h 0.03 - 0.12 E_m 150	-40 to +105	x		x	x	x	
PTCEL17 series, D17 mm, silicone coated		Tinned CCSW 0.8 mm bulk 2E, 3E, 4E pitch	60 to 500	460 700 to 1000		I_h 0.050 - 0.14 E_m 240	x			x	x	x		

Varistors

	Product Family	Reference Size and Encapsulant	Lead Wire or Termination Characteristics	Voltage Range (V_{RMS})	V_{bd} (V_{DC} at 1 mA) ± 10 %	Max. I_{surge} (A_{peak}) 8/20 μs	Max. Energy (J) 10/1000 μs	Temp. Range (°C)	AEC-Q200 Compliant	HALOGEN FREE	SPICE model available	RoHS	UL
Leaded (Through-Hole)	 VDRS05/07/10/14/20 Standard Surge	5 mm, 7 mm, 10 mm, 14 mm, 20 mm epoxy coated	Tinned CCSW 0.6 mm, 0.8 mm tinned Cu 1.0 mm straight, kinked, flanged leads, bulk / T & R	14 to 680	22 to 1100	100 to 6500	0.5 to 496	-40 to +85		x	x	x	x
	 VDRH05/07/10/14/20 High Surge	5 mm, 7 mm, 10 mm, 14 mm, 20 mm epoxy coated	Tinned CCSW 0.6 mm, 0.8 mm tinned Cu 1.0 mm straight, kinked leads, bulk / T & R	11 to 680	18 to 1100	250 to 10 000	0.7 to 620	-40 to +125		x	x	x	x
	 VDRUS07/10/14/20 Ultra Surge	7 mm, 10 mm, 14 mm, 20 mm silicone coated	Tinned CCSW 0.6 mm, 0.8 mm Cu 1.0 mm in straight, kinked leads, bulk / T & R	115 to 680	180 to 1100	1800 to 13 000	19 to 720	-40 to +125		x	x		x
SMD	 MLV Series	<u>0402, 0603, 0805</u> <u>1206, 1210, 1812, 2220</u>	Ni barrier + tinned and glass protected in T & R	4 to 25 4 to 95	8 to 46 8 to 150	20 to 40 100 to 1200	0.05 to 0.1 0.5 to 12	-40 to +125 -40 to +85		x	x		









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Resistive Products

RTD and PTC Thermistor Sensors

	Product Family	Size and Encapsulant	Lead Wire or Termination Characteristics	Res. Range R at T _{ref} (Ω)	T _n (°C)	Tol. (% or K)	TCR (ppm/°C)	Temp. Range (°C)	AEC-Q200 Compliant	HALOGEN FREE	RoHS Pb-free available	SPICE model available	3D Models	FAU US
SMD	 PTS, Platinum Thin Film	0603 (1608 metric)	Ni barrier + tinned in box / T & R, protective coating	100	0	± 0.3 K, ± 0.6 K	3850	-55 to +155		x	x	x	x	
		0805 (2012 metric)		100, 500										
		1206 (3216 metric)		100, 500, 1k										
	 PTS AT	0603 (1608 metric)	Ni barrier + tinned on T & R, protective coating	100	0	± 0.3 K, ± 0.6 K	3850	-55 to +175	x	x	x	x	x	
		0805 (2012 metric)		100, 500										
		1206 (3216 metric)		100, 500, 1k										
	 PTS ATAU NEW	0603 (1608 metric)	Ni barrier + Au plated on T & R, protective coating	100	0	± 0.3 K, ± 0.6 K	3850	-55 to +200	x	x	x	x	x	
		0805 (2012 metric)		100, 500										
		1206 (3216 metric)		100, 500, 1k										
	 TFPT, Nickel Thin Film	0603 (1608 metric)	Ni barrier + tinned in T & R	100 to 1k	25	± 0.5 to ± 5	4110	-55 to +150	x	x	x	x		x
		0805 (2012 metric)		100 to 5k										
		1206 (3216 metric)		100 to 10k										
Leaded (Through-Hole)	 PTCSL03, Ceramic	3.5 mm silicone coating	Tinned CCSW 0.5 mm 1E / 2E pitch bulk / T & R	550 to 1330	80 to 150	± 5 K	> 100 000	-40 to T _n + 15	x			x		x
	 TFPTL, Nickel Thin Film	TL10 3.6 mm epoxy	Tinned CCSW 0.5 mm 1E / 2E pitch	100 to 1k	25	± 1, ± 5	4110	-55 to +150	x					x
		TL15 4.0 mm epoxy		100 to 5k					x					x