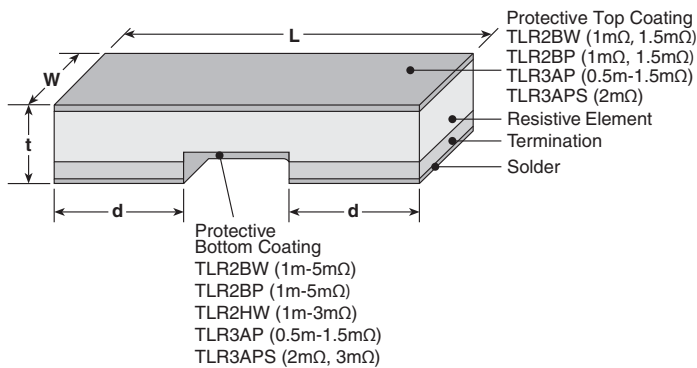


features

- Ultra-low TCR (+50ppm/°C) available
- Metal alloy: superior corrosion and heat resistance
- Applications include current sensing, voltage division and pulse applications
- Ultra low resistance (0.5mΩ - 20mΩ)
- Suitable for reflow soldering (Not suitable for flow soldering)
- Products with lead-free terminations meet EU RoHS and China RoHS requirements
- AEC-Q200 Qualified

dimensions and construction



Size Code	Resistance	Dimensions inches (mm)			
		L	W	d	t
TLR3AP	0.5mΩ	.25±.01 (6.35±0.25)	.125±.01 (3.18±0.25)	.107±.01 (2.725±0.25)	.024±.01 (0.62±0.25)
	0.68mΩ, 0.75mΩ, 0.82mΩ			.105±.01 (2.675±0.25)	
	1mΩ, 1.5mΩ, 3mΩ, 4mΩ			.087±.01 (2.20±0.25)	
	2mΩ			.098±.01 (2.50±0.25)	
	5mΩ, 6mΩ, 7mΩ, 8mΩ			.047±.01 (1.20±0.25)	
	9mΩ, 10mΩ			.030±.01 (0.77±0.25)	
NEW TLR3APS	2mΩ, 3mΩ	.25±.01 (6.35±0.25)	.125±.01 (3.18±0.25)	.047±.01 (1.20±0.25)	.024±.01 (0.60±0.25)

Size Code	Resistance	Dimensions inches (mm)			
		L	W	d	t
TLR2BW	New 0.5mΩ	.126±.008 (3.20±0.20)	.063±.008 (1.60±0.20)	.049±.008 (1.25±0.20)	.028±.008 (0.70±0.20)
	1mΩ			.043±.008 (1.10±0.20)	.024±.008 (0.60±0.20)
	New 1.5mΩ			.020±.008 (0.50±0.20)	
NEW TLR2BP	New 0.5mΩ	.126±.008 (3.20±0.20)	.063±.008 (1.60±0.20)	.049±.008 (1.25±0.20)	.028±.008 (0.70±0.20)
	1mΩ, 1.5mΩ			.043±.008 (1.10±0.20)	.024±.008 (0.60±0.20)
	2mΩ - 20mΩ			.020±.008 (0.50±0.20)	
TLR2HW	New 0.5mΩ	.200±.008 (5.00±0.20)	.100±.008 (2.50±0.20)	.075±.008 (1.90±0.20)	.028±.008 (0.70±0.20)
	1mΩ			.071±.008 (1.80±0.20)	.024±.008 (0.65±0.20)
	2mΩ - 6mΩ			.060±.008 (1.50±0.20)	
	7mΩ - 10mΩ			.020±.008 (0.50±0.20)	

ordering information

TLR	2BW	D	TD	10L0	F	75
Type	Power Rating	Termination Material	Packaging	Nominal Resistance	Tolerance	T.C.R.
	2BW: 1W New 2BP: 1.5W 2HW: 2W 3AP: 3W New 3APS: 3W	D: SnAgCu	TD: 7" 4mm pitch punched paper TE: 7" 4mm embossed plastic	±1%: 4 digits All values less than 0.1Ω (100m) are expressed in mW with "L" as decimal Ex: 2mΩ = 2L00	F: ±1%	50: 50ppm/°C 75: 75ppm/°C

For further information on packaging, please refer to Appendix A.

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

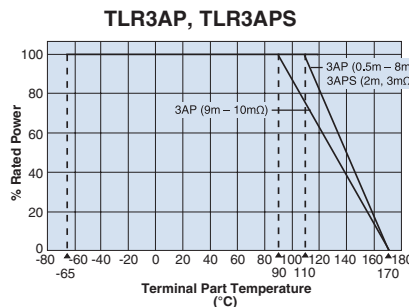
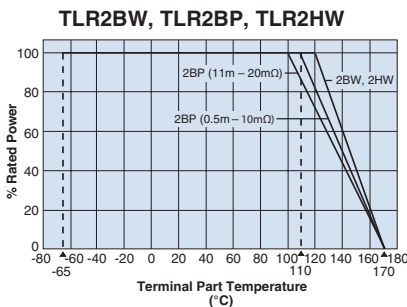
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applications and ratings

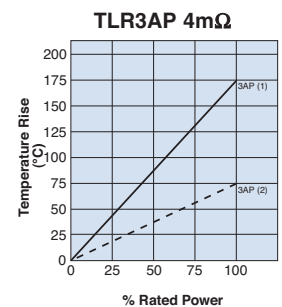
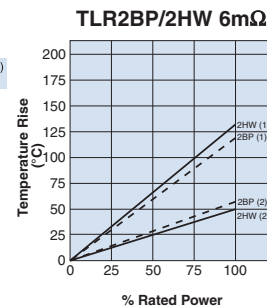
Part Designation	Power Rating	T.C.R. (ppm/°C) Max.**	Standard Resistance (Ω)	Resistance Tolerance	Rated Terminal Part Temperature	Operating Temperature Range
TLR2BW	1W	±50	2m,3m,4m,5m,6m,7m,8m,9m,10m,11m,12m,13m,15m,16m,18m,20m	F: ±1%	+120°C and less	-65°C to +170°C
		±75	0.5m,1m,1.5m,2m,3m,4m,5m,6m,7m,8m,9m,10m,11m,12m,13m,15m,16m,18m,20m			
TLR2BP	1.5W	±50	2m,3m,4m,5m,6m,7m,8m,9m,10m	F: ±1%	+110°C and less	-65°C to +170°C
			11m,12m,13m,15m,16m,18m,20m		+100°C and less	
		±75	0.5m,1m,1.5m,2m,3m,4m,5m,6m,7m,8m,9m,10m		+110°C and less	
			11m,12m,13m,15m,16m,18m,20m		+100°C and less	
TLR2HW	2W	±50	0.5m,1m,2m,2.5m,3m,4m,5m,6m,7m,8m,9m,10m	F: ±1%	+120°C and less	-65°C to +170°C
TLR3AP	3W	±50	2m,3m,4m,5m,6m,7m,8m,9m,10m	F: ±1%	0.5m ~ 8m: +110°C and less	-65°C to +170°C
		±75	0.5m,0.68m,0.75m,0.82m,1m,1.5m,2m,3m,4m,5m,6m,7m,8m,9m,10m		9m, 10m: +90°C and less	
TLR3APS	3W	±50, ±75	2m,3m	F: ±1%	+110°C and less	-65°C to +170°C

environmental applications

Derating Curve



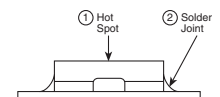
Temperature Rise



For resistors operated at a terminal part temperature of described for each size or above, a power rating shall be derated in accordance with the derating curve.

Please refer to "Introduction of the derating curve based in the terminal part temperature" in the beginning of our catalog before use.

Regarding the temperature rise, the value of the temperature varies per conditions and board for use since the temperature is measured under our measuring conditions.



Performance Characteristics

Parameter	Requirement Δ R ±%		Test Method
	Limit	Typical	
Resistance	Within regulated tolerance	—	25°C
T.C.R.	Within specified T.C.R.	—	+25°C/+125°C
Resistance to Solder Heat	±0.5%	±0.3%	260°C ± 5°C, 10 ± 2 seconds
Rapid Change of Temperature	±0.5%	±0.3%	-55°C (15 minutes), +150°C (15 minutes), 1000 cycles
Moisture Resistance	±0.5%	±0.1%	MIL-STD-202-106, 0% power, 7a and 7b not required
Biased Humidity	±0.5%	±0.1%	85°C ± 2°C, 85% RH, 1000 hours, 10% bias
Endurance of Rated Terminal Part Temperature	±1.0%	±0.3%	120°C ± 2°C (2BW, 2HW), 110°C ± 2°C (3AP 0.5mΩ-8mΩ) 90°C ± 2°C (3AP 9mΩ-10mΩ), 110°C±2°C (2BP 1mΩ-10mΩ) 100°C±2°C (2BP 11mΩ-20mΩ), 110°C±2°C (3APS 2mΩ, 3mΩ) 1000 hours, 1.5 hr ON, 0.5 hr OFF cycle
High Temperature Exposure	±1.0%	±0.6%	±155°C, 1000 hours
	±2.0%	±0.8%	±170°C, 1000 hours
	2BW: ±1.0%	—	±170°C ±3°C, 2000 hours

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