

The TL Series add heat sinkable options to the thick film resistor family. The resistor element is packaged with plastic insulators, and quick-connect terminals in a symmetrical aluminum profile for easy heat sink mounting. Special tapped configurations are offered to reduce on board component count.

Efficient thermal packaging provides improved heat conduction to the heat sink. Self-insulating package design increases voltage withstanding characteristics when compared to traditional aluminum housings. The in line mounting profile makes the TL Series easily adaptable to most heat sink systems. Thermal compound is always recommended when heat sinking.

## FEATURES

- Very low inductance
- Low profile design
- In-Line Mounting Profile
- 1/4" Quick connect terminals
- Consult factory for common, isolated, or special multiple tap options.

## APPLICATIONS

- Semiconductor Balancing
- Frequency Converters
- Snubber
- In-Rush Current Limiter
- Bleeder Resistor
- Power Switching
- Voltage Dividers

## SPECIFICATIONS

### Material

**Resistive Element:** Thick Film on Alumina

**Housing:** Aluminum

**Insulators:** Glass reinforced high temperature Valox®

**Terminals:** Tinned brass

### Electrical

**Power Range:** 27 – 275 watts

**Resistance Range:**

0.3 ohm – 4 megohm

**Tolerance:**

Ultra Power (U Style): ±10% std;  
Standard Power: ±10% std;  
5% and 1% available

**Temperature Coefficient:**

±250 PPM

**Test Voltage for 1 Minute:**

6000 VDC/2500 VAC

**Working Voltage:** 1200 VAC

**External Creeping Distance:**

12mm

**Temperature Limits:** -40°C to +125°C

**Insulation:** >100<sup>2</sup> Mohm/500V

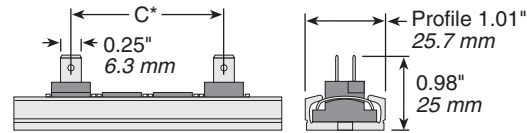
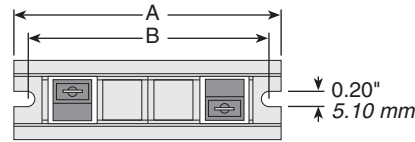
**Air Distance, Terminal to Ground:** 7mm

**Inductance:** 50-100 nH



# TL Series

## Modular Heat Sinkable Thick Film Power



\*For adjacent taps, C = 0.665" (16.9mm)

Series	Ultra* Wwattage	Std** Wwattage	Ohm Range	A (mm)	B (mm)	Operating Voltage VAC	Dielectric Withstanding Voltage VAC
TL54	35	27	0.3 - 1 Meg	54	46	1200	2500
TL71	96	71	1.0 - 2 Meg	71	63	1200	2500
TL88	155	114	1.5 - 3 Meg	88	80	1200	2500
TL104	215	158	2.0 - 4 Meg	104	96	1200	2500
†TL122	275	202	2.0 - 4 Meg	122	114	1200	2500

\* For properly heat sinked, untrimmed resistors - see chart  
\*\* For properly heat sinked, trimmed resistors - see chart  
† Power Ratings are theoretical. Consult Factory for details.

THERMAL RESISTANCE (°C/W)				
	TL54	TL71	TL88	TL104
Ultra Power (10% Tolerance)	1.26	0.53	0.34	0.25
Std Power (5% - 3% Tolerance)	1.67	0.70	0.45	0.33

Consult factory for multiple tap options in common, isolated, and special configurations.

## ELECTRICAL/MECHANICAL SPECS

Type		TL54	TL71	TL88	TL104	TL122
Values for Standard Resistors						
Max. Rated Wattage	W	35	96	155	215	275
Nominal Power	W	18	48	78	108	137
Surge Load in 10 sec	W	72	192	312	432	548
Max Voltage Between Terminal	V	1000	2000	2500	2500	2500
Resistance Min	ohm	0.3	1	1.5	2	2
Resistance Max	ohm	1 meg	2 meg	3 meg	4 meg	4 meg
Mechanics:						
A	mm	54	71	88	104	122
B	mm	46	63	80	96	114
C	mm	16.9	33.8	50.7	67.6	84.5
Weight	g	26	33	44	55	65

## STANDARD PART NUMBERS FOR TL SERIES

Ohmic value	Part No. Prefix Suffix	TL54K	TL71K	TL88K	TL104K	TL122K	Ohmic value	Part No. Prefix Suffix	TL54K	TL71K	TL88K	TL104K	TL122K
		0.5	R50	✓							240.0	240	✓
1.0	1R0	✓	✓	✓			470.0	470	✓	✓	✓	✓	✓
1.5	1R5	✓	✓	✓			510.0	510	✓	✓	✓	✓	✓
2.0	2R0	✓	✓	✓	✓		750.0	750	✓	✓	✓	✓	✓
3.0	3R0	✓	✓	✓	✓	✓	1,000.0	1K0	✓	✓	✓	✓	✓
4.0	4R0	✓	✓	✓	✓	✓	1,100.0	1K1	✓	✓	✓	✓	✓
5.0	5R1	✓	✓	✓	✓	✓	2,200.0	2K2	✓	✓	✓	✓	✓
10.0	10R	✓	✓	✓	✓	✓	4,700.0	4K7	✳	✳	✳	✳	✳
15.0	15R	✓	✓	✓	✓	✓	5,100.0	5K1	✳	✳	✳	✳	✳
22.0	22R	✓	✓	✓	✓	✓	10,000.0	10K	✳	✳	✳	✳	✳
47.0	47R	✓	✓	✓	✓	✓	22,000.0	22K	✳	✳	✳	✳	✳
75.0	75R	✓	✓	✓	✓	✓	51,000.0	51K	✳	✳	✳	✳	✳
100.0	100	✓	✓	✓	✓	✓							
150.0	150	✓	✓	✓	✓	✓							
220.0	220	✓	✓	✓	✓	✓							

✓ = Standard values  
✳ = Non-standard values subject to minimum handling charge per item

## ORDERING INFORMATION

E = RoHS compliant

**TL104KUR500CE**

<b>Size</b>	<b>Tolerance</b>	<b>Power</b>	<b>Ohms</b>	<b>Center tap</b>
TL54 = 54 mm	F = 1%	U = ultra (optional)	R500 = 0.50	(optional)
TL71 = 71 mm	J = 5%		10R0 = 10.0	
TL88 = 88 mm	K = 10%		1K00 = 1,000	
TL104 = 104 mm			1M00 = 1,000,000	
TL122 = 122 mm				

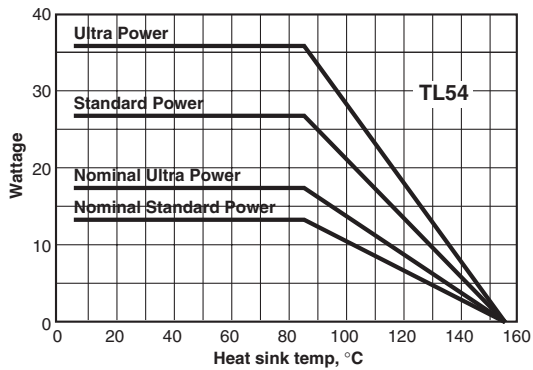
**THIS PRODUCT IS DESIGNED FOR USE WITH PROPER HEATSINKING.** Maximum base plate temperature of the resistor must be monitored and kept within specified limits to establish the power rating. Best technique is to attach a thermocouple to the side of the base plate of the resistor. Temperature of plastic housing or heat sink cannot be used to establish rating of the resistor.

# TL Series

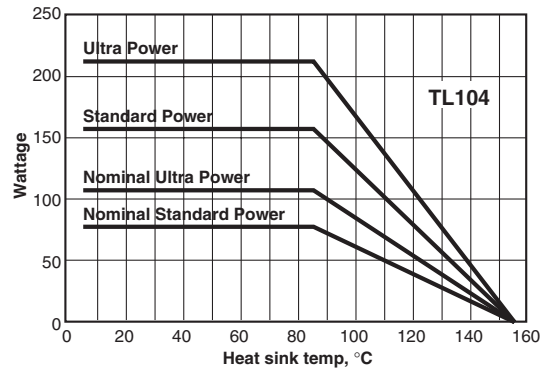
## Modular Heat Sinkable Thick Film Power

### MAXIMUM AND NOMINAL POWER RATINGS FOR ULTRA POWER AND STANDARD POWER RESISTORS

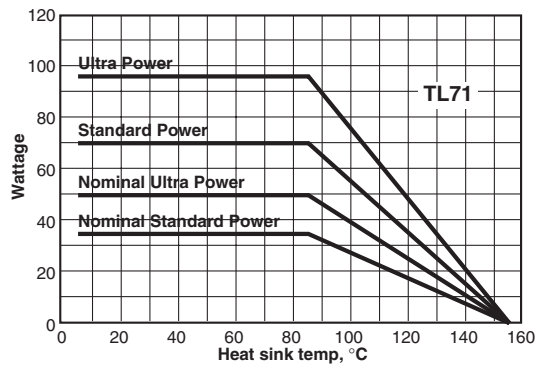
#### TL54



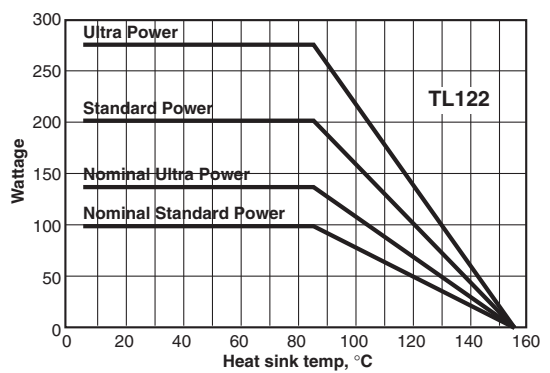
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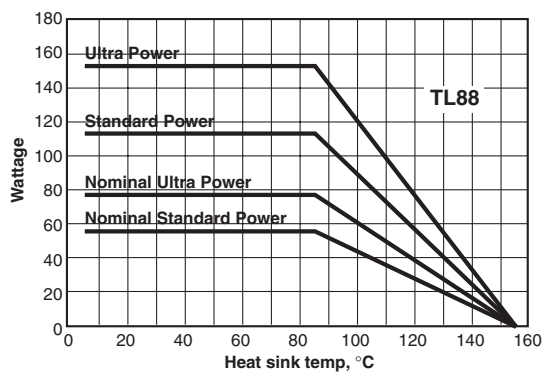
#### TL71



#### TL122



#### TL88



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