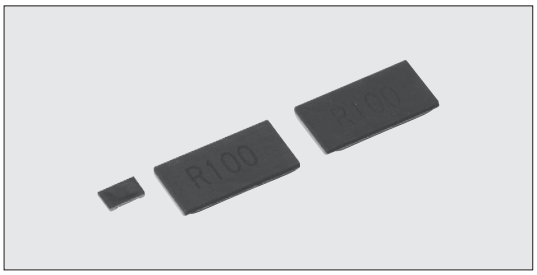
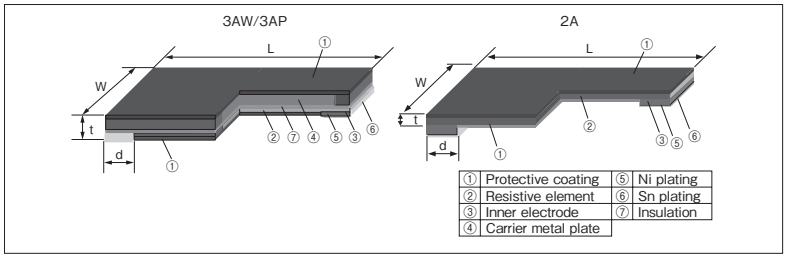
EU RoHS

TLRH Metal Plate Chip Type Low Resistance Resistors



Coating color ：Black

■Construction



■Features

- SMD Type of small size, low resistance resistor for current detection.
- Carrier metal plate inside, resistor of high radiation of heat structure. (3AW/3AP)
- High reliability and performance with Low T.C.R.
- Automatic mounting machines are applicable.
- Suitable for reflow soldering. (Not Suitable for flow soldering)
- Products meet EU-RoHS requirments.
- AEC-Q200 qualified.

■Applications

- Inverter power supplies
- Motor control
- Mobile PC

■Reference Standards

IEC 60115-8
JIS C 5201-8

■Dimensions

Type (Inch Size Code)	Resistance (Ω)	Dimensions (mm)				Weight(g) (1000pcs)
		L	W	d	t	
2A(0805)	12m～100m	2.0±0.2	1.25±0.2	0.35±0.2	0.25±0.15	4
3AW(2512)	10m～270m	6.3±0.2	3.2±0.2	0.75±0.2	0.5±0.2	52
3AP(2512)	6m～39m			1.8±0.2		60
	40m～120m			1.3±0.2		55

■Type Designation

Example

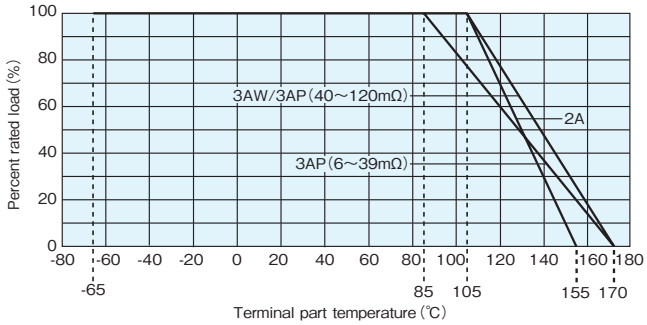
TLRH	3AW	T	TE	33L0	F
Product Code	Power Rating	Terminal Surface Material	Taping	Nominal Resistance	Resistance Tolerance
	2A(12～27mΩ)： 0.5W 2A(33～50mΩ)： 0.33W 2A(56～100mΩ)：0.25W 3AW：2.0W 3AP(6～39mΩ)： 5W 3AP(40～120mΩ)：4W	T：Sn	TD：4mm pitch punch paper TE：Plastic embossed BK：Bulk	F：4 digits EX 33L0：33mΩ R100：100mΩ	F：±1%

Contact us when you have control request for environmental hazardous material other than The substance specified by EU-RoHS.
For further information on taping, please refer to APPENDIX C on the back pages.

■Ratings

Type	Power Rating	T.C.R. (×10⁻⁶/K)	Resistance Range (Ω) F：±1% (E12)	Rated Terminal Part Temp.	Operating Temp. Range	Taping & Q'ty/Reel (pcs) TD	TE
TLRH2A	0.25W	±75	56m～100m	105℃	−65℃～+155℃	5,000	−
	0.33W		33m～50m				
	0.50W		12m～27m				
TLRH3AW	2.0W	±75	10m～22m		−65℃～+170℃	−	2,000
		±50	24m～270m				
TLRH3AP	4.0W		40m、47m、50m～120m				
	5.0W		18m、20m、22m、25m～39m	85℃			
		±75	6m、7m、8m、9m、10m、12m				

■Derating Curve

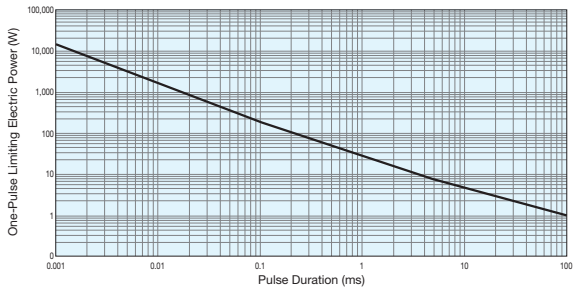


When the terminal part temperature of the resistor exceeds the rated terminal part temperature shown above, the power shall be derated according to the derating curve.
※Please refer to "Introduction of the derating curves based on the terminal part temperature" on the beginning of our catalog before use.

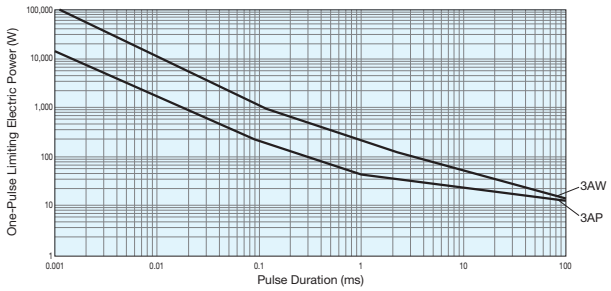
■One-Pulse Limiting Electric Power

※The maximum applicable voltage is equal to the max. overload voltage.
Please ask us about the resistance characteristic of continuous applied pulse.
The pulse endurance values are not assured values,so be sure to check the products on actual equipment when you use them.

TLRH2A



TLRH3AW/TLRH3AP



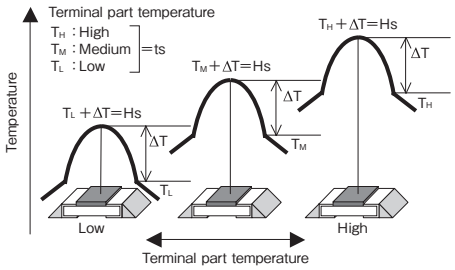
■Thermal Resistance

Type	Size	Resistance (Ω)	Rth (℃/W)
TLRH	2A	27m	123
		50m	195
		100m	280
	3AW	10m	5.2
		270m	7.4
	3AP	18m	7.4
		120m	4.1

Rth=(Hs-ts)/Power

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. Please refer to us before use.

The temperature of the resistor will increase the same ⊿T from the standard terminal part temperature regardlless of the ambient temperature when the same power is applied. This is because there is hardly any heat dissipation from the resistor surface to the ambient air.



■Performance

Test Items	Performance Requirements ΔR%		Test Methods
	Limit	Typical	
Resistance	Within specified tolerance	—	25℃
T.C.R.	Within specified T.C.R.	—	+25℃/+100℃
Overload (Short time)	0.5	0.05 : 2A 0.2 : 3AW/3AP	Rated power×2.5 for 5s : 2A, 3AW 8W for 5s : 3AP
Resistance to soldering heat	0.5	0.1	260℃±5℃, 10s～12s
Rapid change of temperature	0.5	0.2 : 2A 0.1 : 3AW/3AP	−55℃ (15min.) /+150℃ (15min.) 1000 cycles
Moisture resistance	0.5	0.1	85℃±2℃, 85%RH, 1000h, 10% Bias
Endurance of Rated Terminal part Temperature	1	0.45 : 2A 0.3 : 3AW/3AP	105℃±2℃ : 2A, 3AW, 3AP (40～120mΩ) 85℃±2℃ : 3AP (6～39mΩ) 1000h, 1.5h ON/0.5h OFF cycle
Low temperature exposure	0.5	0.05 : 2A 0.02 : 3AW/3AP	−65℃, 96h
High temperature exposure	2	0.2 : 3AP	170℃, 1000h : 3AP (6～12mΩ)
	1	0.5 : 2A 0.2 : 3AW/3AP	155℃, 1000h : 2A/3AP (6～12mΩ) 170℃, 1000h : 3AW/3AP (18～120mΩ)

■Precautions for Use

- In case of using the low ohm resistors as shunt resistors, please lay out a pattern considering the electromagnetic induction with surrounding inductors.
- For resistance values of TLRH the resistance value after soldering may change depending on the size of pad pattern or solder amount. Make sure the effect of decline/increase of resistance value before designing.