

Extra - High Power Thick Film Chip Resistors - 2512

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RoHS
Compliant

- 1. Scope:** This specification for approval relates to Extra - High Power Thick Film Chip Resistors.
- 2. Type designation:** The type designation shall be in the following form:

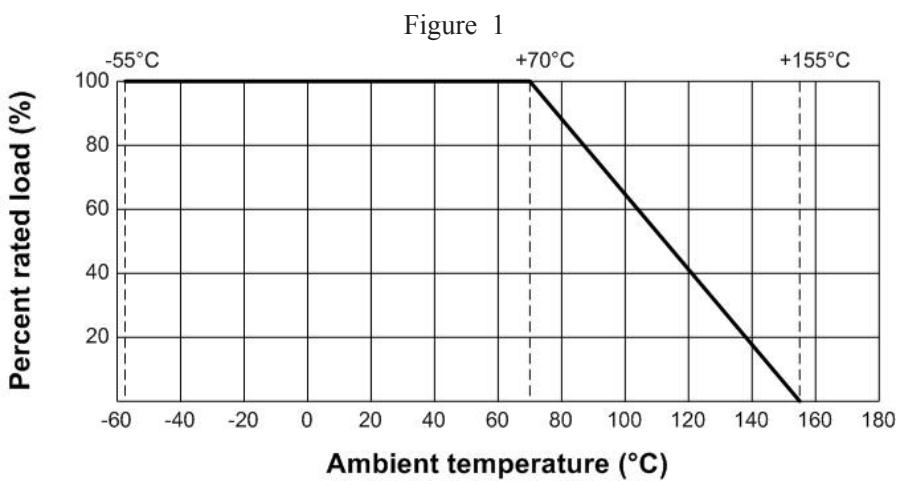
Type	Power Rating	Resistance tolerance	Nominal Resistance
2512	3W	F, J	10Ω

3. Ratings:

Type	2512
Power Rating at 70°C	3W
Max. Working Voltage	250 V
Max. Overload Voltage	500 V
Dielectric Withstanding Voltage	500 V
Temperature Range	-55°C to +155°C
Ambient Temperature	70°C

3.1 Power rating:

Resistors shall have a power rating based on continuous load operation at an ambient temperature of 70°C . For temperature in excess of 70°C , The load shall be derate as shown in figure 1.

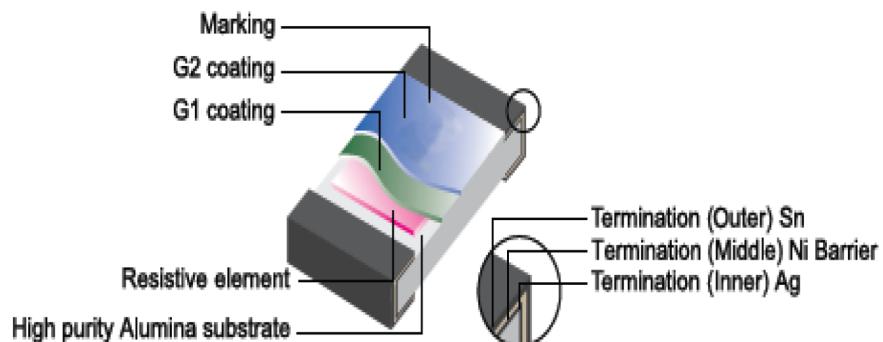


- 3.2 Nominal Resistance :** Effective figures of nominal resistance shall be in accordance with
- E-24 and E-96 series for 1 %
 - E-24 series for 5 %

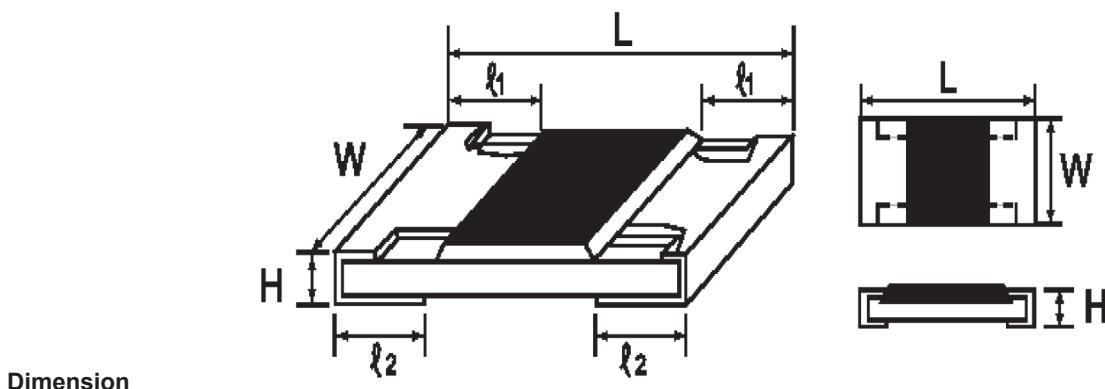
Extra - High Power Thick Film Chip Resistors - 2512

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4. Construction:



5. Power rating and dimensions



Dimension

Type	Dimension (mm)				
	L ±0.1	W ±0.15	H ±0.1	t1 ±0.25	t2 ±0.2
2512	6.35	3.2	1.1	0.6	1.8

Power Rating

Type	Power Rating at 70°C	Tolerance %	Resistance Range	Standard Series
2512	3W	Jumper	< 50mΩ	
		±1	1Ω to 10mΩ	E-96
		±5	1Ω to 10mΩ	E-24

6. Marking :

6.1 Resistors

A. Marking for E-96 series 1% in size : 4 Digits

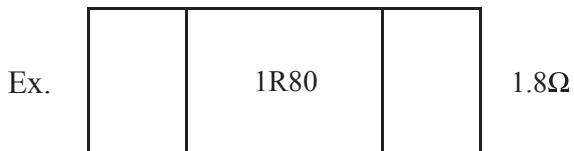
*The first 3 digits are significant figures of resistance and the 4th digit denoted number of zeros.

Ex.  1003 100KΩ

Extra - High Power Thick Film Chip Resistors - 2512

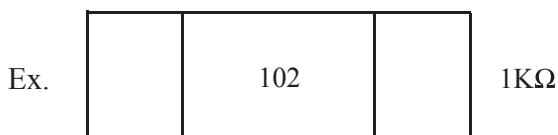
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*For Ω_{ic} values below 100 Ω , letter "R" is for decimal point.

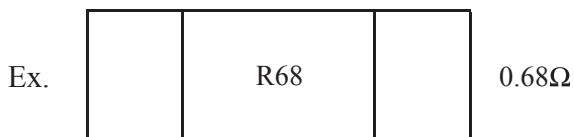


B. Marking for E-24 series in : 3 Digits

*The first 2 digits are significant figures of resistance and the 3rd digit denotes number of zeros.



*For Ω_{ic} values below 10 Ω , letter "R" is for decimal point.

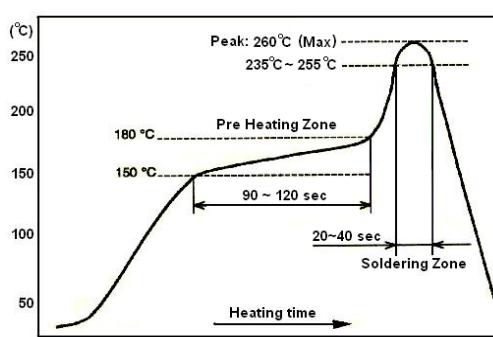


7. Performance specification

Characteristics	Limits	Test Methods (JIS C 5201-1)
Dielectric withstanding voltage	No evidence of flashover mechanical damage, arcing or insulation break down	4.7 Clamped in the trough of a 90°C metallic v-block and shall be tested at ac potential respectively specified in the type for 60-70 seconds
Temperature Coefficient	$1\Omega \sim 10\Omega \leq \pm 200\text{PPM}/^{\circ}\text{C}$ $10.1\Omega \sim 10\text{M}\Omega \leq \pm 100\text{PPM}/^{\circ}\text{C}$	4.8 Natural resistance change per temp. degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \quad (\text{PPM}/^{\circ}\text{C})$ R1: Resistance value at room temperature (T1) R2: Resistance value at room temp. plus 100°C (T2) Test pattern: room temp. (T1), room temp. +100°C (T2)
Short time overload	Resistance change rate is $\pm 5\%$ ($2.0\% + 0.1\Omega$) Max. $\pm 1\%$ ($1.0\% + 0.1\Omega$) Max.	4.13 Permanent resistance change after the application of a potential of 2.5 times RCWV for 5 seconds

Extra - High Power Thick Film Chip Resistors - 2512

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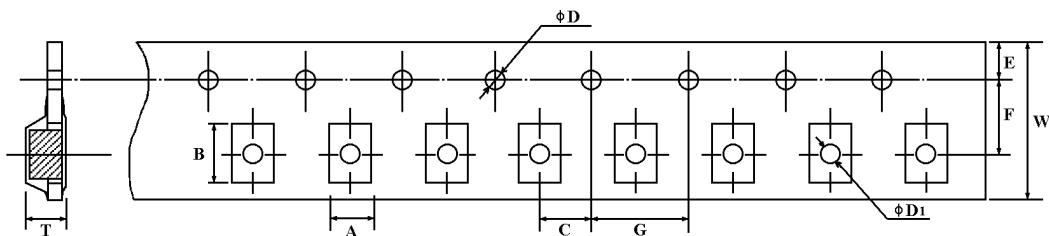
Characteristics	Limits	Test Methods (JIS C 5201-1)																		
Soldering temp. reference	Electrical characteristics shall be satisfied. Without distinct deformation in appearance. (95 % coverage Min.)	<p>Wave soldering condition: (2 cycles Max.) Pre-heat : 100°C to 120°C, 30 ± 5 sec. Suggestion solder temp.: 235°C to 255°C, 10 sec. (Max.) Peak temp.: 260°C</p> <p>Reflow soldering condition: (2 cycles Max.) Pre-heat : 150°C to 180°C, 90°C to 120 sec. Suggestion solder temp.: 235°C to 255°C, 20 to 40 sec. Peak temp.: 260°C</p>  <p>Temperature profile for evaluation</p> <p>Hand soldering condition: The soldering iron tip temperature should be less than 300°C and maximum contract time should be 5 sec.</p>																		
Soldering heat	Resistance change rate is: ± (1%+0.05Ω) Max.	4.18 Dip the resistor into a solder bath having a temperature of 260°C±3°C and hold it for 10±1 seconds.																		
Humidity	Resistance change rate is ± 5% (3% + 0.1Ω) Max. ± 1% (0.5% + 0.1Ω) Max.	4.24 Temporary resistance change after 240 hours exposure in a humidity test chamber controlled at 40±2°C and 90-95% relative humidity																		
Load life in humidity	Resistance change rate is ± 5% (3.0% + 0.1Ω) Max. ± 1% (1.0% + 0.1Ω) Max.	7.9 Resistance change after 1,000 hours (1.5 hours "on", 0.5 hour "off") at RCWV in a humidity chamber controlled at 40°C ±2°C and 90 to 95 % relative humidity																		
Load Life	Resistance change rate is ± 5% (3% + 0.1Ω) Max. ± 1% (1% + 0.1Ω) Max.	4.25.1 Permanent resistance change after 1,000 hours operating at RCWV, with duty cycle of (1.5 hours"on", 0.5 hour"off") at 70°C ± 2°C ambient																		
Terminal bending	Resistance change rate is ± (1% + 0.05Ω) Max.	4.33 Twist of Test Board : Y/X = 3/90 mm for 60 seconds																		
Temperature cycling	Resistance change rate is ± 5% (1.0% + 0.1Ω) Max ± 1% (0.5% + 0.1Ω) Max.	<p>4.19 Resistance change after continuous 5 cycles for duty cycle specified below :</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55°C ±3°C</td> <td>30 mins</td> </tr> <tr> <td>2</td> <td>Room temp.</td> <td>10 to 15 mins</td> </tr> <tr> <td>3</td> <td>+155°C ± 2°C</td> <td>30 mins</td> </tr> <tr> <td>4</td> <td>Room temp.</td> <td>10 to 15 mins</td> </tr> <tr> <td></td> <td></td> <td></td> </tr> </tbody> </table>	Step	Temperature	Time	1	-55°C ±3°C	30 mins	2	Room temp.	10 to 15 mins	3	+155°C ± 2°C	30 mins	4	Room temp.	10 to 15 mins			
Step	Temperature	Time																		
1	-55°C ±3°C	30 mins																		
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Extra - High Power Thick Film Chip Resistors - 2512

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8. Packing specification:

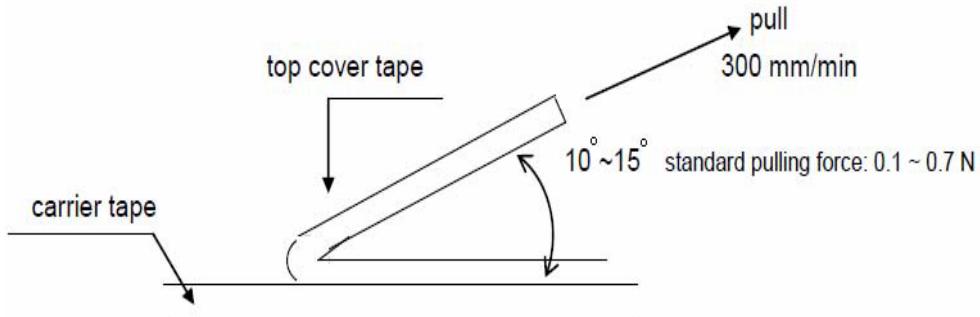
* Taping Dimension (mm)



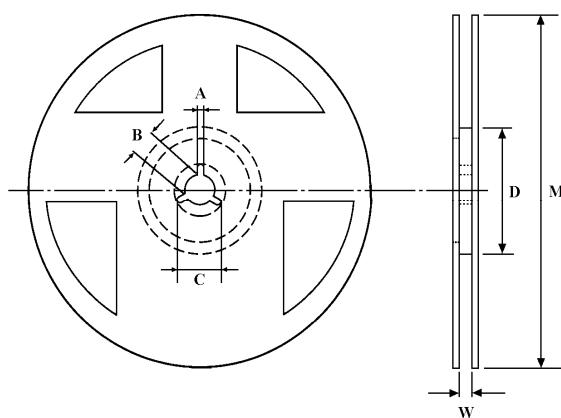
Type	A ± 0.2	B ± 0.2	C ± 0.05	$\varnothing D + 0.1 - 0$	E ± 0.1	F ± 0.05	G ± 0.1	W ± 0.2	$\varnothing D1 + 0.1 - 0$	T ± 0.1
2512	3.5	6.7	2	1.5	1.75	5.5	4	12	1.5	1.35

* Peeling Strength of Top Cover Tape

Test Condition: 0.1 to 0.7 N at a peel-off speed of 300 mm / min.



* Reel Dimension (mm)



Extra - High Power Thick Film Chip Resistors - 2512

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Type	Quantity Per Reel	A ± 0.5	B ± 0.5	C ± 0.5	D ± 1	M ± 2	W ±1
2512	2,000 Pcs. Reel	2	13.5	21	60	178	13.5

Environment Related Substance

This product complies to EU RoHS directive, EU PAHs directive, EU PFOS directive and Halogen free.

Ozone layer depleting substances.

Ozone depleting substances are not used in our manufacturing process of this product.

This product is not manufactured using Chloro fluorocarbons (CFCs), Hydrochlorofluorocarbons (HCFCs), Hydrobromofluorocarbons (HBFCs) or other ozone depleting substances in any phase of the manufacturing process.

Storage Condition

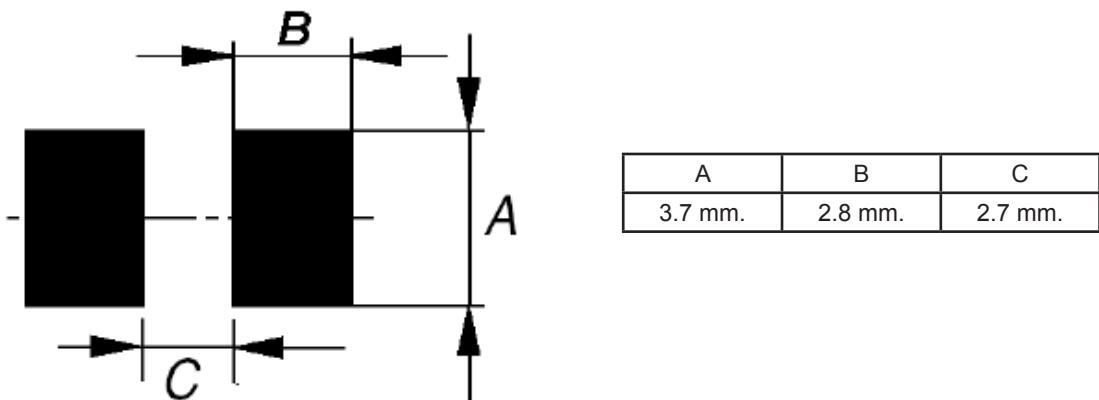
The performance of these products, including the solderability, is guaranteed for a year from the date of arrival at your company, provided that they remain packed as they were when delivered and stored at a temperature of $25^{\circ}\text{C} \pm 10^{\circ}\text{C}$ and a relative humidity of $60\%\text{RH} \pm 10\%\text{RH}$, chemical and dust free atmosphere

Even within the above guarantee periods, do not store these products in the following conditions.

Otherwise, their electrical performance and/or solderability may be deteriorated, and the packaging materials (e.g. taping materials) may be deformed or deteriorated, resulting in mounting failures.

1. In salty air or in air with a high concentration of corrosive gas, such as Cl_2 , H_2S , NH_3 , SO_2 , or NO_2
2. In direct sunlight

Recommended solder pad



4 layers PCB specification:

- 1) Outside 2 layers (Top and Bottom) with copper foil thickness at 2oz.
- 2) Inside 2 layers (Middle layers) with copper foil thickness at 4 oz.

Extra - High Power Thick Film Chip Resistors - 2512

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Part Number Table

Description	Part Number
Chip Resistor, Thick Film, 3W, ± 5%, 1.5R Ω, ± 200ppm/°C, 2512	MP002932
Chip Resistor, Thick Film, 3W, ± 5%, 22R Ω, ± 100ppm/°C, 2512	MP002933
Chip Resistor, Thick Film, 3W, ± 5%, 33R Ω, ± 100ppm/°C, 2512	MP002934
Chip Resistor, Thick Film, 3W, ± 5%, 39R Ω, ± 100ppm/°C, 2512	MP002935
Chip Resistor, Thick Film, 3W, ± 5%, 56R Ω, ± 100ppm/°C, 2512	MP002936
Chip Resistor, Thick Film, 3W, ± 5%, 82R Ω, ± 100ppm/°C, 2512	MP002937
Chip Resistor, Thick Film, 3W, ± 5%, 200R Ω, ± 100ppm/°C, 2512	MP002938
Chip Resistor, Thick Film, 3W, ± 5%, 300R Ω, ± 100ppm/°C, 2512	MP002939
Chip Resistor, Thick Film, 3W, ± 5%, 330R Ω, ± 100ppm/°C, 2512	MP002940
Chip Resistor, Thick Film, 3W, ± 5%, 390R Ω, ± 100ppm/°C, 2512	MP002941
Chip Resistor, Thick Film, 3W, ± 5%, 680R Ω, ± 100ppm/°C, 2512	MP002942
Chip Resistor, Thick Film, 3W, ± 5%, 820R Ω, ± 100ppm/°C, 2512	MP002943
Chip Resistor, Thick Film, 3W, ± 5%, 1.2K Ω, ± 100ppm/°C, 2512	MP002944
Chip Resistor, Thick Film, 3W, ± 5%, 1.8K Ω, ± 100ppm/°C, 2512	MP002945
Chip Resistor, Thick Film, 3W, ± 5%, 2.7K Ω, ± 100ppm/°C, 2512	MP002946
Chip Resistor, Thick Film, 3W, ± 5%, 3.3K Ω, ± 100ppm/°C, 2512	MP002947
Chip Resistor, Thick Film, 3W, ± 5%, 3.9K Ω, ± 100ppm/°C, 2512	MP002948
Chip Resistor, Thick Film, 3W, ± 5%, 4.7K Ω, ± 100ppm/°C, 2512	MP002949
Chip Resistor, Thick Film, 3W, ± 5%, 6.8K Ω, ± 100ppm/°C, 2512	MP002950
Chip Resistor, Thick Film, 3W, ± 5%, 8.2K Ω, ± 100ppm/°C, 2512	MP002951
Chip Resistor, Thick Film, 3W, ± 5%, 18K Ω, ± 100ppm/°C, 2512	MP002952
Chip Resistor, Thick Film, 3W, ± 5%, 22K Ω, ± 100ppm/°C, 2512	MP002953
Chip Resistor, Thick Film, 3W, ± 5%, 56K Ω, ± 100ppm/°C, 2512	MP002954
Chip Resistor, Thick Film, 3W, ± 5%, 68K Ω, ± 100ppm/°C, 2512	MP002955
Chip Resistor, Thick Film, 3W, ± 5%, 82K Ω, ± 100ppm/°C, 2512	MP002956
Chip Resistor, Thick Film, 3W, ± 5%, 120K Ω, ± 100ppm/°C, 2512	MP002957
Chip Resistor, Thick Film, 3W, ± 5%, 150K Ω, ± 100ppm/°C, 2512	MP002958
Chip Resistor, Thick Film, 3W, ± 5%, 220K Ω, ± 100ppm/°C, 2512	MP002959
Chip Resistor, Thick Film, 3W, ± 5%, 270K Ω, ± 100ppm/°C, 2512	MP002960
Chip Resistor, Thick Film, 3W, ± 5%, 330K Ω, ± 100ppm/°C, 2512	MP002961
Chip Resistor, Thick Film, 3W, ± 5%, 390K Ω, ± 100ppm/°C, 2512	MP002962
Chip Resistor, Thick Film, 3W, ± 5%, 470K Ω, ± 100ppm/°C, 2512	MP002963
Chip Resistor, Thick Film, 3W, ± 5%, 560K Ω, ± 100ppm/°C, 2512	MP002964
Chip Resistor, Thick Film, 3W, ± 5%, 680K Ω, ± 100ppm/°C, 2512	MP002965
Chip Resistor, Thick Film, 3W, ± 5%, 820K Ω, ± 100ppm/°C, 2512	MP002966
Chip Resistor, Thick Film, 3W, ± 5%, 1M Ω, ± 100ppm/°C, 2512	MP002967
Chip Resistor, Thick Film, 3W, ± 5%, 1.2M Ω, ± 100ppm/°C, 2512	MP002968

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Extra - High Power Thick Film Chip Resistors - 2512

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Description	Part Number
Chip Resistor, Thick Film, 3W, ± 5%, 1.5M Ω, ± 100ppm/°C, 2512	MP002969
Chip Resistor, Thick Film, 3W, ± 5%, 1.8M Ω, ± 100ppm/°C, 2512	MP002970
Chip Resistor, Thick Film, 3W, ± 5%, 2.2M Ω, ± 100ppm/°C, 2512	MP002971
Chip Resistor, Thick Film, 3W, ± 5%, 2.7M Ω, ± 100ppm/°C, 2512	MP002972
Chip Resistor, Thick Film, 3W, ± 5%, 3.3M Ω, ± 100ppm/°C, 2512	MP002973
Chip Resistor, Thick Film, 3W, ± 5%, 3.9M Ω, ± 100ppm/°C, 2512	MP002974
Chip Resistor, Thick Film, 3W, ± 5%, 4.7M Ω, ± 100ppm/°C, 2512	MP002975
Chip Resistor, Thick Film, 3W, ± 5%, 5.6M Ω, ± 100ppm/°C, 2512	MP002976
Chip Resistor, Thick Film, 3W, ± 5%, 6.8M Ω, ± 100ppm/°C, 2512	MP002977
Chip Resistor, Thick Film, 3W, ± 5%, 8.2M Ω, ± 100ppm/°C, 2512	MP002978
Chip Resistor, Thick Film, 3W, ± 5%, 10M Ω, ± 100ppm/°C, 2512	MP002979
Chip Resistor, Thick Film, 3W, ± 1%, Jumper, 2512	MP002980
Chip Resistor, Thick Film, 3W, ± 1%, 1R Ω, ± 200ppm/°C, 2512	MP002981
Chip Resistor, Thick Film, 3W, ± 1%, 1.5R Ω, ± 200ppm/°C, 2512	MP002982
Chip Resistor, Thick Film, 3W, ± 1%, 2.2R Ω, ± 200ppm/°C, 2512	MP002983
Chip Resistor, Thick Film, 3W, ± 1%, 3.3R Ω, ± 200ppm/°C, 2512	MP002984
Chip Resistor, Thick Film, 3W, ± 1%, 4.7R Ω, ± 200ppm/°C, 2512	MP002985
Chip Resistor, Thick Film, 3W, ± 1%, 6.8R Ω, ± 200ppm/°C, 2512	MP002986
Chip Resistor, Thick Film, 3W, ± 1%, 11R Ω, ± 100ppm/°C, 2512	MP002987
Chip Resistor, Thick Film, 3W, ± 1%, 13R Ω, ± 100ppm/°C, 2512	MP002988
Chip Resistor, Thick Film, 3W, ± 1%, 43R Ω, ± 100ppm/°C, 2512	MP002989
Chip Resistor, Thick Film, 3W, ± 1%, 56R Ω, ± 100ppm/°C, 2512	MP002990
Chip Resistor, Thick Film, 3W, ± 1%, 68R Ω, ± 100ppm/°C, 2512	MP002991
Chip Resistor, Thick Film, 3W, ± 1%, 82R Ω, ± 100ppm/°C, 2512	MP002992
Chip Resistor, Thick Film, 3W, ± 1%, 130R Ω, ± 100ppm/°C, 2512	MP002993
Chip Resistor, Thick Film, 3W, ± 1%, 160R Ω, ± 100ppm/°C, 2512	MP002994
Chip Resistor, Thick Film, 3W, ± 1%, 180R Ω, ± 100ppm/°C, 2512	MP002995
Chip Resistor, Thick Film, 3W, ± 1%, 220R Ω, ± 100ppm/°C, 2512	MP002996
Chip Resistor, Thick Film, 3W, ± 1%, 240R Ω, ± 100ppm/°C, 2512	MP002997
Chip Resistor, Thick Film, 3W, ± 1%, 270R Ω, ± 100ppm/°C, 2512	MP002998
Chip Resistor, Thick Film, 3W, ± 1%, 360R Ω, ± 100ppm/°C, 2512	MP002999
Chip Resistor, Thick Film, 3W, ± 1%, 470R Ω, ± 100ppm/°C, 2512	MP003000
Chip Resistor, Thick Film, 3W, ± 1%, 510R Ω, ± 100ppm/°C, 2512	MP003001
Chip Resistor, Thick Film, 3W, ± 1%, 620R Ω, ± 100ppm/°C, 2512	MP003002
Chip Resistor, Thick Film, 3W, ± 1%, 820R Ω, ± 100ppm/°C, 2512	MP003003
Chip Resistor, Thick Film, 3W, ± 1%, 1.1K Ω, ± 100ppm/°C, 2512	MP003004

Extra - High Power Thick Film Chip Resistors - 2512

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Description	Part Number
Chip Resistor, Thick Film, 3W, ± 1%, 1.2K Ω, ± 100ppm/°C, 2512	MP003005
Chip Resistor, Thick Film, 3W, ± 1%, 1.3K Ω, ± 100ppm/°C, 2512	MP003006
Chip Resistor, Thick Film, 3W, ± 1%, 1.5K Ω, ± 100ppm/°C, 2512	MP003007
Chip Resistor, Thick Film, 3W, ± 1%, 1.6K Ω, ± 100ppm/°C, 2512	MP003008
Chip Resistor, Thick Film, 3W, ± 1%, 1.8K Ω, ± 100ppm/°C, 2512	MP003009
Chip Resistor, Thick Film, 3W, ± 1%, 2.4K Ω, ± 100ppm/°C, 2512	MP003010
Chip Resistor, Thick Film, 3W, ± 1%, 2.7K Ω, ± 100ppm/°C, 2512	MP003011
Chip Resistor, Thick Film, 3W, ± 1%, 3.3K Ω, ± 100ppm/°C, 2512	MP003012
Chip Resistor, Thick Film, 3W, ± 1%, 3.6K Ω, ± 100ppm/°C, 2512	MP003013
Chip Resistor, Thick Film, 3W, ± 1%, 3.9K Ω, ± 100ppm/°C, 2512	MP003014
Chip Resistor, Thick Film, 3W, ± 1%, 4.3K Ω, ± 100ppm/°C, 2512	MP003015
Chip Resistor, Thick Film, 3W, ± 1%, 4.7K Ω, ± 100ppm/°C, 2512	MP003016
Chip Resistor, Thick Film, 3W, ± 1%, 5.1K Ω, ± 100ppm/°C, 2512	MP003017
Chip Resistor, Thick Film, 3W, ± 1%, 5.6K Ω, ± 100ppm/°C, 2512	MP003018
Chip Resistor, Thick Film, 3W, ± 1%, 6.2K Ω, ± 100ppm/°C, 2512	MP003019
Chip Resistor, Thick Film, 3W, ± 1%, 6.8K Ω, ± 100ppm/°C, 2512	MP003020
Chip Resistor, Thick Film, 3W, ± 1%, 7.5K Ω, ± 100ppm/°C, 2512	MP003021
Chip Resistor, Thick Film, 3W, ± 1%, 8.2K Ω, ± 100ppm/°C, 2512	MP003022
Chip Resistor, Thick Film, 3W, ± 1%, 9.1K Ω, ± 100ppm/°C, 2512	MP003023
Chip Resistor, Thick Film, 3W, ± 1%, 10K Ω, ± 100ppm/°C, 2512	MP003024
Chip Resistor, Thick Film, 3W, ± 1%, 11K Ω, ± 100ppm/°C, 2512	MP003025
Chip Resistor, Thick Film, 3W, ± 1%, 12K Ω, ± 100ppm/°C, 2512	MP003026
Chip Resistor, Thick Film, 3W, ± 1%, 13K Ω, ± 100ppm/°C, 2512	MP003027
Chip Resistor, Thick Film, 3W, ± 1%, 15K Ω, ± 100ppm/°C, 2512	MP003028
Chip Resistor, Thick Film, 3W, ± 1%, 16K Ω, ± 100ppm/°C, 2512	MP003029
Chip Resistor, Thick Film, 3W, ± 1%, 18K Ω, ± 100ppm/°C, 2512	MP003030
Chip Resistor, Thick Film, 3W, ± 1%, 20K Ω, ± 100ppm/°C, 2512	MP003031
Chip Resistor, Thick Film, 3W, ± 1%, 22K Ω, ± 100ppm/°C, 2512	MP003032
Chip Resistor, Thick Film, 3W, ± 1%, 27K Ω, ± 100ppm/°C, 2512	MP003033
Chip Resistor, Thick Film, 3W, ± 1%, 30K Ω, ± 100ppm/°C, 2512	MP003034
Chip Resistor, Thick Film, 3W, ± 1%, 39K Ω, ± 100ppm/°C, 2512	MP003035
Chip Resistor, Thick Film, 3W, ± 1%, 43K Ω, ± 100ppm/°C, 2512	MP003036
Chip Resistor, Thick Film, 3W, ± 1%, 47K Ω, ± 100ppm/°C, 2512	MP003037
Chip Resistor, Thick Film, 3W, ± 1%, 51K Ω, ± 100ppm/°C, 2512	MP003038
Chip Resistor, Thick Film, 3W, ± 1%, 56K Ω, ± 100ppm/°C, 2512	MP003039
Chip Resistor, Thick Film, 3W, ± 1%, 62K Ω, ± 100ppm/°C, 2512	MP003040
Chip Resistor, Thick Film, 3W, ± 1%, 68K Ω, ± 100ppm/°C, 2512	MP003041

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Description	Part Number
Chip Resistor, Thick Film, 3W, ± 1%, 75K Ω, ± 100ppm/°C, 2512	MP003042
Chip Resistor, Thick Film, 3W, ± 1%, 82K Ω, ± 100ppm/°C, 2512	MP003043
Chip Resistor, Thick Film, 3W, ± 1%, 91K Ω, ± 100ppm/°C, 2512	MP003044
Chip Resistor, Thick Film, 3W, ± 1%, 110K Ω, ± 100ppm/°C, 2512	MP003045
Chip Resistor, Thick Film, 3W, ± 1%, 120K Ω, ± 100ppm/°C, 2512	MP003046
Chip Resistor, Thick Film, 3W, ± 1%, 130K Ω, ± 100ppm/°C, 2512	MP003047
Chip Resistor, Thick Film, 3W, ± 1%, 150K Ω, ± 100ppm/°C, 2512	MP003048
Chip Resistor, Thick Film, 3W, ± 1%, 160K Ω, ± 100ppm/°C, 2512	MP003049
Chip Resistor, Thick Film, 3W, ± 1%, 180K Ω, ± 100ppm/°C, 2512	MP003050
Chip Resistor, Thick Film, 3W, ± 1%, 200K Ω, ± 100ppm/°C, 2512	MP003051
Chip Resistor, Thick Film, 3W, ± 1%, 220K Ω, ± 100ppm/°C, 2512	MP003052
Chip Resistor, Thick Film, 3W, ± 1%, 240K Ω, ± 100ppm/°C, 2512	MP003053
Chip Resistor, Thick Film, 3W, ± 1%, 270K Ω, ± 100ppm/°C, 2512	MP003054
Chip Resistor, Thick Film, 3W, ± 1%, 300K Ω, ± 100ppm/°C, 2512	MP003055
Chip Resistor, Thick Film, 3W, ± 1%, 330K Ω, ± 100ppm/°C, 2512	MP003056
Chip Resistor, Thick Film, 3W, ± 1%, 360K Ω, ± 100ppm/°C, 2512	MP003057
Chip Resistor, Thick Film, 3W, ± 1%, 390K Ω, ± 100ppm/°C, 2512	MP003058
Chip Resistor, Thick Film, 3W, ± 1%, 430K Ω, ± 100ppm/°C, 2512	MP003059
Chip Resistor, Thick Film, 3W, ± 1%, 470K Ω, ± 100ppm/°C, 2512	MP003060
Chip Resistor, Thick Film, 3W, ± 1%, 510K Ω, ± 100ppm/°C, 2512	MP003061
Chip Resistor, Thick Film, 3W, ± 1%, 560K Ω, ± 100ppm/°C, 2512	MP003062
Chip Resistor, Thick Film, 3W, ± 1%, 620K Ω, ± 100ppm/°C, 2512	MP003063
Chip Resistor, Thick Film, 3W, ± 1%, 680K Ω, ± 100ppm/°C, 2512	MP003064
Chip Resistor, Thick Film, 3W, ± 1%, 750K Ω, ± 100ppm/°C, 2512	MP003065
Chip Resistor, Thick Film, 3W, ± 1%, 820K Ω, ± 100ppm/°C, 2512	MP003066
Chip Resistor, Thick Film, 3W, ± 1%, 910K Ω, ± 100ppm/°C, 2512	MP003067
Chip Resistor, Thick Film, 3W, ± 1%, 1M Ω, ± 100ppm/°C, 2512	MP003068
Chip Resistor, Thick Film, 3W, ± 1%, 1.5M Ω, ± 100ppm/°C, 2512	MP003069
Chip Resistor, Thick Film, 3W, ± 1%, 2.2M Ω, ± 100ppm/°C, 2512	MP003070
Chip Resistor, Thick Film, 3W, ± 1%, 3.3M Ω, ± 100ppm/°C, 2512	MP003071
Chip Resistor, Thick Film, 3W, ± 1%, 4.7M Ω, ± 100ppm/°C, 2512	MP003072
Chip Resistor, Thick Film, 3W, ± 1%, 6.8M Ω, ± 100ppm/°C, 2512	MP003073
Chip Resistor, Thick Film, 3W, ± 1%, 10M Ω, ± 100ppm/°C, 2512	MP003074

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