High reliability type thick film chip resistors　ZPR series

ZPR03（0402）　ZPR05（0603）　ZPR10（0805）

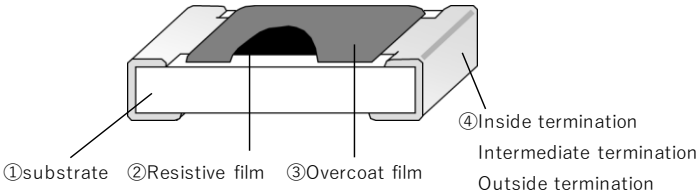
*(　): Inch size

Recommendation

■Features

・Load life in Humidity is much
　better than conventional chip resistors.
・Long time stability ± 0.2%
・Tolerrance on rated resistance ± 0.1%
・TCR ± 50ppm/°C
（± 25ppm/°C is available depending on resistance value）
・RoHS qualified
・ELV qualified
・AEC-Q200 qualified

■Structure



*This is only a schematic drawing of the structure.

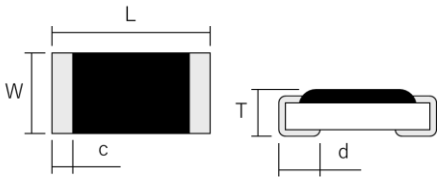
■Part No. Explanation (Example)

Z	P	R	0	5	Y	T	1	0	3	B

Product type	Rated power and Size	T.C.R	Packaging form	Nominal resistance value(*)	Resistance tolerance
ZPR： High reliability	03：0.063W,0402 05：0.2W,0603 10：0.25W,0805	Refer to "■Ratings"	T：4mm pitch taping ϕ180 reel (ZPR 03 is 2mm pitch)	The resistance value is indicated by 3-digit numbers. E96 sequence products are indicated by a 4-digit.	B: ± 0.1%

*The first two numbers are significant numbers,
and the third one is the number of zeros "0" following to the first two numbers (multiple of 10).
*In the case of the E96 sequence,
the first three values mean the significant figures and the fourth one represents the number of 0 following to them (multiplier of 10).
*If there is a decimal point in resistance value, it is indicated by "R" and all numbers are significant numbers.

■Dimensions



＊External dimensions are for reference only.
Overcoat film color : Black

	L	W	T	c	d
ZPR03	1.00 ± 0.05	0.50 $^{+0.10}_{-0.05}$	0.35 ± 0.05	0.20 ± 0.10	0.25 $^{+0.05}_{-0.10}$
ZPR05	1.60 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.25 $^{+0.15}_{-0.10}$	0.25 $^{+0.15}_{-0.10}$
ZPR10	2.00 ± 0.15	1.25 ± 0.15	0.55 $^{+0.10}_{-0.05}$	0.25 $^{+0.20}_{-0.10}$	0.40 ± 0.15

(Unit: mm)

■Ratings

	Rated power	Limiting element voltage(*1)	Maximum overload voltage(*2)	Range of rated resistance	Tolerance on rated resistance	Category temperature range	Temperature Coefficient of Resistance(T.C.R)			
ZPR03	0.063W	75V	150V	100Ω～68KΩ	B	-55°C～+155°C	Y	+25°C～+155°C	100Ω～68KΩ	±50×10⁻⁶/°C
								-55°C～+25°C	100Ω～294Ω	-100～+50×10⁻⁶/°C
									300Ω～3.9KΩ	±50×10⁻⁶/°C
									3.92KΩ～68KΩ	-100～+50×10⁻⁶/°C
ZPR05	0.2W	150V	150V	100Ω～220KΩ	B	-55°C～+155°C	Y	+25°C～+155°C	100Ω～220KΩ	±50×10⁻⁶/°C
								-55°C～+25°C	100Ω～732Ω	-100～+50×10⁻⁶/°C
									750Ω～18KΩ	±50×10⁻⁶/°C
									18.2KΩ～220KΩ	-100～+50×10⁻⁶/°C
							E	+25°C～+125°C	10KΩ～100KΩ	±25×10⁻⁶/°C
ZPR10	0.25W	150V	200V	100Ω～2MΩ	B	-55°C～+155°C	Y	+25°C～+155°C	100Ω～2MΩ	±50×10⁻⁶/°C
								-55°C～+25°C	100Ω～2MΩ	-80～+70×10⁻⁶/°C
							E	+25°C～+125°C	1MΩ～2MΩ	±25×10⁻⁶/°C

(*1) Rated voltage $=\sqrt{Rated\ power \times Resistance\ value}$

In the case of rated voltage over above limiting element voltage, limiting element voltage will be the maximum.

(*2) The applied voltage in short time overload test = 2.5×rated voltage

In the case of the applied voltage in short time overload test over above maximum overload voltage, maximum overload voltage will be the maximum.

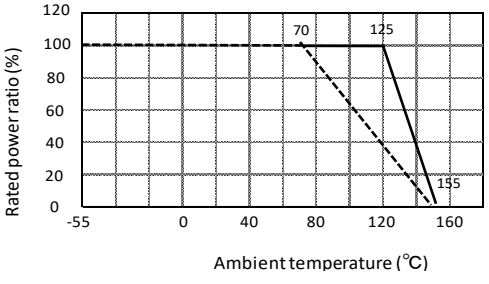
＊There are the supplementary information about rating on reference page.

＊Temperature Coefficient of Resistance (T.C.R) is based on JIS C5201-1 6.2 between two points: -55°C and 25°C, 25°C and 155°C. However ±25ppm is between two points: 25°C and 125°C

■Specifications and test methods

Item	Specifications	Test method
Overload	±(0.2%+0.05Ω)	JIS C5201-1 8.1 2.5×Rated voltage, for 5 seconds
Bend strength of the face plating	±(0.2%+0.05Ω)	JIS C5201-1 9.8 Bending distance : 3mm
Resistance to soldering heat	±(0.2%+0.05Ω)	JIS C5201-1 11.2 260±5°C.10(sec.)
Solderability	Covered with more than 95%	JIS C5201-1 11.1 245±3°C.2(sec.)
Rapid change of temperature	±(0.2%+0.05Ω)	JIS C5201-1 10.1 -55°C⇔+125°C,1000(times)
Loadlife in humidity	±(0.2%+0.05Ω)	60±2°C. 90~95% R.H 1000h
Endurance at 70°C	±(0.2%+0.05Ω)	JIS C5201-1 7.1 70±2°C.1000h

■Derating curve



＊Rated power of the resistor is the maximum power which can be loaded continuously at the ambient temperature of 70 °C. For the ambient temperature above 70°C, please use according to the load derating curve (dotted line). Please note that the component surface temperature does not exceed operating temperature range.

＊If the component temperature is below 155°C, the power rating can be used according to the load derating curve in the solid line.