DataSheet No: C16009 Version:V4 Date:2024/03/24



PCSR2512

High-Precision Low-TCR Molded Alloy Current Sensing Resistor

Resistance $5m\Omega \sim 100m\Omega$

Tolerance ±0.1%

TCR ±15ppm/°C

Rated Current 3A~14A



Applications

Automotive Electronics

Precision Power Supply

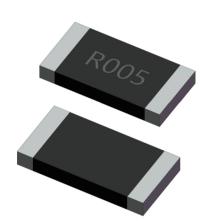
Instrumentation

Sorting & Formation of Battery

Medical Equipment

Better Solution for Sustainable High End Manufacturing

Tolerance of $\pm 0.1\%$ and TCR of ± 15 ppm High Reliability and Stability



Introduction

High-precision low-TCR molded alloy current sensing resistor adopts a resistive alloy independently developed by C&B Electronics, which undergoes precision processing, then is welded by a dedicated electron beam welding equipment independently designed and manufactured by C&B Electronics to achieve continuous welding, and then is shaped by precision stamping. Based on the control ability of the resistance alloy's consistency, precision processing ability, process control ability, and precision welding ability, the product can achieve a maximum target tolerance of \pm 0.1% after precision trimming. Finally, the product is encapsulated through precision molding.

The resistance range of PCSR2512 series of products is $5m\Omega$ ~100m Ω . TCR of PCSR2512 series is $\leq \pm 15$ ppm/°C within the operating temperature range from -55°C to +125°C. By controlling the resistive alloy materials, precision electron beam welding processes and subsequent processes, the thermal EMF is significantly reduced, while significantly improving its long-term stability.







PCSR2512 series, from raw materials, core equipment, to core processes, achieves independent and controllable production, stable quality, and timely delivery. If the standard specifications cannot meet your needs, please contact our sales for consultation. Resi is committed to providing the best precision resistor solutions to meet the needs of customers in testing and measurement, power equipment, medical equipment, precision power supply, automotive electronics, formation & sorting of battery.

Electrical Parameters

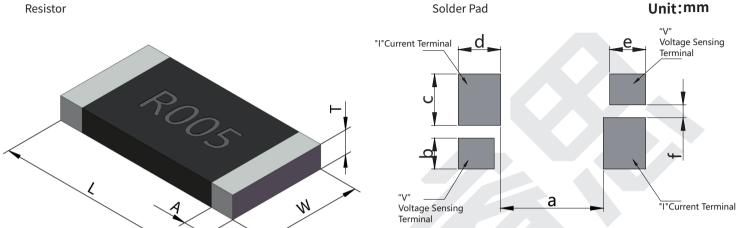
Size	Resistance	Rated Power (+70°C)	Max. Operating Current	Operating Temperature	TCR ppm/°C(+20°CRef)	Tolerance %
PCSR2512	5mΩ~9mΩ	1W	10A~14A	-55°C~+170°C	±15(-55°C~+125°C)	±0.1 ±0.5 ±1.0 ±5.0
PCSR2512	10mΩ~100mΩ	1W	3A~10A	-55°C~+170°C	±15(-55°C~+125°C)	± 0.1 ± 0.5 ± 1.0 ± 5.0

Applications

PCSR series is applicable to AC, DC, high and low-frequency sampling circuits.



Dimensions

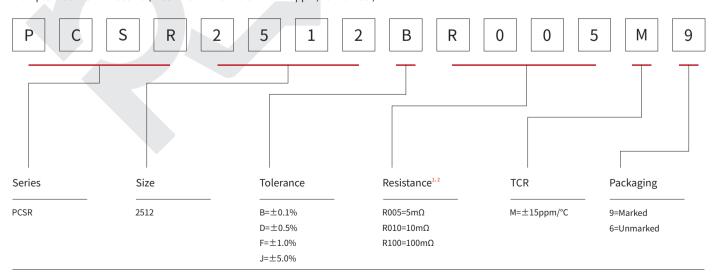


Not following the recommended solder pad design can seriously affect the temperature coefficient measurement results and current sensing accuracy!

Resistance	L	W	A	Т	a	b
5mΩ~100mΩ	6.4±0.2	3.2±0.2	0.8±0.2	0.8±0.1	4.0	1.2
С	d	е	f	Packaging	Quantity Per Reel	Net Weight
2.0	1.65	1.4	0.5	Tape & Reel	4000pcs	0.07±0.02g

Part Number Information

Example: PCSR2512BR005M9 (PCSR 2512 $\pm 0.1\%$ 5m Ω ± 15 ppm/°C Marked)



- 1. There are situations where the expression of resistance value exceeds four digits. 49.9mohm expresses as R0499, and 49.99mohm expresses as R04999, etc.
- 2. For higher/lower resistance, tighter tolerance, higher power, lower TCR and larger size, please contact us.

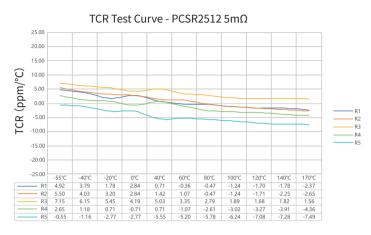


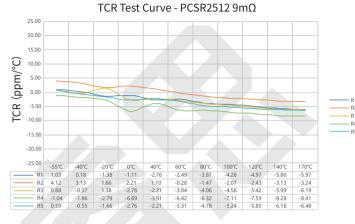
Performance

Max.
△R≤±0.3%
△R≤±0.3%
△R≤±0.2%
△R≤±1.0%
△R≤±0.05%
△R≤±0.05%
△R≤±0.1%
△R≤±0.5%
△R≤±0.5%
△R≤±0.5%
△R≤±0.05%

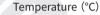


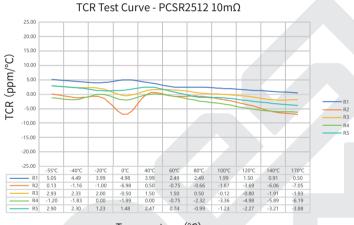
Temperature Coefficient of Resistance Test Curve

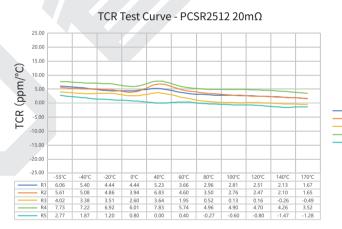






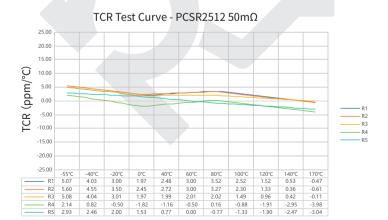


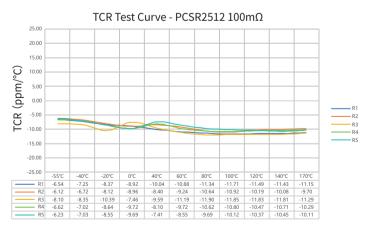




Temperature (°C)

Temperature (°C)



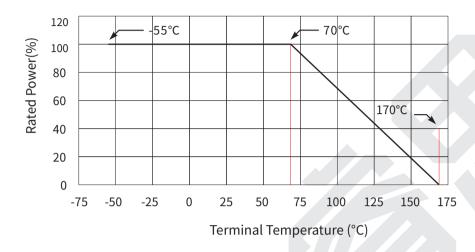


Temperature (°C)

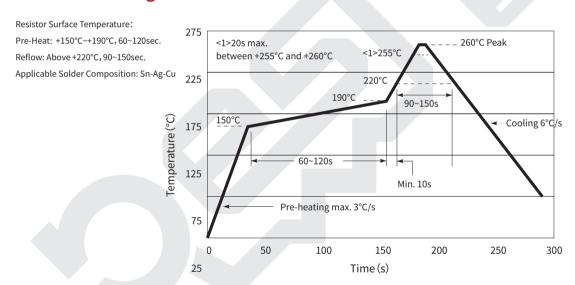
Temperature (°C)



Derating Curve

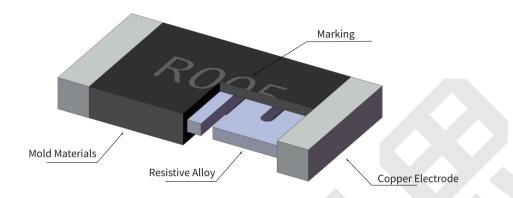


Reflow Soldering Profile





Construction



Marking

Marking: Resistance

Size	Illustration	Demonstration
2512	R005	R005=5mΩ R100=100mΩ

Storage Instructions

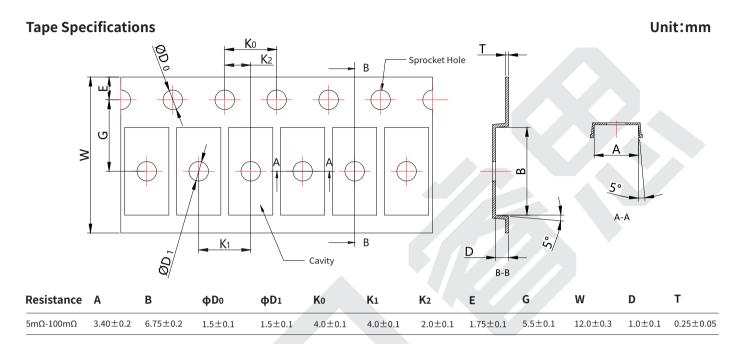
- (1) Resistors should be stored at a temperature of 5 to 35 °C, with a humidity of <60% RH. The humidity should be kept as low as possible.
- (2) Resistors should be protected from direct sunlight.
- (3) Resistors should be stored in a clean and dry environment free of harmful gases (HCl, Sulfuric acid, H2S, etc.)
- (4) Do not move the resistor from the packaging unless use it.
- (5) Under the above storage conditions, the resistor can be stored for at least 1 year.

Usage Suggestions

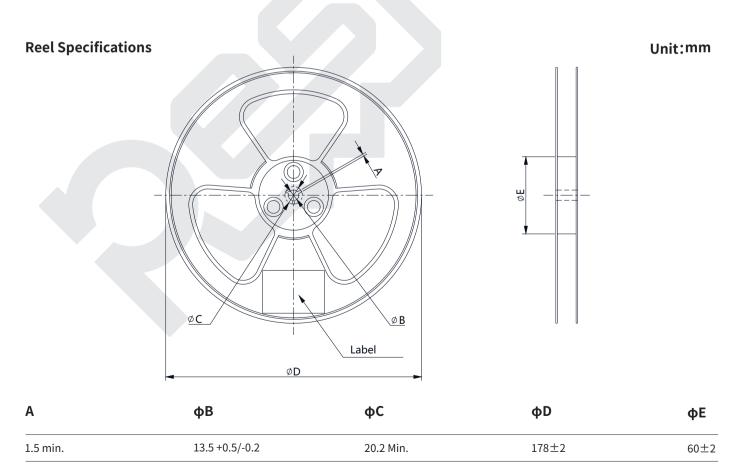
- (1) Please protect the surface of the resistor during use. Prevent defects such as scratches, bumps, and oil stains on the surface.
- (2) Do not use sharp tweezers to move the resistor. Scratches on the surface can cause resistance drift and resistor failure.
- (3) When installing and using resistors, avoid the impact of mechanical stress on the resistor.
- $(4) The long-term operating power of resistors should be \leqslant rated power to avoid resistance drift caused by long-term overload. \\$
- (5) Please refer to the derating curve when operating under high temperature conditions or poor heat dissipation environment.
- (6) If the operating conditions exceed the pulse specified in the pulse curve, a systematic evaluation is required.
- (7) If the resistor is not used after being moved from the packaging, it should be stored under vacuum to avoid risks such as poor welding caused by oxidation of the resistor.



Packaging



High-Precision Low-TCR Molded Alloy Current Sensing Resistor



3. Place every 8 cases into a box

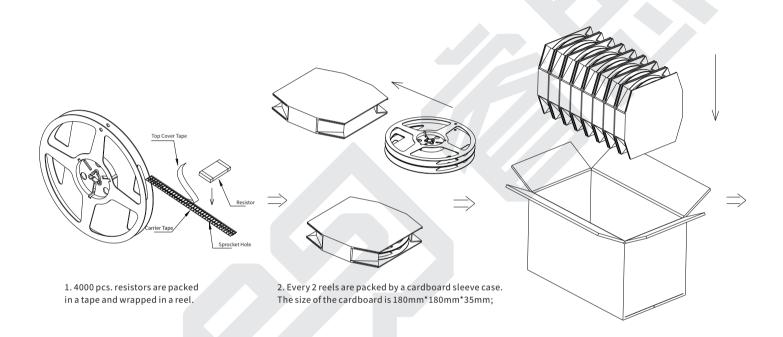
(64000 pcs. / box).

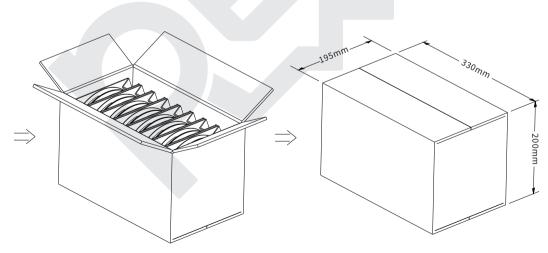


High-Precision Low-TCR Molded Alloy Current Sensing Resistor

Packaging

- (1) 4000 pcs. resistors are packed in a tape and wrapped in a reel;
- (2) Every 2 reels are packed by a cardboard sleeve case. The size of the cardboard is 180mm*180mm*35mm;
- (3) Place every 8 cases into a box (64000 pcs. / box);
- (4) Box size: 330mm*195mm*200mm.





 $4. For the last box, 8\ cardboard\ sleeve\ cases should\ be\ placed\ regardless\ of\ quantity\ of\ the\ product,\ preventing\ shaking.$

5. Box size: 330mm*195mm*200mm





Part Number	Size	Tolerance	Resistance	Marking	TCR	Power	Max. Operating Current
PCSR2512BR005M9	2512	±0.1%	5.0mΩ	Marked	±15ppm/°C	1W	14A
PCSR2512DR005M9	2512	±0.5%	5.0mΩ	Marked	±15ppm/°C	1W	14A
PCSR2512FR005M9	2512	±1.0%	5.0mΩ	Marked	±15ppm/°C	1W	14A
PCSR2512JR005M9	2512	±5.0%	5.0mΩ	Marked	±15ppm/°C	1W	14A
PCSR2512BR006M9	2512	±0.1%	6.0mΩ	Marked	±15ppm/°C	1W	12A
PCSR2512DR006M9	2512	±0.5%	6.0mΩ	Marked	±15ppm/°C	1W	12A
PCSR2512FR006M9	2512	±1.0%	6.0mΩ	Marked	±15ppm/°C	1W	12A
PCSR2512JR006M9	2512	±5.0%	6.0mΩ	Marked	±15ppm/°C	1W	12A
PCSR2512BR007M9	2512	±0.1%	7.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512DR007M9	2512	±0.5%	7.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512FR007M9	2512	±1.0%	7.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512JR007M9	2512	±5.0%	7.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512BR008M9	2512	±0.1%	8.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512DR008M9	2512	±0.5%	8.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512FR008M9	2512	±1.0%	8.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512JR008M9	2512	±5.0%	8.0mΩ	Marked	±15ppm/°C	1W	11A
PCSR2512BR009M9	2512	±0.1%	9.0mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512DR009M9	2512	±0.5%	9.0mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512FR009M9	2512	±1.0%	9.0mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512JR009M9	2512	±5.0%	9.0mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512BR010M9	2512	±0.1%	10mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512DR010M9	2512	±0.5%	10mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512FR010M9	2512	±1.0%	10mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512JR010M9	2512	±5.0%	10mΩ	Marked	±15ppm/°C	1W	10A
PCSR2512BR015M9	2512	±0.1%	15mΩ	Marked	±15ppm/°C	1W	8A
PCSR2512DR015M9	2512	±0.5%	15mΩ	Marked	±15ppm/°C	1W	8A
PCSR2512FR015M9	2512	±1.0%	15mΩ	Marked	±15ppm/°C	1W	8A
PCSR2512JR015M9	2512	±5.0%	15mΩ	Marked	±15ppm/°C	1W	8A
PCSR2512BR018M9	2512	±0.1%	18mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512DR018M9	2512	±0.5%	18mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512FR018M9	2512	±1.0%	18mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512JR018M9	2512	±5.0%	18mΩ	Marked	±15ppm/°C	1W	7A





Part Number	Size	Tolerance	Resistance	Marking	TCR	Power	Max. Operating Current
PCSR2512BR020M9	2512	±0.1%	20mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512DR020M9	2512	±0.5%	20mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512FR020M9	2512	±1.0%	20mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512JR020M9	2512	±5.0%	20mΩ	Marked	±15ppm/°C	1W	7A
PCSR2512BR025M9	2512	±0.1%	25mΩ	Marked	±15ppm/°C	1W	6A
PCSR2512DR025M9	2512	±0.5%	25mΩ	Marked	±15ppm/°C	1W	6A
PCSR2512FR025M9	2512	±1.0%	25mΩ	Marked	±15ppm/°C	1W	6A
PCSR2512JR025M9	2512	±5.0%	25mΩ	Marked	±15ppm/°C	1W	6A
PCSR2512BR030M9	2512	±0.1%	30mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512DR030M9	2512	±0.5%	30mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512FR030M9	2512	±1.0%	30mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512JR030M9	2512	±5.0%	30mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512BR033M9	2512	±0.1%	33mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512DR033M9	2512	±0.5%	33mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512FR033M9	2512	±1.0%	33mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512JR033M9	2512	±5.0%	33mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512BR040M9	2512	±0.1%	40mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512DR040M9	2512	±0.5%	40mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512FR040M9	2512	±1.0%	40mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512JR040M9	2512	±5.0%	40mΩ	Marked	±15ppm/°C	1W	5A
PCSR2512BR047M9	2512	±0.1%	47mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512DR047M9	2512	±0.5%	47mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512FR047M9	2512	±1.0%	47mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512JR047M9	2512	±5.0%	47mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512BR050M9	2512	±0.1%	50mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512DR050M9	2512	±0.5%	50mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512FR050M9	2512	±1.0%	50mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512JR050M9	2512	±5.0%	50mΩ	Marked	±15ppm/°C	1W	4A
PCSR2512BR100M9	2512	±0.1%	100mΩ	Marked	±15ppm/°C	1W	3A
PCSR2512DR100M9	2512	±0.5%	100mΩ	Marked	±15ppm/°C	1W	3A
PCSR2512FR100M9	2512	±1.0%	100mΩ	Marked	±15ppm/°C	1W	3A
PCSR2512JR100M9	2512	±5.0%	100mΩ	Marked	±15ppm/°C	1W	3A





Part Number	Size	Tolerance	Resistance	Marking	TCR	Power	Max. Operating Current
PCSR2512BR005M6	2512	±0.1%	5.0mΩ	Unmarked	±15ppm/°C	1W	14A
PCSR2512DR005M6	2512	±0.5%	5.0mΩ	Unmarked	±15ppm/°C	1W	14A
PCSR2512FR005M6	2512	±1.0%	5.0mΩ	Unmarked	±15ppm/°C	1W	14A
PCSR2512JR005M6	2512	±5.0%	5.0mΩ	Unmarked	±15ppm/°C	1W	14A
PCSR2512BR006M6	2512	±0.1%	6.0mΩ	Unmarked	±15ppm/°C	1W	12A
PCSR2512DR006M6	2512	±0.5%	6.0mΩ	Unmarked	±15ppm/°C	1W	12A
PCSR2512FR006M6	2512	±1.0%	6.0mΩ	Unmarked	±15ppm/°C	1W	12A
PCSR2512JR006M6	2512	±5.0%	6.0mΩ	Unmarked	±15ppm/°C	1W	12A
PCSR2512BR007M6	2512	±0.1%	7.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512DR007M6	2512	±0.5%	7.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512FR007M6	2512	±1.0%	7.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512JR007M6	2512	±5.0%	7.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512BR008M6	2512	±0.1%	8.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512DR008M6	2512	±0.5%	8.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512FR008M6	2512	±1.0%	8.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512JR008M6	2512	±5.0%	8.0mΩ	Unmarked	±15ppm/°C	1W	11A
PCSR2512BR009M6	2512	±0.1%	9.0mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512DR009M6	2512	±0.5%	9.0mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512FR009M6	2512	±1.0%	9.0mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512JR009M6	2512	±5.0%	9.0mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512BR010M6	2512	±0.1%	10mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512DR010M6	2512	±0.5%	10mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512FR010M6	2512	±1.0%	10mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512JR010M6	2512	±5.0%	10mΩ	Unmarked	±15ppm/°C	1W	10A
PCSR2512BR015M6	2512	±0.1%	15mΩ	Unmarked	±15ppm/°C	1W	8A
PCSR2512DR015M6	2512	±0.5%	15mΩ	Unmarked	±15ppm/°C	1W	8A
PCSR2512FR015M6	2512	±1.0%	15mΩ	Unmarked	±15ppm/°C	1W	8A
PCSR2512JR015M6	2512	±5.0%	15mΩ	Unmarked	±15ppm/°C	1W	8A
PCSR2512BR018M6	2512	±0.1%	18mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512DR018M6	2512	±0.5%	18mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512FR018M6	2512	±1.0%	18mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512JR018M6	2512	±5.0%	18mΩ	Unmarked	±15ppm/°C	1W	7A





Part Number	Size	Tolerance	Resistance	Marking	TCR	Power	Max. Operating Current
PCSR2512BR020M6	2512	±0.1%	20mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512DR020M6	2512	±0.5%	20mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512FR020M6	2512	±1.0%	20mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512JR020M6	2512	±5.0%	20mΩ	Unmarked	±15ppm/°C	1W	7A
PCSR2512BR025M6	2512	±0.1%	25mΩ	Unmarked	±15ppm/°C	1W	6A
PCSR2512DR025M6	2512	±0.5%	25mΩ	Unmarked	±15ppm/°C	1W	6A
PCSR2512FR025M6	2512	±1.0%	25mΩ	Unmarked	±15ppm/°C	1W	6A
PCSR2512JR025M6	2512	±5.0%	25mΩ	Unmarked	±15ppm/°C	1W	6A
PCSR2512BR030M6	2512	±0.1%	30mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512DR030M6	2512	±0.5%	30mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512FR030M6	2512	±1.0%	30mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512JR030M6	2512	±5.0%	30mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512BR033M6	2512	±0.1%	33mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512DR033M6	2512	±0.5%	33mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512FR033M6	2512	±1.0%	33mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512JR033M6	2512	±5.0%	33mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512BR040M6	2512	±0.1%	40mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512DR040M6	2512	±0.5%	40mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512FR040M6	2512	±1.0%	40mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512JR040M6	2512	±5.0%	40mΩ	Unmarked	±15ppm/°C	1W	5A
PCSR2512BR047M6	2512	±0.1%	47mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512DR047M6	2512	±0.5%	47mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512FR047M6	2512	±1.0%	47mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512JR047M6	2512	±5.0%	47mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512BR050M6	2512	±0.1%	50mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512DR050M6	2512	±0.5%	50mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512FR050M6	2512	±1.0%	50mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512JR050M6	2512	±5.0%	50mΩ	Unmarked	±15ppm/°C	1W	4A
PCSR2512BR100M6	2512	±0.1%	100mΩ	Unmarked	±15ppm/°C	1W	3A
PCSR2512DR100M6	2512	±0.5%	100mΩ	Unmarked	±15ppm/°C	1W	3A
PCSR2512FR100M6	2512	±1.0%	100mΩ	Unmarked	±15ppm/°C	1W	3A
PCSR2512JR100M6	2512	±5.0%	100mΩ	Unmarked	±15ppm/°C	1W	3A





Revision

Version	Revised Content	Date	Approver
VO	Initial Issue	2019.12.26	YBP
V1	Change datasheet to the new template.	2020.02.27	YBP
V2	Improve the description of material information.	2020.03.09	YBP
V3	Change datasheet to the new template. Add $10\text{-}100\text{m}\Omega$ specifications.	2022.07.17	LWW
V4	Change datasheet to the new template. Add 5-9m Ω specifications. Add product reliability information and packaging information.	2024.03.24	LWW





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