




SPECIFICATION SHEET NO.	S0225- CRCR12FA2R4S01	
ORIGINAL MFG/PART NO.	Aillen Capacitors/CR12FA2R4	
NEXTGEN PART CODE	CRCR12FA2R4S01	Indicate This Code For RFQ /Order
DATE	Feb. 25, 2025	
REVISION	A5	Updated With Most Recent Data
DESCRIPTION AND MAIN PARAMETRICS	<p>Thick Film Chip Resistors, 2512 (6432 Metric), CR12 Series, Dimension L6.40*W3.20*H0.60mm, 2 Terminations, Tolerance: $\pm 1.0\%$, Resistance Range 2.4 ohm, Dissipation Max. 1W @ 70°C, Temperature Coefficient Rate (TCR) Max. $\pm 200\text{ppm}/^\circ\text{C}$ Operating Temp. Range $-55^\circ\text{C} \sim +155^\circ\text{C}$ Package in Tape/Reel, 4,000pcs/Reel RoHS/RoHS III Compliant and HF</p>	
CUSTOMER		
CUSTOMER PART NUMBER		
CROSS REF. PART NUMBER		
MEMO		

VENDOR APPROVE			
Issued/Checked/Approved			
Date: Feb. 25, 2025			

CUSTOMER APPROVE
DATE:

DESCRIPTION

The resistors are constructed in a high grade ceramic body (aluminum oxide). Internal metal electrodes are added at each end and connected by a resistive paste that is applied to the top surface of the substrate. The composition of the paste is adjusted to give the approximate resistance required and the value is trimmed to within tolerance by laser cutting of this resistive layer. The resistive layer is covered with a protective coat. Finally, the two external end terminations are added. For ease of soldering the outer layer of these end terminations is a Tin (lead free) alloy.

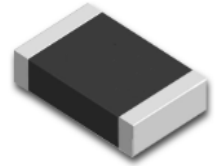


Image shown is a representation only. Exact specifications should be obtained from the product dimension.



MAIN FEATURE

- High power rating and Compact size
- High reliability and Stability
- Reduced size of final equipment
- RoHS III Compliant And Halogen Free Products

APPLICATION

- Power supply / PDA
- Digital meter / PC
- Automotives / Battery charger
- DC-DC power converter

ELECTRICAL CHARBCTERISTICS

- See Page 5 ~page 6
- All Products Parameters are Subject To NextGen Components' Final Confirmation.

HOW TO ORDER

- Please Follow Up Part Code Guide And Indicate Part Code CRCR12FA2R4S01 For RFQ/Order.

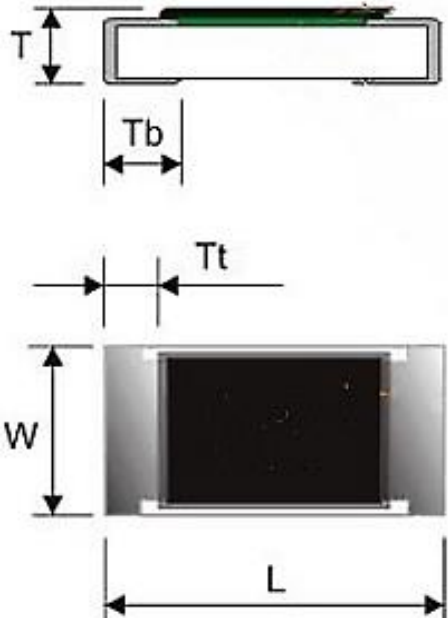
PART CODE GUIDE

RFQ
[Request For Quotation](#)

CODE	NAME	KEY SPECIFICATION OPTION
CRCR	Product Index	Thick Film Chip Resistors
12	Case Size	12: 2512 (6432 Metric), L6.40*W3.20*H0.60mm
F	Resistance Tolerance	B: $\pm 0.1\%$; D: $\pm 0.5\%$; F: $\pm 1\%$; J: $\pm 5\%$; P: Jumper
A	Quantity Per Reel	A: 4Kpcs/7"Reel B: 5kpcs/7"Reel Z: 3kpcs/7"Reel
2R4	Resistance Value	1R2: 1.2ohm; 2R4: 2.4ohm; 330R: 330ohm; 1K: 1Kohm; 10K: 10Kohm; 10K5: 10.5kohm; 100K: 100Kohm; 820K: 820Kohm 1M: 1.0Mohm; 1M2: 1.2Mohm
S01	Suffix	Blank: N/A XX: Internal Control Code, Letter A~Z, a~z or digits (0~9) for Special/Custom Parameters

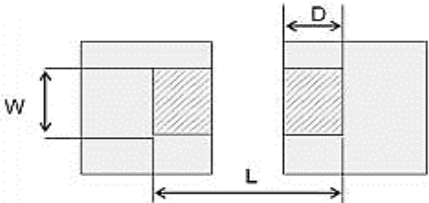
DIMENSION (Unit: mm)

Case Size: 2010 (5025 metric)
 L5.00*W2.50*H0.55mm



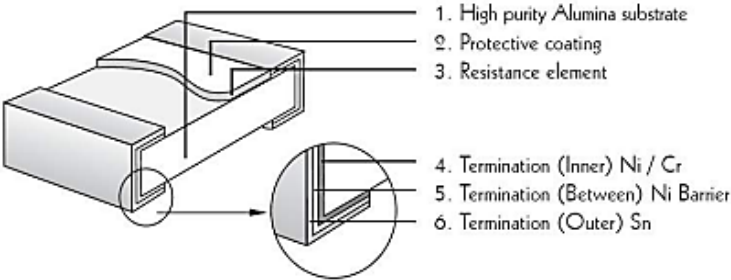
ITEM	DIMENSION
L	6.40±0.20
W	3.20±0.20
T	0.60±0.10
T b	0.90±0.25
T t	0.65±0.25

Recommended
 Solder Pad



ITEM	DIMENSION
W	3.60~4.00
L	7.80~8.60
D	2.30~3.50

Construction



TEST CONDITIONS - FOR JUMPER (0 ohm)

ITEM	UNIT	SYMBOL	CHARACTERISTIC	CONDITION
Power Rating	W		1	@ 70°C
Max. Resistance	mRΩ		50	
Rated Current	A		4.5	
Peak Current	A		11	

GENERAL CONDITIONS - FOR DIFFERENT PART CODE

ITEM	UNIT	SYMBOL	CHARACTERISTIC	CONDITION
Operating Temperature Range	°C		-55 ~+155	
Storage Temperature Range	°C		5~+40	

Note

- 1) This is the maximum voltage that may be continuously supplied to the resistor element, "IEC publication 60115-8"
- 2) Max. Operation Voltage : So called RCWV (Rated Continuous Working Voltage) is determined by

$$RCWV = \sqrt{\text{Rated Power} \times \text{Resistance Value}}$$
or Max. RCWV listed above, whichever is lower.
- 3) Max. Operation Current : So called RCWC (Rated Continuous Working Current) is determined by
- 4) $RCWC = \sqrt{\text{Rated Power} / \text{Resistance Value}}$

ELECTRICAL CHARACTERISTICS - Ta = 25°C, FOR DIFFERENT PART CODE

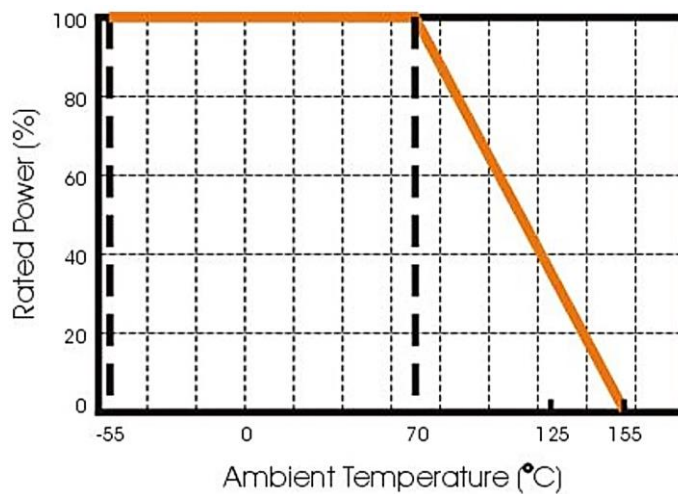
NextGen Part Code	Original Part Number	Resistance Tolerance	Resistance Range	Temp. Coefficient Rate (TRC)	Max. Dissipation @Tamb 70°C	Max. Operation Voltage (DC or RMS)	Max. Overload Voltage (DC or RMS)
		%	Ω	ppm/°C	W	V	V
CRCR12FA2R4S01	CR12FA2R4	±1.0	2.4	±200	1	250	500
CRCR12FA3R3S01	CR12FA3R3	±1.0	3.3	±200	1	250	500
CRCR12JA10RS01	CR12JA10R	±5.0	10	±200	1	250	500
CRCR12FA18RS01	CR12FA18R	±1.0	18	±100	1	250	500
CRCR12JA18RS01	CR12JA18R	±5.0	18	±100	1	250	500
CRCR12FA22RS01	CR12FA22R	±1.0	22	±100	1	250	500
CRCR12JA75RS01	CR12JA75R	±5.0	75	±100	1	250	500
CRCR12JA100RS1	CR12JA100R	±5.0	100	±100	1	250	500
CRCR12JA330RS1	CR12JA330R	±5.0	330	±100	1	250	500
CRCR12FA2KS001	CR12FA2K	±1.0	2K	±100	1	250	500

PRODUCT CHARACTERIZATION

Standard values of nominal resistance are taken from the E24 & E96 series for resistors with a tolerance Of $\pm 0.1\%$, $\pm 0.5\%$, $\pm 1\%$ & $\pm 5\%$, The values of the E24/E96 series are in accordance with “IEC publication 60063”

DERATING

The power that the resistor can dissipate depends on the operating temperature; see the figure below:



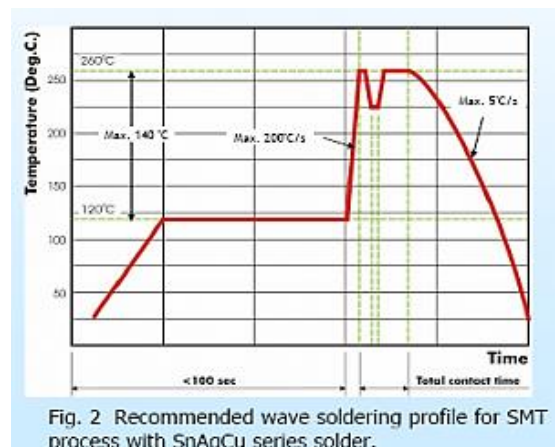
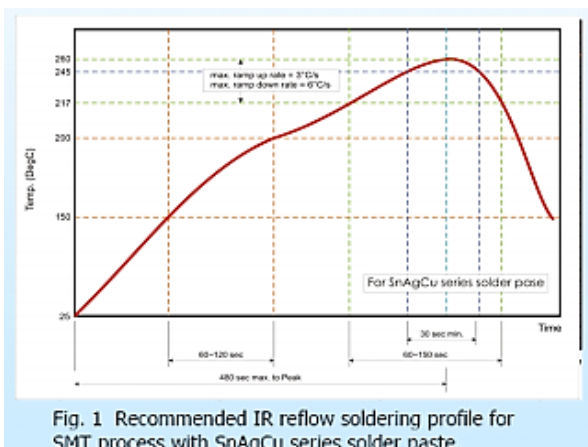
Maximum dissipation in percentage of rated power as a function of the ambient temperature

MOUNTING

Due to their rectangular shapes and small tolerances, Surface Mountable Resistors are suitable for handling by automatic placement systems. Chip placement can be on ceramic substrates and printed-circuit boards (PCBs). Electrical connection to the circuit is by individual soldering condition. The end terminations guarantee a reliable contact.

REFLOW SOLDERING CONDITION

The robust construction of chip resistors allows them to be completely immersed in a solder bath of 260 °C for 10 seconds. Therefore, it is possible to mount Surface Mount Resistors on one side of a PCB and other discrete components on the reverse (mixed PCBs). Surface Mount Resistors are tested for solderability at 235 °C during 2 seconds. The test condition for no leaching is 260°C for 30 seconds. Typical examples of soldering processes that provide reliable joints without any damage are given in below.



TEST AND REQUIREMENTS

Essentially all tests are carried out according to the schedule of IEC publication 115-8, category LCT/UCT/56 (rated temperature range: Lower Category Temperature, Upper Category Temperature; damp heat, long term, 56 days). The testing also meets the requirements specified by EIA, EIAJ and JIS. The tests are carried out in accordance with IEC publication 68, "Recommended basic climatic and mechanical robustness testing procedure for electronic components" and under standard atmospheric conditions according to IEC 60068-1, subclause 5.3. Unless otherwise specified, the following value supplied

Temperature: 15 °C to 35 °C ; Relative humidity: 45% to 75%.

Air pressure: 86kPa to 106 kPa (860 mbar to 1060 mbar).

All soldering tests are performed with mildly activated flux

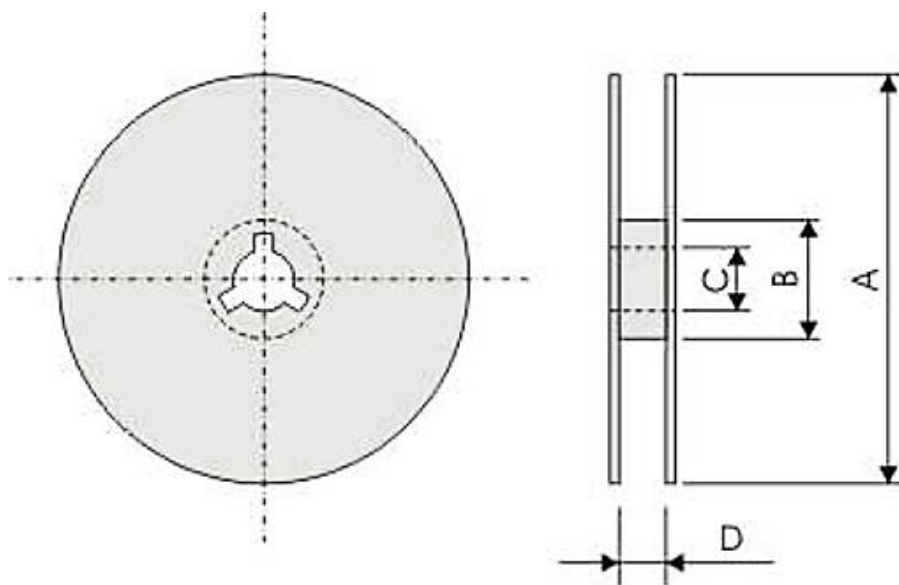
TEST AND REQUIREMENT (JIS C 5201-1 : 1998)

TEST	PROCEDURE / TEST METHOD	REQUIREMENT
DC resistance Clause 4.5	DC resistance values measured at the test voltages specified below : <10Ω@0.1V, <100Ω@0.3V, <1KΩ@1.0V, <10KΩ@3V, <100KΩ@10V, <1MΩ@25V, <10MΩ@30V	Within the specified tolerance
Temperature Coefficient of Resistance(T.C.R) Clause 4.8	Natural resistance change per change in degree centigrade. $\frac{R_2 - R_1}{R_1(t_2 - t_1)} \times 10^6 \text{ (ppm/}^\circ\text{C)}$ t1 : 20°C+5°C-1°C R1 : Resistance at reference temperature R2: Resistance at test temperature	Refer to "QUICK REFERENCE DATA"
Short time overload (S.T.O.L) Clause 4.13	Permanent resistance change after a 5second application of a voltage 2.5 times RCWV or the maximum overload voltage specified in the above list, whichever is less.	Δ R/R max. ±(2%+0.1Ω)
Resistance to soldering heat(R.S.H) Clause 4.18	Un-mounted chips completely immersed for 10±1second in a SAC solder bath at 260 ±5°C	Δ R/R max.±(1%+0.05Ω) No visible damage
Solderability Clause 4.17	Un-mounted chips completely immersed for 2±0.5second in a SAC solder bath at 235°C±5°C	Good tinning (>95% covered) No visible damage
Temperature cycling Clause 4.19	30 minutes at -55°C±3°C, 2~3 minutes at 20°C+5°C-1°C, 30 minutes at +155°C±3°C, 2~3 minutes at 20°C+5°C-1°C, total 5 continuous cycles	Δ R/R max. ±(1%+0.05Ω) No visible damage
Load Life (Endurance) Clause 4.25	1000 +48/-0 hours, loaded with RCWV or Vmax in chamber controller 70±2°C, 1.5 hours on and 0.5 hours off	Δ R/R max. ±(3%+0.1Ω)
Load life in Humidity Clause 4.24	1000 +48/-0 hours, loaded with RCWV or Vmax in humidity chamber controller at 40°C±2°C and 90~95% relative humidity, 1.5hours on and 0.5 hours off	Δ R/R max. ±(3%+0.1Ω)

TEST AND REQUIREMENT (JIS C 5201-1 : 1998)

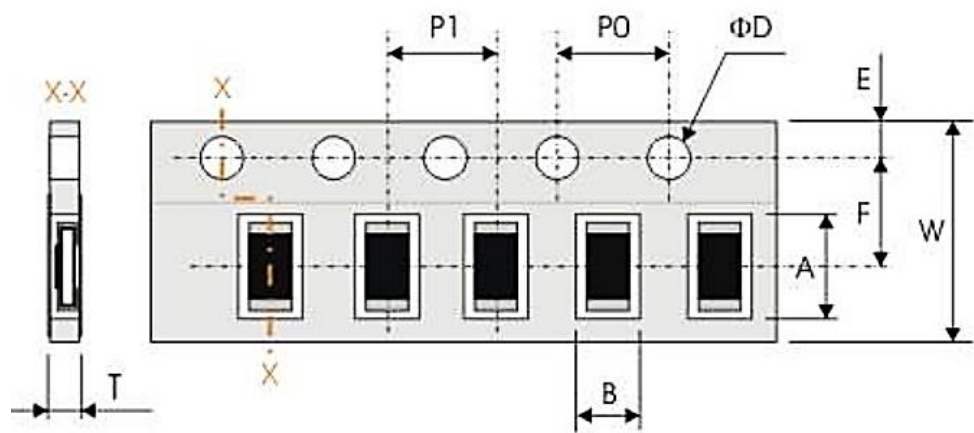
TEST	PROCEDURE / TEST METHOD	REQUIREMENT
Bending strength Clause 4.33	Resistors mounted on a 90mm glass epoxy resin PCB(FR4); bending : 2 mm, once for 10 seconds.	$\Delta R/R$ max. $\pm(1\%+0.05\Omega)$
Adhesion Clause 4.32	Pressurizing force: 5N, Test time: 10 ± 1 sec.	No remarkable damage or removal of the terminations.
Insulation Resistance Clause 4.6	Apply the maximum overload voltage (DC) for 1 minute	$R \geq 10G\Omega$
Dielectric Withstand Voltage Clause 4.7	Apply the maximum overload voltage (AC) for 1 minute	No breakdown or flashover

REEL DIMENSION (Unit: mm),



CODE	DIMENSION 7" Reel	DIMENSION 10" Reel	DIMENSION 13" Reel
A	$\varnothing 178.0 \pm 2.0$	$\varnothing 254.0 \pm 2.0$	$\varnothing 330.0 \pm 2.0$
B	$\varnothing 60.0 \pm 1.0$	$\varnothing 100 \pm 1.0$	$\varnothing 100 \pm 1.0$
C	13.0 ± 0.20	13.0 ± 0.20	13.0 ± 0.20
D	$12.4.0 \pm 1.00$	14.0 ± 0.20	14.0 ± 0.20

TAPE DIMENSION (Unit: mm)



CODE	DIMENSION
A	6.90±0.20
B	3.60±0.20
W	12.00±0.30
F	5.50±0.10
E	1.75±0.10
P 1	4.00±0. 10
P0	4.00±0.10
ΦD	1.50+0.10/-0.0
T	1.20 Max.

TAPING QUANTITY

Tape	Paper Tape		
	2 mm Pitch		
Reel Size	7"	10"	13"
CR12 Series	4000	8000	16000

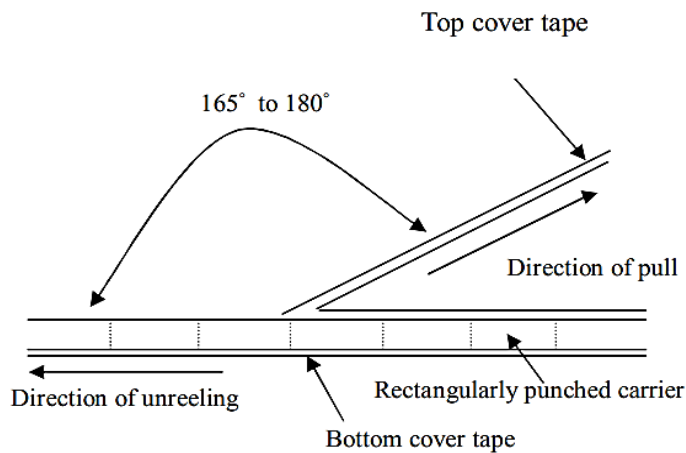
PERFORMANCE OF TAPING

Strength of Carrier Tape and Top Cover Tape

Carrier Tape: When a tensile force 1.02kgf is applied in the direction of unreeling the tape, the tape shall withstand this force. Top cover Tape: When a tensile force 1.02kgf is applied to the tape, the tape shall withstand this force.

Peel Force of Top Cover Tape

Unless otherwise specified, the peel force of top cover tape shall be 10.2 to 71.4 g f when the top cover tape is pulled at a speed of 300mm/min with the angle between the taped during peel and the direction of unreeling maintained at 165 to 180° as illustrated in Fig.



CAUTION

- Don't apply excess mechanical stress to the component and terminals at soldering. Do not use this product with bend.
- Do not clean or wash the component for it is not hermetically sealed.
- Do not use strong acidity flux, more than 0.2wt% chlorine content, in flow soldering.
- Don't be close to fire.
- This specification mentions the quality of the component as a single unit. Please insure the component is thoroughly evaluated in your application circuit
- Expire date (Shelf life) of the products is 12 months after delivery under the conditions of a sealed and an unopened package. Please use the products within 12 months after delivery. If you store the products for a long time (more than 12 months), use carefully because the products may be degraded in the solder-ability or rusty. Please confirm solder-ability and characteristics for the products regularly.
- Exposure components under soldering condition that is exceeding our recommendation will increase the failure dangerous.
- Please contact us before using the product as automobile electronic component.
- Please return one of these specifications after your signature of acceptance.
- When something gets doubtful with this specifications, we shall jointly work to get an agreement.
- For questions on technology, prices and delivery, please contact our sales offices or e-mail:

sales@NextGenComponent.com .

IMPORTANT NOTES AND DISCLAIMER

1. **ROHS COMPLIANCE:** The levels of RoHS restricted materials in this product are below the maximum concentration values (also referred to as the threshold limits) permitted for such substances, or are used in an exempted application, in accordance with EU RoHS Directive (EU) 2015/863 EC (RoHS3). RoHS Test Report for this product can be obtained at Download Center.
2. **REACH COMPLIANCE:** REACH substances of high concern (SVHCs) information is available for this product. Since the European Chemical Agency (ECHA) has published notice of their intent to frequently revise the SVHC listing for the foreseeable future, REACH Test Report for this product can be obtained at Download Center.
3. All Product parametric performance is indicated in the Electrical Characteristics for the listed herein test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.
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