CR63 Series

Features:

1) Rated power 1.0W.
2) Nominal resistor values from 1Ω to 1MΩ.
3) EIA chip size 2512.

How To Order:

CR 63 – 562 J – UE

Packaging
B = Bulk (100 pcs/bag)
UE = 7" Reel/Embossed Plastic Tape (4,000 pcs/reel)

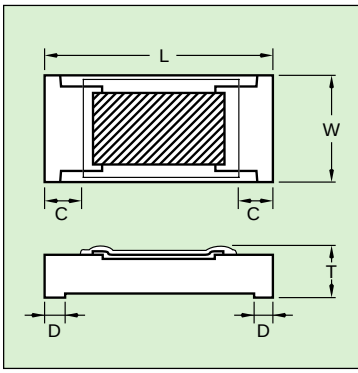
Resistance Tolerance
K = ±10%
J = ±5%

Resistance Code
For J and K Tolerances
3 digit code (E-24)
2 significant digits plus number of zeros
Examples:
2.2Ω = 2R2
10Ω = 100
100Ω = 101
1kΩ = 102

Case Size
63 = 2512

Style
CR = Chip Resistor

Dimensions:



	CR63	
L	6.30 ±0.20	(.248±.008)
W	3.20 ±0.20	(.126±.008)
T	0.60±0.20	(.024±.008)
C	0.45±0.20	(.018±.008)
D	0.45±0.20	(.018±.008)

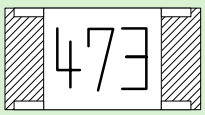
mm (inches)

Chip Resistor Ratings

Spec \ Style	CR63 (2512)	
Power	1.0W	
Voltage	200V max.	
Tolerance	J (±5%)	K (±10%)
Value Range	1.0Ω J 1 MΩ	
Working Temperature	–55°C ~ +125°C	

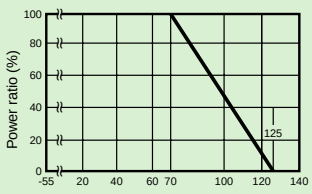
Marking

Marking available as follows:
Series: CR63
3 digit indication
Example: 473 = 47 X 10^3= 47000 Ω = 47 kΩ
100 : 10 Ω
102 : 1 kΩ
105 : 1 MΩ



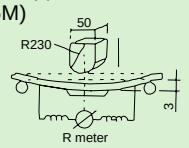
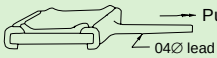
Derating Curve

Under high temperature, power must not exceed derating curve.



Specifications and Test Methods for Chip Resistors and Arrays

Mechanical Characteristics

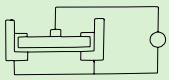
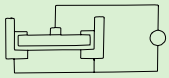
Item		Specification		Test Method
			Jumpers	
Terminal Strength	ΔR/R	≤ ± (1% + 0.05Ω) of initial value	R ≤ 50mΩ	Apply the load as shown: Measure resistance during load application. PC board: glass-epoxy (T=1.6M) CR/CJ32: 3mm CR/CJ21: 3mm CR/CJ10: 3mm CR/CJ05: 3mm 
	Visual	No evidence of mechanical damage after loading		
	Breaking strength	Lead Pull > 0.5kg		fixed  Except for CRA, CR05
Resistance to Soldering Heat	ΔR/R	≤ ± (1 + 0.05Ω) of the initial value		Immerse into molten solder at 260±5°C for 10±1 sec. Stabilize at room temperature for 60 min. Measure resistance.
	Visual	Visual: no evidence of leaching		
Solderability		Coverage ≥95% Each termination end		Immerse for 2 ± 0.5 sec. in Sn62 solder at 235 ± 5°C
Anti-vibration Test	ΔR/R	≤ ± (1% + 0.1Ω) of the initial value	R ≤ 50mΩ	2 hrs. each in x, y and z axis. (total 6 hrs.) 10 to 55Hz sweep in 1 min at 1.5mm amplitude.
	Visual	No evidence of mechanical damage		
Solvent Resistance	ΔR/R	≤±(0.5% + 0.05Ω) of the initial value	R ≤ 50mΩ	Immerse in static state trichloroethylene at 20° to 25°C for 30±5 sec. Dry in air @ 25°C for 30 minutes. Measure resistance.
	Visual	No evidence of mechanical damage		

Environmental Characteristics

Item		Specification		Test Method
			Jumpers	
Low Temperature Storage	ΔR/R	≤ ± (2% + 0.1Ω) of the initial value	R ≤ 50mΩ	Dwell in -65°C chamber without loading for 1000 +48/-0 hrs Stabilize at room temperature for 60 min. Measure resistance value.
	Visual	No evidence of mechanical damage		
High Temperature Exposure	ΔR/R	≤±(3% + 0.1Ω) of the initial value	R ≤ 50mΩ	Dwell in 125°C chamber for 1,000 +48/-0 hrs. without loading. Stabilize at room temperature for 60 minutes. Measure resistance value
	Visual	No evidence of mechanical damage		
Temperature Cycle	ΔR/R	≤±(1%+0.05Ω) of the initial value	R ≤ 50mΩ	① Perform 5 cycles as follows: -55±3°C for 30 min. →room temp. for 10~15 min. ⇔125±3° for 30 min. ② Stabilize at room temperature for 1 hr, then measure value.
	Visual	No evidence of mechanical damage		
Moisture Resistance	ΔR/R	≤±(3% + 0.1Ω) of the initial value	R ≤ 50mΩ	Dwell in test chamber at +65°C, and 90-95% RH for 1000 +48/-0 hours Stabilize at room temperature for 60 min. Measure resistance value.
	Visual	No evidence of mechanical damage		
Salt Spray	ΔR/R	≤±(3%+0.1Ω) of the initial value	R ≤ 50mΩ	Dwell in temp. 35±2°C Salt density 5% for 24 ±2 hrs.
	Visual	No evidence of mechanical damage		
Voltage Cycle in High Temperature	ΔR/R	≤±(3% + 0.1Ω) of the initial value	R ≤ 50mΩ	① Perform 1,000 +48/-0 hrs. in chamber (70±3°C) ON: 90 min. at rated voltage; OFF: 30 min. ② Stabilize at room temperature for 1 hr., then measure value.
	Visual	No evidence of mechanical damage		
Voltage Cycle in High Humidity	ΔR/R	≤±(3% + 0.1Ω) of the initial value	R ≤ 50mΩ	① Perform 1,000 +48/-0 hrs. in chamber (40 ±2°C, 90~95%RH) ON: 90 min. at rated voltage; OFF: 30 min. ② Stabilize at room temperature for 1 hr., then measure value.
	Visual	No evidence of mechanical damage		

Specifications and Test Methods for Chip Resistors and Arrays

Electrical Characteristics

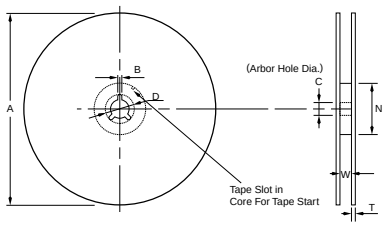
Item		Specification	Jumpers	Test Method
DC Resistance		Within initial tolerance	R≤50mΩ	Test Voltage (20°C, 65% RH): Range of resistance (Ω) / Maximum voltage to be applied: R<10: 0.1 (V); 10≤R<100: 0.3 (V); 100≤R<1K: 1.0; 1K≤R<10K: 3; 10K≤R<100K: 10; 100K≤R<1M: 35; 1M≤R: 50
Resistance Temperature Characteristic		CR Series See Page 2 CRA Series See Page 6		Test temperature: - 55°C ~ 125°C $\Delta R/R = \frac{R_2-R_1}{R_1} \times \frac{1}{T_2-T_1} \times 10^6$ ΔR/R: Temp. coefficient (ppm/°C) T_1: 25 °C T_2: 125 °C R_1: Resistance at T1 (Ω) R_2: Resistance at T2 (Ω)
Short-time Overload	ΔR/R	≤± (2.0% + 0.1Ω) of the initial value	R ≤50mΩ	① Apply 2.5 x rated voltage (rated current: Jumper Chip) for 5 sec. ② Wait 30 minutes ③ Measure resistance {CR32: 400V Max; CR21: 200V Max; CR10: 100V Max; CR05: 50V Max; CRA: 50V Max}
	Visual	No evidence of mechanical damage		
Intermittent Overload	ΔR/R	≤± (5% + 0.1Ω) of the of the initial value	R ≤50mΩ	①Perform 10000 voltage cycles as follows ON (2.5 x rated voltage or current) 1 sec. OFF 25 sec. ② Stabilization time 30 min. without loading ③ Measure resistance {CR32: 400V Max; CR21: 200V Max; CR10: 100V Max; CR05: 50V Max; CRA: 50V Max}
	Visual	No evidence of mechanical damage		
Dielectric Withstanding Voltage		No evidence of mechanical damage		For CR32 & CR21 apply 500VAC for 1 min. For CRA and CR05 apply 300VAC for 1 sec. For CR10 apply 300VAC for 1 min. 
Insulation Resistance		•CR05: 10^8Ω Min •CR10: 10^9Ω Min •CR21: 10^{10}Ω Min •CR32: 10^{12}Ω Min •CRA: 10^9Ω Min	•CJ05: 10^8Ω Min •CJ10: 10^9Ω Min •CJ21: 10^{10}Ω Min •CJ32: 10^{12}Ω Min •CJA: 10^9Ω Min	For CR32, CR21, CR10 CJ32, CJ21, CJ10 apply 500VDC For CRA, CR05 CJA, CJ05 apply 100VDC 
Noise Level		Resistance / Noise: R<100Ω: -10dB (0.32μV/V); 100Ω≤R<1KΩ: 0dB (1.0μV/V); 1KΩ≤R<10KΩ: 10dB (3.2μV/V); 10KΩ≤R<100KΩ: 15dB (5.6μV/V); 100KΩ≤R<1MΩ: 20dB (10μV/V); 1MΩ≤R: 30dB (32μV/V)		Refer to JIS C5202 5.9 Measurement method of noise level Except CR05, CRA

Automatic Insertion Packaging

Tape & Reel Quantities (Punched Paper Tape)

Style	CR05	CR10, CR21, CR32
Punched Carrier	8mm	8mm
Pieces/7" Reel	10,000	5,000
Pieces/10" or 13" Reel	NA	10,000

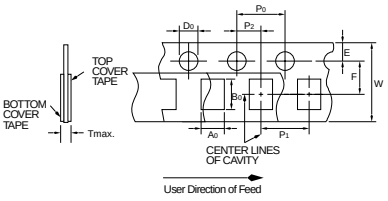
Reel Dimensions (Metric dimensions will govern)



Tape Size	A Max.	B Min.	C	D Min.	N Min.	W	T Max.
8mm	178 (7)	1.5 (.059)	13.0±0.50 (.512±.020)	20.2 (.795)	50 (1.969)	10.0±1.5 (.394±.060)	2.5 (.098)
	260 (10)						
	330 (13)						

Metric dimensions will govern. mm (inch)
English measurements rounded and for reference only.

Punched Tape Configuration
8mm Tape Only (Metric dimensions will govern, inches are in parentheses)



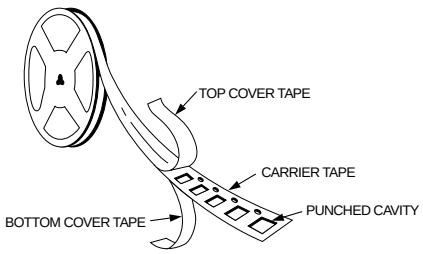
Constant Dimensions

Tape Size	D_0	E	P_0	P_2	W	F
8mm	$1.5^{+0.1}_{-0.0}$ ($.059^{+.004}_{-.000}$)	1.75±0.10 (.069±.004)	4.0±0.10 (.157±.004)	2.0±0.05 (.079±.002)	8.0±0.2 (.315±.008)	3.5±0.05 (.138±.002)

Variable Dimensions

Style	P_1	A_0	B_0	$T_{MAX.}$
CR/CJ05	2.0±0.1 (.079±.004)	0.65±0.10 (.026±.004)	1.15±0.10 (.045±.004)	0.6 (.024)
CR/CJ/FR10	4.0±0.1 (.157±.004) or 2.0±0.1 (.079±.004)	1.1±0.20 (.043±.008)	1.9±0.20 (.075±.008)	1.1 (.043)
CR/CJ/FR21	4.0±0.10 (.157±.004)	1.65±0.20 (.065±008)	2.4±0.20 (.094±.008)	
CR/CJ/FR32		2.0±0.20 (.079±.008)	3.6±0.20 (.142±.008)	
CRA3A CRB3A CRC3A				
CRA1A CRB1A CRC1A		1.9±0.20 (.079±.008)	1.9±0.20 (.079±.008)	
CRB2A	2.0±0.1 (.079±.004)	1.25±0.2 (.049±.008)	2.5±0.2 (.098±.008)	

Punched Carrier



Bulk Packaging

1) Package: 100 × 60mm Plastic bag
2) Unit: 1,000 pcs/bag
3) Label includes the following:
   - Part Number
   - Quantity
   - Lot Number