CAR Series

Thin Film Precision Chip Resistor

- **Resistances from 1 Ohm to 3M Ohms**
- **Power Rating 0.06 to 0.75 Watt**
- **Resistance Tolerances to ± 0.01%**
- **TCR's to ±1 ppm/°C**
- **Sizes: 0402 /0603 / 0805 / 1206 / 2010 / 2512**
- **Operating Temperature: -55°C to 155°C**

SPECIFICATIONS - STANDARD / HIGH POWER (HP)

Package Size	Power Rating (W) at 70°C	MAX Operating Voltage[1]	MAX Overload Voltage[2]	Resistance Range (E24/E96)*						TCR PPM/°C
				±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
0402	0.0625	25V	50V	49.9Ω - 4.99KΩ			-			±1, ±2, ±3
				49.9Ω - 20KΩ						±5
				49.9Ω - 20KΩ		49.9Ω - 100KΩ				±10
						49.9Ω - 69.8KΩ				±15
				-	49.9Ω - 12KΩ	10Ω - 511KΩ	4.7Ω - 511KΩ			±25. ±50
0603	0.0625	50V	100V	24.9Ω - 15KΩ			-			±1, ±2, ±3
				24.9Ω - 60KΩ						±5
				24.9Ω - 100KΩ	4.7Ω - 332KΩ	4.7Ω - 511KΩ				±10, ±15
				-		4.7Ω - 1MΩ	1Ω - 1MΩ			±25, ±50
0603 HP	0.100	75V	150V	24.9Ω - 15KΩ			-			±1, ±2 ±3
				24.9Ω - 15KΩ						±5
				24.9Ω - 100KΩ	4.7Ω - 332KΩ	4.7Ω - 332KΩ				±10, ±15
						4.7Ω - 1MΩ				±25, ±50
0805	0.100	100V	200V	24.9Ω - 30KΩ			-			±1, ±2, ±3
				24.9Ω - 150KΩ						±5
				24.9Ω - 200KΩ	4.7Ω - 1MΩ					±10, ±15
				-	4.7Ω - 1MΩ	4.7Ω - 2MΩ	1Ω - 2MΩ			±25, ±50
0805 HP	0.125	150V	300V	24.9Ω - 30KΩ			-			±1, ±2, ±3
				24.9Ω - 30KΩ						±5
				24.9Ω - 200KΩ	4.7Ω - 511KΩ	4.7Ω - 511KΩ				±10
						4.7Ω - 1MΩ				±15
						4.7Ω - 1MΩ	1Ω - 1MΩ			±25, ±50
1206	0.125	150V	300V	24.9Ω - 49.9KΩ			-			±1, ±2, ±3
				24.9Ω - 300KΩ						±5
				24.9Ω - 499KΩ	4.7Ω - 1.5MΩ					±10, ±15
				-	4.7Ω - 1MΩ	4.7Ω - 2.49MΩ	1Ω - 2.49MΩ			±25, ±50
1206 HP	0.250	200V	400V	24.9Ω - 49.9KΩ			-			±1, ±2, ±3
				24.9Ω - 49.9KΩ						±5
				24.9Ω - 499KΩ	4.7Ω - 1MΩ					±10, ±15, ±25, ±50

[1] Operating Voltage = $\sqrt{(P*R)}$ or MAX Listed, whichever is lower. | [2] Overload Voltage = $2.5*\sqrt{(P*R)}$ or MAX Listed, whichever is lower. | * E24/E96 Consult Factory for available values

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CAR Series

Thin Film Precision Chip Resistor

SPECIFICATIONS - STANDARD / HIGH POWER (HP) continued

Package Size	Power Rating (W) at 70°C	MAX Operating Voltage[1]	MAX Overload Voltage[2]	Resistance Range (E24/E96)*						TCR PPM/°C
				±0.01%	±0.05%	±0.1%	±0.25%	±0.5%	±1%	
2010	0.250	150V	300V	24.9Ω - 100KΩ			-			±1, ±2, ±3
				24.9Ω - 300KΩ						±5
				24.9Ω - 499KΩ	4.7Ω - 1MΩ					±10, ±15
				-	4.7Ω - 1MΩ	4.7Ω - 3MΩ	1Ω - 3MΩ			±25, ±50
2010 HP	0.333	200V	400V	24.9Ω - 49.9KΩ			-			±1, ±2, ±3
				24.9Ω - 49.9KΩ						±5
				24.9Ω - 499KΩ	4.7Ω - 1MΩ					±10, ±15, ±25, ±50
2512	0.500	150V	300V	24.9Ω - 100KΩ			-			±1, ±2, ±3
				24.9Ω - 300KΩ						±5
				24.9Ω - 499KΩ	4.7Ω - 1MΩ					±10, ±15
				-	4.7Ω - 1MΩ	4.7Ω - 3MΩ	1Ω - 3MΩ			±25, ±50
2512 HP	0.750	200V	400V	24.9Ω - 2KΩ	4.7Ω - 2KΩ		1Ω - 2KΩ			±10, ±15, ±25, ±50

[1] Operating Voltage = $\sqrt{(P * R)}$ or MAX Listed, whichever is lower. | [2] Overload Voltage = 2.5 * $\sqrt{(P * R)}$ or MAX Listed, whichever is lower. | * E24/E96 Consult Factory for available values

Environmental Characteristics

Test	Requirement		Conditions
	Tol. ≤ 0.05%	Tol. >0.05%	
TCR	As Spec.		+25/-55/+25/+125/+25°C
Short Time Overload	ΔR±0.05%	ΔR±0.2%	RCWV*2.5 or Max. overload voltage for 5 seconds
	ΔR±0.2% for high power rating		
Insulation Resistance	>1000 MΩ		Apply 100VDC for 1 minute
Load Life	ΔR±0.05%	ΔR±0.2%	70±2°C, Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	>7kΩ ΔR±0.5%		
	ΔR±0.5% for high power rating		
Damp Heat with Load	ΔR±0.05%	ΔR±0.3%	40±2°C, 90~95% R.H. Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hrs "OFF"
	ΔR±0.5% for high power rating		
Bending Strength	ΔR±0.05%	ΔR±0.2%	Bending amplitude 3 mm for 10 seconds
Solderability Terminal Finish = Nickel Tin	95% min. coverage		245±5°C for 3 seconds
Resistance to Soldering Heat	ΔR±0.05%	ΔR±0.2%	260±5°C for 10 seconds
Thermal Shock	ΔR±0.05%	ΔR±0.25%	-55°C~150°C, 100 cycles
Low Temperature Operation	ΔR±0.05%	ΔR±0.2%	1 hour, -65°C, followed by 45 minutes of RCWV
	ΔR±0.5% for high power rating		
Terminal Finish	Tin/Nickel		

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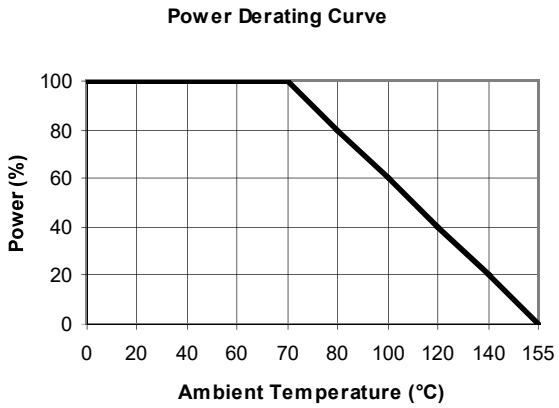
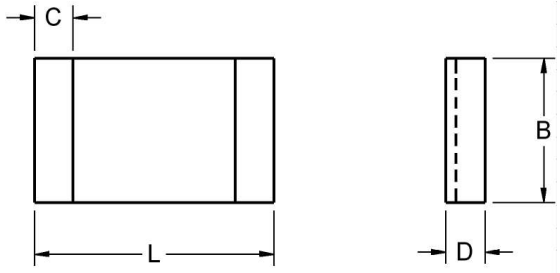
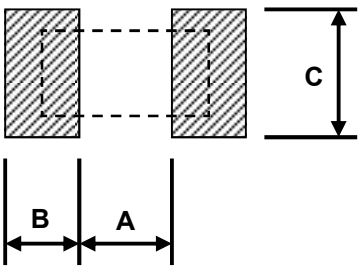




Dimensions (mm)					
Type	**L**	**B**	**D**	**C**	**Mass (grams/1k)**
CAR0402	1.00 ± 0.05	0.50 ± 0.05	0.30 ± 0.05	0.20 ± 0.10	0.54
CAR0603	1.55 ± 0.10	0.80 ± 0.10	0.45 ± 0.10	0.30 ± 0.20	1.83
CAR0805	2.00 ± 0.15	1.25 ± 0.15	0.55 ± 0.10	0.30 ± 0.20	4.71
CAR1206	3.05 ± 0.15	1.55 ± 0.15	0.55 ± 0.10	0.42 ± 0.20	9.02
CAR2010	4.90 ± 0.15	2.40 ± 0.15	0.55 ± 0.10	0.60 ± 0.30	23.61
CAR2512	6.30 ± 0.15	3.10 ± 0.15	0.55 ± 0.10	0.6 ± 0.30	38.06



Recommended Land Pattern (mm)			
Type	**A**	**B**	**C**
CAR0402	0.50	0.50	0.60 ± 0.2
CAR0603	0.80	0.80	0.90 ± 0.2
CAR0805	1.00	1.00	1.35 ± 0.2
CAR1206	2.00	1.15	1.70 ± 0.2
CAR2010	3.60	1.40	2.50 ± 0.2
CAR2512	4.90	1.60	3.10 ± 0.2

Ordering Information

Part Description: Part Type - Package Size- Resistance - Tolerance - TCR - HP option

Example: CAR0402 50 Ohms 0.05% 25ppm HP

(Note: if no TCR is specified: The highest value will be supplied)

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