

# CAR Series

Thin Film Precision Chip Resistor



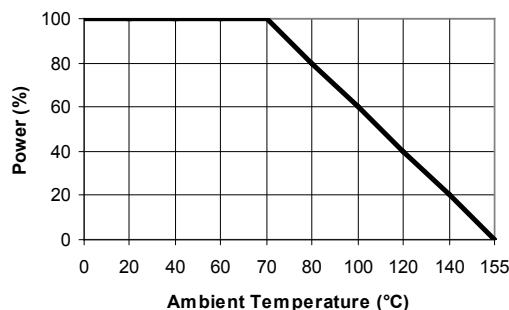
- Resistances from 1 Ohm to 2MOhms
- Power Rating 0.06 to 0.5 Watt
- Resistance Tolerances to  $\pm 0.01\%$
- TCR's to  $\pm 5$  ppm/K
- Sizes: 0201 / 0402 / 0603 / 0805 / 1206 / 1210 / 2010 / 2512

## SPECIFICATIONS

Type	CAR0201	CAR0402	CAR0603	CAR0805	CAR1206	CAR1210	CAR2010	CAR2512	
Power Rating (W) at 70°C	1/32	0.0625	0.0625	0.1	0.125	0.2	0.25	0.5	
High Power Rating (W) at 70°C	-	-	1/10	1/8	1/4	1/3	1/3	3/4	
Standard Resistance Range ( $\Omega$ ) Low TCR Resistance Range ( $\Omega$ )	50 to 33k -	50 to 205k 50 to 70k	1 to 1M 5 - 332k	1 to 2M 5 to 511k	1 to 2.5M 5 to 1M		1 to 3M 5 to 1M		
Operating Temperature	-55 - +155°C								
MAX Operating Voltage <sup>1</sup>	15V	25V	50V	100V	150V				
MAX Overload Voltage <sup>2</sup>	30V	50V	100V	200V	300V				
Tolerances (depending on value)	0.01% / 0.05% / 0.1% / 0.25% / 0.5% / 1%								
Temperature Coefficient (depending on value)	$\pm 5$ to $\pm 50$								
Dimensions (LxWxT) mm [inches]	0.58 x 0.29 x 0.23 [0.02 x 0.01 x 0.01]	1.00 x 0.50 x 0.3 [0.04 x 0.02 x 0.012]	1.55 x 0.80 x 0.45 [0.06 x 0.03 x 0.018]	2.00 x 1.25 x 0.55 [0.08 x 0.05 x 0.022]	3.05 x 1.55 x 0.55 [0.12 x 0.06 x 0.022]	3.10 x 2.40 x 0.55 [0.12 x 0.10 x 0.022]	5.00 x 2.50 x 0.55 [0.20 x 0.10 x 0.022]	6.30 x 3.10 x 0.55 [0.25 x 0.12 x 0.022]	
Packaging (pcs) Tape and Reel	10,000		5,000			4,000			

<sup>1</sup> Operating Voltage =  $\sqrt{P \cdot R}$  or MAX Listed, whichever is lower.  
<sup>2</sup> Overload Voltage =  $2.5 \cdot \sqrt{P \cdot R}$  or MAX Listed, whichever is lower.

Power Derating Curve



## Ordering Information

Part Number - Resistance - Tolerance - TCR - Packaging

Example: CAR 0402 50Ohms 0.05% 25ppm

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

## Environmental Characteristics

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