CR50 0.5W Carbon Film Resistors

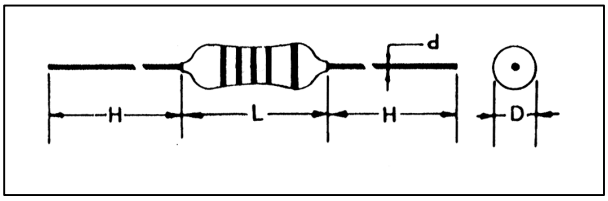
Truohm – CR50 Series

Introduction

The earliest and most popular type of resistor is carbon film resistor which can be used in almost all kinds of electronic products. The resistive element is a high grade ceramic rod on which a homogenous film of pure carbon is deposited by vacuum heating process to produce electrical conductivity on the surface. Fully automation and mass production on capping, sorting, cutting, welding, coating and double-checking which ensures stable quality, high reliability and economic cost.

Features

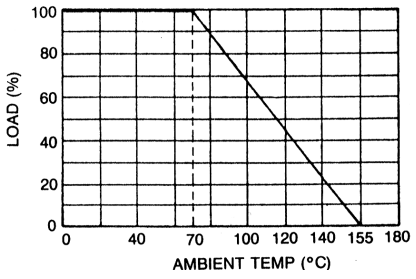
- Meets requirements of JIS-C-5202 and MIL-R-22684B
- Quicker dissipation of heat
- Lower temperature rise
- Small shelf life drift
- Tolerance of 5%
- Wattage 0.5W ($^1/_2$W)
- Resistance range of 4.7Ω up to 4.7MΩ



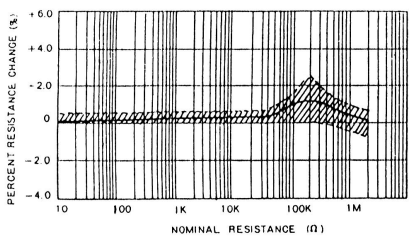
Specifications

Type	Power Rating @70ºC	Dimensions (mm)				Maximum Working Voltage	Maximum Overload Voltage	Resistance Range
		L	D	H	d			
CR-50S	0.5W	8.5 ±0.5	2.7 ±0.5	28 ±2	0.60 ±0.05	350V	700V	4.7Ω - 4.7MΩ

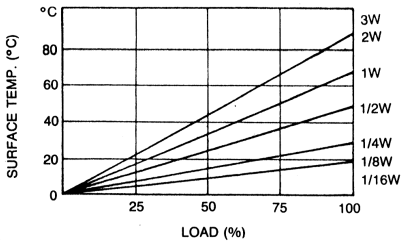
Derating Curve



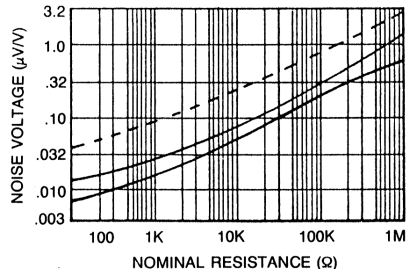
Load Stability 1000 Hours



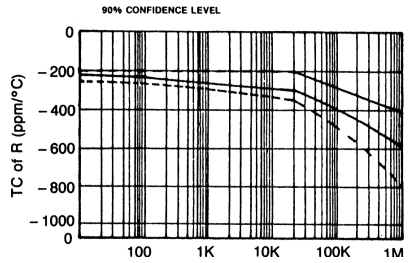
Surface Temperature Rise



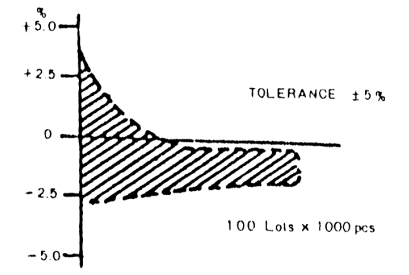
Current Noise



Temperature Coefficient



Resistance Distribution



Characteristics:

Test	Test Method	Limits
Short-Time Overload	Resistors shall be tested at 2.5 times rated voltage for 5 seconds at ambient room temperature	Resistance shall not change more than ±0.5% No evidence of mechanical damage
Terminal Strength	Pull a resistor with a weight of 1kg for 30 seconds. Bend the terminal lead wire with 500g weight to 90 degree and bend it to 90 degree in opposite direction and return to normal	Resistance shall not change more than ±0.3% or 0.5Ω. No evidence of mechanical damage
Resistance To Soldering Heat	Immerse each terminal wire of a resistor up to 4 ±0.8mm away from the resistor body in the solder tank at 350 ±10ºC for 3 ±0.5 seconds. Measure resistance in 3 hours	Resistance shall not change more than ±0.5% or 0.5Ω. No evidence of mechanical damage
Moisture Resistance	At temperature of 40 ±2ºC and a relative humidity of 90-95% for 1000 ± 12 hours, under a rating DC voltage for 1 hour on and ½ hour off	Resistance shall not change more than ±3% No evidence of mechanical damage
Load Life	Thermostatic chamber at a temperature of 70 ±5ºC under a rated DC voltage for 1.5 hours on and ½ hour off, repeat this cycle for 1000 ±12 hours	Resistance shall not change more than ±2.5% No evidence of mechanical damage
Insulation Resistance	Resistors shall be clamped in the trough of a 90 degree metallic V-block, apply DC 100V between this electrode and another lead wire for 1 minute	10,000 MΩ above
Noise	Quad-Tech Laboratories Inc. Model 515B	100KΩ below 0.3μ V/V 100KΩ - 1MΩ below 0.5μ V/V 1MΩ - 5.6MΩ 1.0μ V/V
Vibration	Total amplitude of 1.5mm. The frequency shall vary from 10Hz to 55Hz, for approximate 1 second. Make this test in the direction parallel to the resistor axis, and up/down for 2 hours respectively. (all together 6 hours)	Resistance shall not change more than ±0.5% or 0.5.Ω. No evidence of mechanical damage
Dielectric Withstanding Voltage	Resistors shall be clamped in the trough of a 90 degree metallic V-block, apply AC between this electrode and another lead wire for 1 minute	Resistance shall not change more than ±0.5% No evidence of mechanical damage
Resistance To Solvents	Immerse a resistor completely in reagent at a temperature of 20-25ºC for 30 ±0.5 seconds	No evidence of mechanical damage
Solderability	Apply flux to the terminal wire of a resistor up to 4 ±0.8mm away from the resistor body and immerse the flux applied portion in the solder tank at 230 ±5ºC for 5 ±0.5 seconds	More than 95% of a circumference of the immersed portion shall be completely covered with new solder
Temperature Cycling	STEP 1 2 3 4 TEMP -55ºC 25ºC 155ºC 25ºC TIME 30min 10-15min 30min 10-15min Form 1 to 4 is a cycle as shown above, repeat 5 cycles measure resistance after 1 hour in normal temperature	Resistance shall not change more than ±0.5% No evidence of mechanical damage
Temperature Coefficient	Resistance Temperature Coefficient: $\frac{R-R_o}{R_o} \times \frac{1}{t-t_o} \times 10^6$ ppm/deg Where: t: effective value of test temperature t_o: effective value of standard temperature R: resistance at t ºC R_o: resistance at to ºC	10 Ω below ±200 ppm/ºC 56K Ω below ±300 ppm/ºC 56K-470K Ω -500 ppm/ºC 470k-1M Ω -700 ppm/ºC 1M Ω up –1000 ppm/ºC