

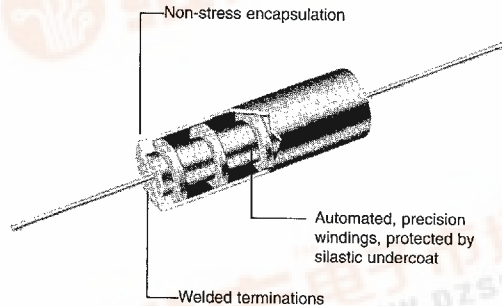


**AXIAL LEAD  
PRECISION WIREWOUND  
RESISTORS**

**HR, VA, SP,  
7000, 8000 SERIES**

**MIL-R-93 (RB) & MIL-R-39005 (RBR)  
& COMMERCIAL STYLES**

- 0.1 ohm to 12 meg ohms
- 0.1 to 1.0 watts
- Tolerance to  $\pm 0.01\%$
- Approved to M, P, & R levels
- TC's from  $\pm 2$  ppm/ $^{\circ}\text{C}$  to  $+6000$  ppm/ $^{\circ}\text{C}$
- Meets or exceeds all applicable MIL-R-93 & MIL -R-39005 ratings



These ultra precision resistors are designed and produced for critical parameter applications. They are available for established reliability military and/or commercial applications requiring state of the art precision and stability.

Construction features may vary slightly between commercial and military styles, but both are produced under the same rigid quality control system required by the tightest military specifications. Both are produced in the same production line using the same highly trained operators required to produce the established reliability product.

Whether military or commercial, all resistors are carefully monitored during assembly, winding, coating, and stabilization procedures to assure high quality standards even when their prescribed parameters are non critical. Premium grade

selected wire is control stress wound on special designed bobbins. All terminations are welded to reduce contact noise and thermal EMF. Extensive accelerated aging programs both before and after calibration assure precise initial accuracy and high resistance stability.

Encapsulation is accomplished by transfer molding with special moisture resistant epoxy or by unique dry air chamber epoxy shell technique for established reliability parts. A resilient inner coating is used to minimize internal stresses on all parts.

The established reliability military parts are burned in 100 hours at  $125^{\circ}\text{C}$  ambient as part of group A acceptance testing. Documentation and special test are available upon customer request to meet your unique requirements.

**MIL-R-39005 SPECIFICATIONS:**

Temperature Range	Standard Temperature Coefficient
-65°C to +145°C	$\pm 10$ ppm/ $^{\circ}\text{C}$ 100 $\Omega$ up
	$\pm 15$ ppm/ $^{\circ}\text{C}$ 10 $\Omega$ to 100 $\Omega$
	$\pm 30$ ppm/ $^{\circ}\text{C}$ 1 $\Omega$ to 10 $\Omega$
	$\pm 90$ ppm/ $^{\circ}\text{C}$ below 1 $\Omega$
	Special Temperature Coefficients Available





**HR, VA, SP, 7000, 8000 SERIES SPECIFICATIONS:**

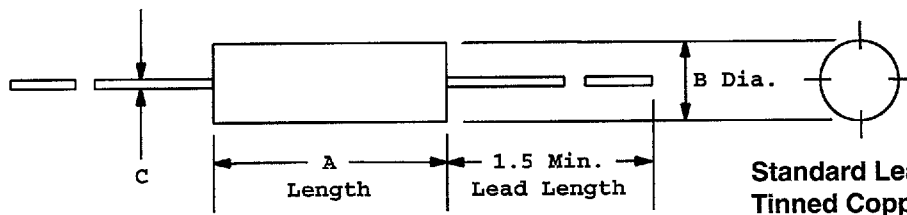
IRC/ Shaltcross Style	MIL-R-93 / 39005 Style	Wattage		Resistance (ohms)			Max. Working Volt (Comm)	Dimensions		
		MIL 125°C	Comm 85°C	Mil		Max		±0.032A	±0.051B	±0.002C
		Inches (mm)	Inches (mm)	Min	Max			Inches (mm)	Inches (mm)	Inches (mm)
7008	---	---	0.150	---	---	1M	300	0.250 (6.3)	0.250 (6.3)	0.025 (0.6)
7009/VA10	RB56	0.125	0.250	0.1	127K	1.4M	200	0.343 (8.7)	0.250 (6.3)	0.032 (0.8)
HR10	RBR56	0.125	0.250	0.1	220K	840K	200	0.343 (8.7)	0.250 (6.3)	0.032 (0.8)
VA/HR11	---	0.125	0.250	---	---	500K	150	0.295 (7.5)	0.250 (6.3)	0.032 (0.8)
7010/VA12	RB55	0.15	0.33	0.1	176K	3M	300	0.500 (12.7)	0.250 (6.3)	0.032 (0.8)
HR12	RBR55	0.15	0.30	0.1	332K	1M	300	0.500 (12.7)	0.250 (6.3)	0.032 (0.8)
7020/VA14	RB54	0.25	0.50	0.1	226K	4.4M	300	0.750 (19.0)	0.250 (6.3)	0.032 (0.8)
HR14	RBR54	0.25	0.50	0.1	526K	2M	300	0.750 (19.0)	0.250 (6.3)	0.032 (0.8)
VA32	---	---	0.50	---	---	2M	300	0.500 (12.7)	0.375 (9.5)	0.032 (0.8)
7030/VA34	RB53	0.33	0.66	0.1	604K	8M	500	0.750 (19.0)	0.375 (9.5)	0.032 (0.8)
HR34	RBR53	0.33	0.66	0.1	1.1M	3M	500	0.750 (19.0)	0.375 (9.5)	0.032 (0.8)
7040/VA36	RB52	0.50	1.00	0.1	1M	12M	750	1.00 (25.4)	0.375 (9.5)	0.032 (0.8)
HR36	RBR52	0.50	1.00	0.1	1.2M	3M	750	1.00 (25.4)	0.375 (9.5)	0.032 (0.8)

**SUBMINIATURES**

7004	---	---	0.05	---	---	250K	150	0.30(7.6)	0.10 (2.5)	0.020 (0.5)
7005/SP41	---	---	0.10	---	---	300K	150	0.25 (6.3)	0.125 (3.2)	0.025 (0.6)
7006	---	---	0.10	---	---	350K	200	0.31 (7.9)	0.125 (3.2)	0.025 (0.6)
7007/SP21	---	---	0.250	---	---	700K	300	0.375 (9.5)	0.188 (4.8)	0.025 (0.6)
SP22	---	---	0.30	---	---	300K	300	0.500 (12.7)	0.187 (4.8)	0.025 (0.6)
SP42	---	---	0.125	---	---	200K	200	0.375 (9.5)	0.125 (3.2)	0.025 (0.6)
8000**	---	---	0.125	---	---	10K	35	0.375 (9.5)	0.140 (3.6)	0.025 (0.6)
8001**	---	---	0.250	---	---	20K	70	0.580 (14.9)	0.190 (4.8)	0.025 (0.6)

\*For all styles commercial ratings may be applied at 125°C provided 175°C max. operating temperature is permissible.  
NOTE: Contact factory for availability of other styles and sizes of above product.

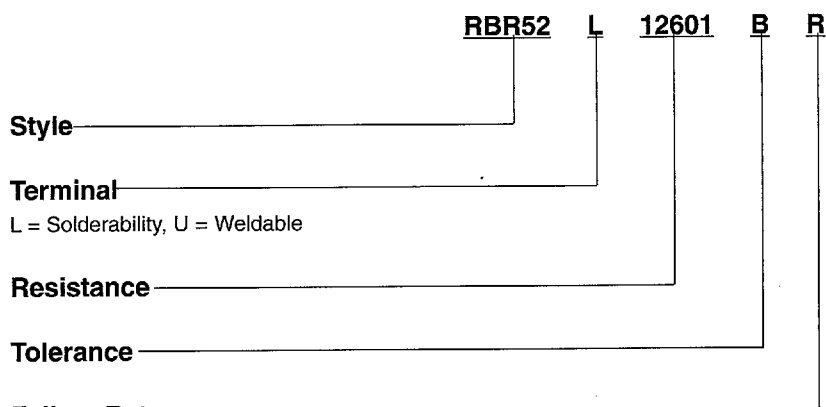
\*\*Customer must specify TCR required.



**Standard Lead Material:  
Tinned Copperweld**

**HOW TO ORDER**

Sample Part No.:



L = Solderability, U = Weldable

**Failure Rate**

For commercial equivalents:  
Style - Resistance - Tolerance - TCR