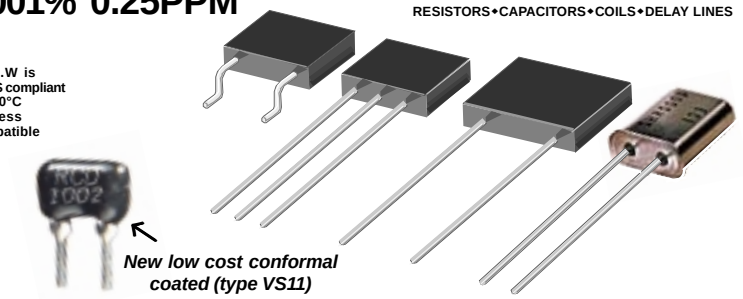
ULTRA PRECISION RESISTORS TO 0.001% 0.25PPM

RCD
RESISTORS•CAPACITORS•COILS•DELAY LINES

HP SERIES- Metal Foil
VS SERIES- Thin Film

RoHS Term.W is RoHS compliant & 260°C process compatible



New low cost conformal coated (type VS11)

- ❒ Industry's widest range and highest precision
- ❒ Low inductance, capacitance, noise and thermal EMF
- ❒ Through-hole and SM designs
- ❒ VS16 is a dual resistor design (TC tracking to 1ppm avail.)
- ❒ **Available on exclusive *SWIFT*™ delivery program!**

OPTIONS

- ❒ Option GW: gullwing SM lead forming (avail. on 24mm T&R)
- ❒ Option EQ: 24 hour burn in (or ER -100 hour burn in)
- ❒ Numerous additional options available including custom marking, matched sets, military screening, etc.

Nichrosil™ Metal Foil - Unsurpassed Performance

Series HP resistors feature a metal foil construction for the most demanding applications. Series VS feature a thin film construction which enables excellent performance across a wide range of values, offering a viable alternative to precision wirewound resistors. Superlow TC's, up to 20× better than Mil p/n RNC90Y requirements, provide new opportunities for design engineers. HP10 is hermetically sealed in a metal case, all others are epoxy encased or coated.

SPECIFICATIONS

RCD Type	Power Rating @70°C	Volt Rating	Resis. Range[1]	FIG	A Max.	B Max.	C Max.	D ±.01
VS1	.25W	250V	10Ω -500K	1,5	.320	.345	.120	.150
VS11	.25W	250V	10Ω -150K	4	.240	.354	.100	.100
VS15	.3W	300V	10Ω -3M	1,5	.305	.305	.105	.200
VS16	.15W [2]	300V	10Ω -1.5M	3,5	.305	.305	.105	.100
VS2	.6W	300V	10Ω -1M	1,5	.320	.345	.120	.150
VS3	.7W	300V	30Ω -3M	1	.610	.365	.160	.400
VS4	1.0W	350V	30Ω -5M	1	.585	.545	.160	.400
VS5	1.5W	350V	50Ω -7M	1	.820	.545	.160	.650
VS55	1W	400V	10Ω -10M	1	1.120	.400	.260	.900
VS6	2.0W	500V	100Ω -10M	1	1.120	.400	.260	.900
HP7	.3W	300V	10Ω -25K	1,5	.320	.400	.120	.150
HP10	.6W	300V	10Ω-60K	2	.455	.530	.200	.150

[1] Consult factory for resistance values as low as 1Ω or as high as 100MΩ.
[2] VS16 wattage rating is per resistor, package power rating is 0.3W

FIG. 1 **FIG. 2** **FIG. 3** **FIG. 4**

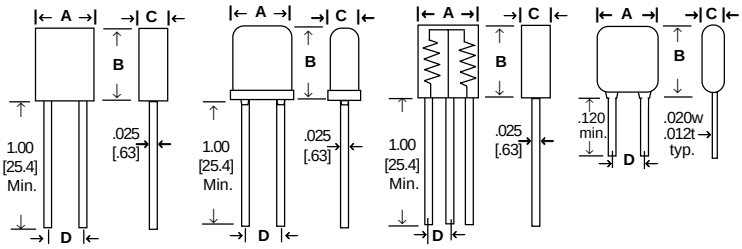
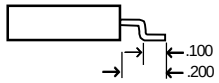
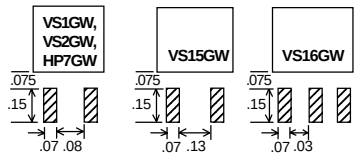


FIG. 5 Option GW (GULLWING)
Available on VS1, VS2, VS15, VS16, & HP7





PERFORMANCE CHARACTERISTICS

Condition	HP10 Max.	HP7 & VS Series**	MIL RNC90Y
TC (ppm/°C)***	.25/.5/1/3/5	1/2/3/5/10/25/50	5ppm
Resistance Tol.	.001% to .1%	.005% to 1%	.005% to 1%
2000hr Load 125°C	±.02%	±.05%	±.05%
Overload	±.01%	±.01%	±.05%
Moisture Resistance	±.01%	±.03%	±.05%
Shock, Vibration	±.01%	±.01%	±.01%, ±.02%
Voltage Coefficient	.1ppm/V	2ppm/V	5ppm/V
Shelf Life (1 year)	5ppm	25ppm	-
Thermal EMF	.05μV/°C	0.1μV/°C	-
Rise Time	1nS	1nS	-
Inductance	.1μH	.1μH	-
Capacitance	1.0pF	1.0pF	-
Current Noise	-30dB	-30dB	-
Derating	Derate W & V ratings by .909%/°C from 70 to 125°C, and 1%/°C from 125° to 175°C (full rated wattage @ 70°C, half wattage @125°C, zero wattage @175°C)		

* Per MIL-R-55182/9 100Ω to 100KΩ (Consult factory if outside this range.)
** Data is typical for all VS sizes except VS1 which meets MIL-R10509 Char E.
***TC is measured -55°C to +125°C for TC's > 5ppm, -20°C to +85°C for TC's 0.5 to 5ppm, and 20°C to +60°C for 0.25ppm.

COMPARISON	RCD Series VS & HP Film & Foil Resistors	RCD PC451 Wirewound
Inductance	Very Low	High*
Capacitance	Very Low	High*
Rise Time	Very Fast	Slow*
Stability	Excellent	Excellent
High Frequency	Excellent	Poor*
Cost Advantage	High values, high volume, high frequency circuits	Low values, small volume

* Largely dependent on resistance value (non-inductive and high-speed winding available.)

P/N DESIGNATION:

HP10 ☐ - 1001 - F ☐ T 5 W

RCD Type
Options: P, H, GW, ER, EQ (leave blank if std)
Resis. Code: 3 signif. figures & multiplier (10R0= 10Ω, 1000= 100Ω, 1001=1KΩ,1002=10K, 1003=100K). When VS16 contains 2 different values, separate with / (e.g. 903/103)
Tolerance Code: F=1%, D=0.5%, C=0.25%, B=0.1%, A=0.05%, Q=0.02%, T=0.01%, V=.005%, S=.001%
Ratio Tolerance (VS16 only): V=0.005%, Y=0.01%, Q=0.02%, A=0.05%, Z=.1%,C=.25%, D=.5%, F=1%, G=2% (leave blank if not req'd)
Packaging: B = Bulk, T = Tape & Reel
TC: .25=0.25ppm, .5=0.5ppm, 2=2ppm, 5=5ppm, 10=10ppm, 25=25ppm, TC Tracking (VS16 only): 210=25ppm abs/10ppm track, 205=25ppm abs/5ppm track, 105=10ppm abs/5ppm track, 102=10ppm abs/2ppm track, 53=5ppm abs/3ppm track, 52=5ppm abs/2ppm track, 51=5ppm abs/1ppm track.
Termination: W= Lead-free, Q= Tin/Lead (leave blank if either is acceptable). Gold plated leads also available on most sizes (specify code G)

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