

High Voltage Chip Resistor - HVR Series



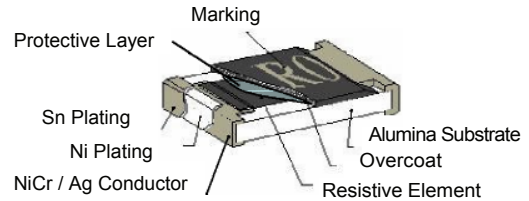
Applications

- Inverter
- Outdoor Equipments - Converter
- High Pulse Equipments

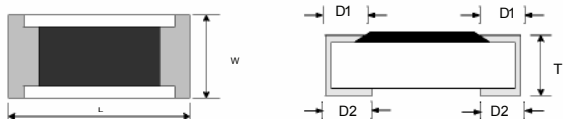
Features

- Highly reliable multilayer electrode construction
- Higher component and equipment reliability
- Excellent performance at high voltage
- Reduced size of final equipment

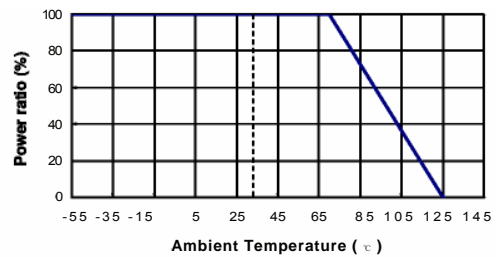
Construction



Dimensions

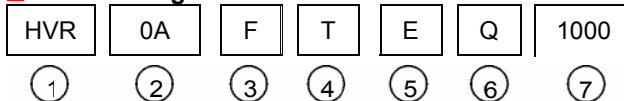


Derating Curve



Codes	L	W	T	D1	D2
HVR12	6.35±0.20	3.20±0.15	0.55±0.10	0.60±0.25	0.50±0.20
HVR0A	5.00±0.20	2.50±0.15	0.55±0.10	0.60±0.25	0.50±0.20
HVR06	3.10±0.10	1.55±0.10	0.55±0.10	0.50±0.25	0.50±0.20
HVR05	2.00±0.10	1.25±0.10	0.50±0.10	0.35±0.20	0.40±0.20
HVR03	1.60±0.10	0.80±0.10	0.45±0.10	0.30±0.20	0.30±0.20
HVR02	1.00±0.05	0.50±0.05	0.35±0.05	0.20±0.10	0.20±0.10

Part Numbering



Product Type

Product Type
HVR High Voltage Chip Resistors

Dimensions (L x W)

	Dimensions (LxW)	EIA
12	6.35×3.20mm	2512
0A	5.00×2.50mm	2010
06	3.10×1.55mm	1206
05	2.00×1.25mm	0805
03	1.60×0.80mm	0603
02	1.00×0.50mm	0402

Resistance Tolerance

Codes	Resistance Tolerance
F	±1%
J	±5%

Packaging

	Type
B	Bulk
T	Taping Reel

TCR

Codes	Type
E	±1
F	±200PPM/

Codes	Type
Y	1/16W
X	1/10W
V	1/4W
W	1/8W
Q	3/4W
T	1W

Resistance

Codes	Type
1001	1K2
1004	1M2
1005	10M2

Electrical Characteristics Specifications

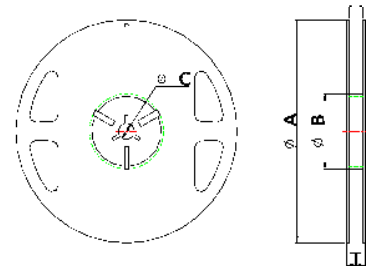
Item Type	Power Rating at 70°C	Operating Temp. Range	Max Operating Voltage	Max Overload Voltage	Resistance Tolerance	Resistance Range (E24 / E96)	TCR (PPM/°C)
HVR12 (2512)	1W	-55 ~ +125°C	500V	1000V	±1% ±5%	10Q~1MQ 1.02MQ~10MQ	±100 ±200
HVR0A (2010)	3/4W	-55 ~ +125°C	400V	800V			
HVR06 (1206)	1/4W	-55 ~ +125°C	400V	800V			
HVR05 (0805)	1/8W	-55 ~ +125°C	300V	600V			
HVR03 (0603)	1/10W	-55 ~ +125°C	100V	200V			
HVR02 (0402)	1/16W	-55 ~ +125°C	100V	200V			

Packaging

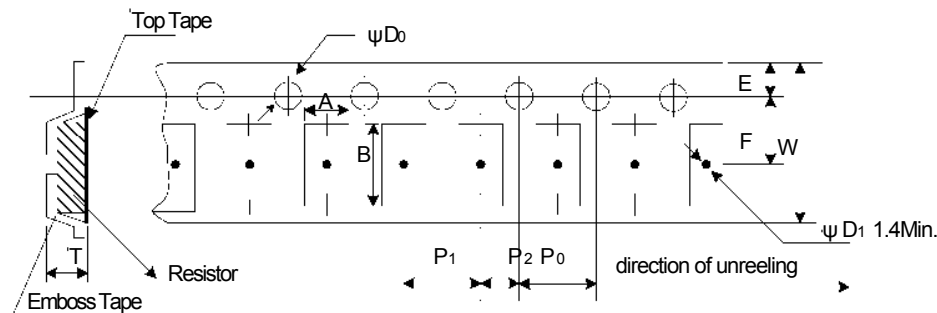
Reel Specifications & Packaging Quantity

Unit :mm

Series	OA	OB	OC	W	T	Paper Tape (EA)	Emboss Plastic Tape (EA)
HVR12	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	13.5 ± 1.0	15.5 ± 1.0	--	4,000
HVR0A	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	13.5 ± 1.0	15.5 ± 1.0	--	4,000
HVR06	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000	--
HVR05	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000	--
HVR03	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	5,000	--
HVR02	178 ± 1.0	60.0 ± 1.0	13.5 ± 0.7	9.5 ± 1.0	11.5 ± 1.0	10,000	--



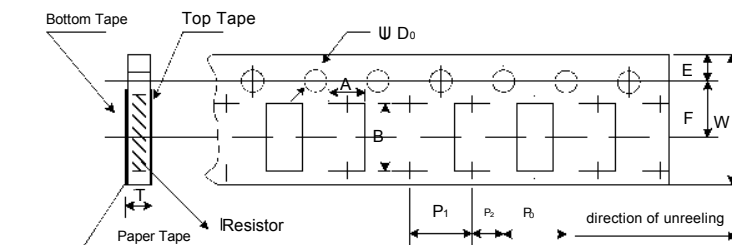
Emboss Plastic Tape Specifications



Unit: mm

Series	A	B	W	E	F	P ₀	P ₁	P ₂	OD ₀	T
HVR12	3.50±0.2	6.70±0.2	12±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.10	2.0±0.05	1.5 ^{+0.1/-0}	1.00±0.20
HVR0A	2.80±0.2	5.50±0.2	12±0.3	1.75±0.1	5.5±0.05	4.0±0.1	4.0±0.10	2.0±0.05	1.5 ^{+0.1/-0}	1.00±0.20

Paper Tape Specifications



Unit: mm

Series	A	B	W	E	F	P ₀	P ₁	P ₂	OD ₀	T
HVR06	1.90±0.1	3.50±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5 ^{+0.1/-0}	0.85±0.1
HVR05	1.60±0.1	2.40±0.2	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5 ^{+0.1/-0}	0.85±0.1
HVR03	1.10±0.1	1.90±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	4.0±0.05	2.0±0.05	1.5 ^{+0.1/-0}	0.70±0.1
HVR02	0.65±0.1	1.15±0.1	8.0±0.2	1.75±0.1	3.5±0.05	4.0±0.1	2.0±0.05	2.0±0.05	1.5 ^{+0.1/-0}	0.45±0.1

Environmental Characteristics

Item	Specification		Test Method
	1%	5%	
Temperature Coefficient of Resistance (T.C.R.)	Within the specification		JIS C 5201 4.8 IEC 60115-1 4.8 -55 C~+1 25 C, 20 C is the reference temperature
Short Time Overload	$\pm(1.0\%+0.05\%)$	$\pm(2.0\%+0.05\%)$	JIS C 5201 4.13 IEC 60115-1 4.13 2.5 times RCWV or Max. overload voltage for 5 seconds
Insulation Resistance	$\geq 10G$		JIS C 5201 4.6 IEC 60115-1 4.6 Max. overload voltage for 1 minute
Voltage Proof	No breakdown or flashover		JIS C 5201 4.7 IEC 60115-1 4.7 1.42 times RCWV (RMS) for 1 minute
Substrate Bending Test	$\pm(1.0\%+0.05\%)$	$\pm(1.0\%+0.05\%)$	JIS C 5201 4.33 IEC 60115-1 4.33 Bending once for 5 seconds with 3mm 2010 / 2512 size: 2mm
Resistance to soldering heat	$\pm(0.5\%+0.05\%)$	$\pm(1.0\%+0.05\%)$	JIS C 5201 4.18 IEC 60115 4.18 260.5 C for 10 seconds
Leaching	Individual leaching area $\leq 5\%$ Total leaching area $\leq 10\%$		JIS C 5201 4.18 IEC 60068-2-58 8.2.1 260.5 C for 30 seconds
Solderability	>95% coverage		JIS C 5201 4.17 IEC 60115-1 4.17 245.5 C for 3 seconds
Endurance at upper category temperature	$\pm(1.0\%+0.05\%)$	$\pm(1.5\%+0.10\%)$	JIS C 5201 4.23 IEC 60115-1 2.23.2 at +125 C for 1000 hrs
Rapid change of temperature	$\pm(0.5\%+0.05\%)$	$\pm(1.0\%+0.05\%)$	JIS C 5201 4.19 IEC 60115-1 4.19 -55 C to +125 C, 5 cycles
Damp heat with load	$\pm(2.0\%+0.10\%)$	$\pm(3.0\%+0.10\%)$	JIS 5201 4.24 40.2 C, 90~95% R.H. or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Endurance	$\pm(2.0\%+0.10\%)$	$\pm(3.0\%+0.10\%)$	JIS C 5201 4.25 IEC 60115-1 4.25.1 70.2 C, or Max. working voltage for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"

• Storage Temperature: $25\pm 3\%$; Humidity < 80%RH