

ASV Series

Pulse Withstanding Chip Resistor



FEATURES

- Tolerance from $\pm 0.5\%$ ~ 5%
- High power rating
- Excellent pulse withstanding performance
- Improved working voltage ratings
- Standard package sizes of 0603~2512
- AEC-Q200 Compliance

APPLICATIONS

- Metering (Testing/Measurement)
- Diagnostic Equipment
- Medical Devices
- Industrial Controls
- Plasma
- LCD Video Monitors



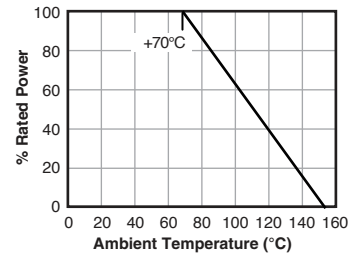
SERIES SPECIFICATIONS

Type	Power Rating at 70°C	Max. Operating Voltage	Max. Overload Voltage	Resistance Range		TCR (PPM/°C)
				$\pm 0.5\%$ (E24,E96)	$\pm 1\%$ (E24,E96) $\pm 5\%$ (E24)	
Standard						
ASV02 (0402)	1/5W	50V	100V	-	1Ω - 20Ω	± 300
				100Ω - 1MΩ	20.5Ω - 1MΩ	± 100
ASV03 (0603)	1/10W	50V	100V	10Ω - 294Ω	1Ω - 294Ω	± 200
				300Ω - 1MΩ		± 100
ASV05 (0805)	1/8W	150V	300V	10Ω - 294Ω	1Ω - 294Ω	± 200
				300Ω - 20MΩ		± 100
ASV06 (1206)	1/3W	200V	400V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 20MΩ		± 100
ASV10 (1210)	1/2W	200V	400V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 20MΩ		± 100
ASV11 (2010)	3/4W	400V	800V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 20MΩ		± 100
ASV12 (2512)	1.5W	500V	1000V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 20MΩ		± 100
High and Ultra Power Rating						
ASV03 (0603)	1/4W	75V	150V	10Ω - 294Ω	1Ω - 294Ω	± 200
				300Ω - 1MΩ		± 100
ASV05 (0805)	2/5W	150V	300V	10Ω - 294Ω	1Ω - 294Ω	± 200
				300Ω - 1MΩ		± 100
ASV05 (0805) Ultra	1/2W	400V	600V	10Ω - 294Ω	1Ω - 294Ω	± 200
				300Ω - 1MΩ		± 100
ASV06 (1206)	1/2W	200V	400V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 1MΩ		± 100
ASV06 (1206) Ultra	3/4W	500V	1000V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 1MΩ		± 100
ASV10 (1210)	3/4W	200V	400V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 1MΩ		± 100
ASV11 (2010)	1W	400V	800V	10Ω - 20Ω	1Ω - 20Ω	± 200
				20.5Ω - 1MΩ		± 100

CHARACTERISTICS

Oper. Temp. Range	-55°C to +155°C
Storage Temperature	15~28°C; Humidity < 80%RH
Rated Voltage	RCWV (Rated Continuous Working Voltage)= $\sqrt{P \cdot R}$ or Max. Operating Voltage whichever is lower.

Derating



"Ultra" Products contain double-sided resistor element

Operating Voltage= $\sqrt{P \cdot R}$ or Max. Operating Voltage listed above, whichever is lower.

Overload Voltage= $2.5 \cdot \sqrt{P \cdot R}$ or Max. Overload Voltage listed above, whichever is lower.

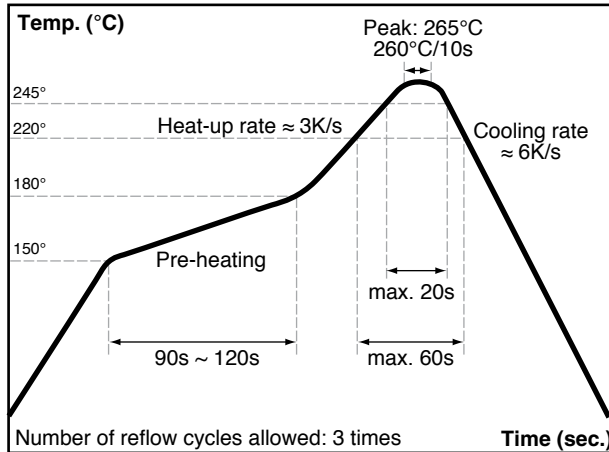
Ohmite is capable of manufacturing the optional spec based on customer's requirement.

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SOLDERING

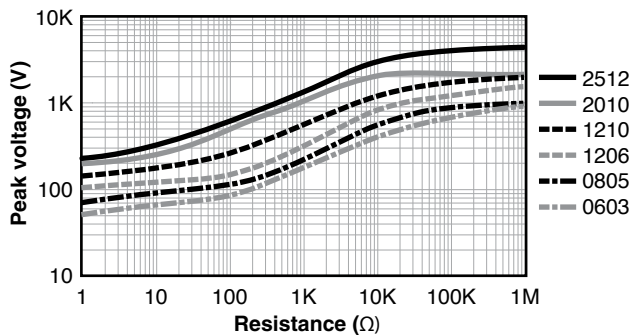


(1) Time of IR reflow soldering at maximum temperature point 260°C: 10s

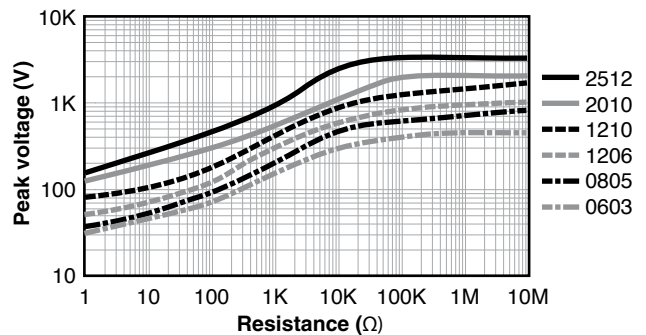
LIGHTNING SURGE

Resistors are tested in accordance with IEC 60115-1 using both 1.2/50 μ s and 10/700 pulse shapes. The limit of acceptance is a shift in resistance of less than 1% from the initial value.

ASV Series 1.2/50 μ s



ASV Series 10/700 μ s

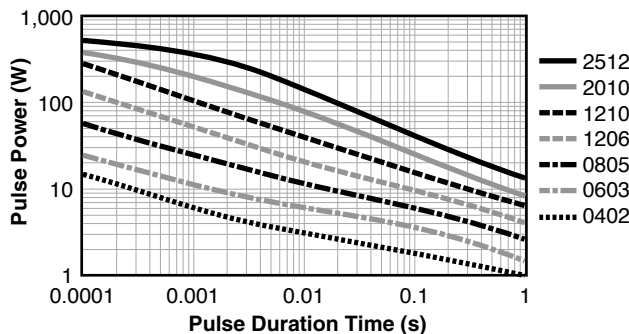


PULSE WITHSTANDING CAPACITY

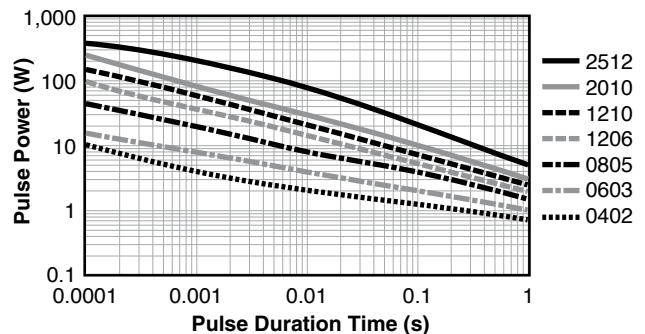
The single impulse graph is the result of 50 impulses of rectangular shape applied at one-minute intervals. The limit of acceptance was a shift in resistance of less than 1% from the initial value. The power applied was subject to the restrictions of the maximum permissible impulse voltage graph shown.

The continuous load graph was obtained by applying repetitive rectangular pulses where the pulse period was adjusted so that the average power dissipated in the resistor was equal to its rated power at 70°C. The limit of acceptance was a shift in resistance of less than 1% from the initial value.

ASV Series Single Pulse (100 Ohms)



ASV Series Continuous Pulse (100 Ohm)



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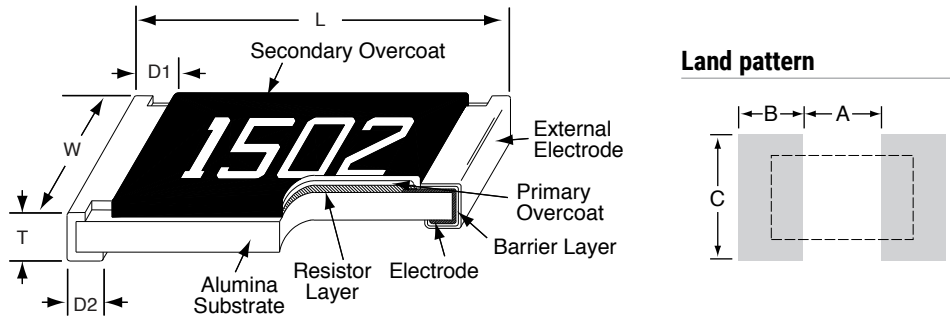
ASV Series

Pulse Withstanding Chip Resistor

PERFORMANCE

Item	Requirement	Test Method
Temperature Coefficient of Resistance (T.C.R.)	As Spec.	JIS-C-5201-1 4.8; IEC-60115-1 4.8; -55°C~+125°C, 25°C is the reference temperature
Short Time Overload	$\pm(1.0\%+0.05\Omega)$	JIS-C-5201-1 4.13; IEC-60115-1 4.13; RCWV*2.5 or Max. Overload Voltage whichever is lower for 5 seconds
Insulation Resistance	$\geq 10G$	JIS-C-5201-1 4.6; IEC-60115-1 4.6; Max. Overload Voltage for 1 minute
Endurance	$\pm(1.0\%+0.05\Omega)$	JIS-C-5201-1 4.25; IEC-60115-1 4.25.1; 70 \pm 2°C, RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Damp Heat with Load	$\pm(0.5\%+0.05\Omega)$; Ultra power: $\pm(1.0\%+0.05\Omega)$	JIS-C-5201-1 4.24; IEC-60115-1 4.24; 40 \pm 2°C, 90~95% R.H., RCWV for 1000 hrs with 1.5 hrs "ON" and 0.5 hr "OFF"
Dry Heat	$\pm(0.5\%+0.05\Omega)$	JIS-C-5201-1 4.23; IEC-60115-1 4.23.2; at +155°C for 1000 hrs
Bending Strength	$\pm(1.0\%+0.05\Omega)$	JIS-C-5201-1 4.33; IEC-60115-1 4.33; Bending once for 5 seconds; 2010, 2512 sizes: 2mm Other sizes: 3mm
Solderability	95% min. coverage	JIS-C-5201-1 4.17; IEC-60115-1 4.17; 245 \pm 5°C for 3 seconds
Resistance to Soldering Heat	$\pm(0.5\%+0.05\Omega)$	JIS-C-5201-1 4.18; IEC-60115-1 4.18; 260 \pm 5°C for 10 seconds
Voltage Proof	No breakdown or flashover	JIS-C-5201-1 4.7; IEC-60115-1 4.7; 1.42 times Max. Operating Voltage for 1 minute
Leaching	Individual leaching area $\leq 5\%$; Total leaching area $\leq 10\%$	JIS-C-5201-1 4.18; IEC-60068-2-58 8.2.1; 260 \pm 5°C for 30 seconds
Rapid Change of Temperature	$\pm(0.5\%+0.05\Omega)$	JIS-C-5201-1 4.19; IEC-60115-1 4.19; -55°C to +155°C, 5 cycles

DIMENSIONS



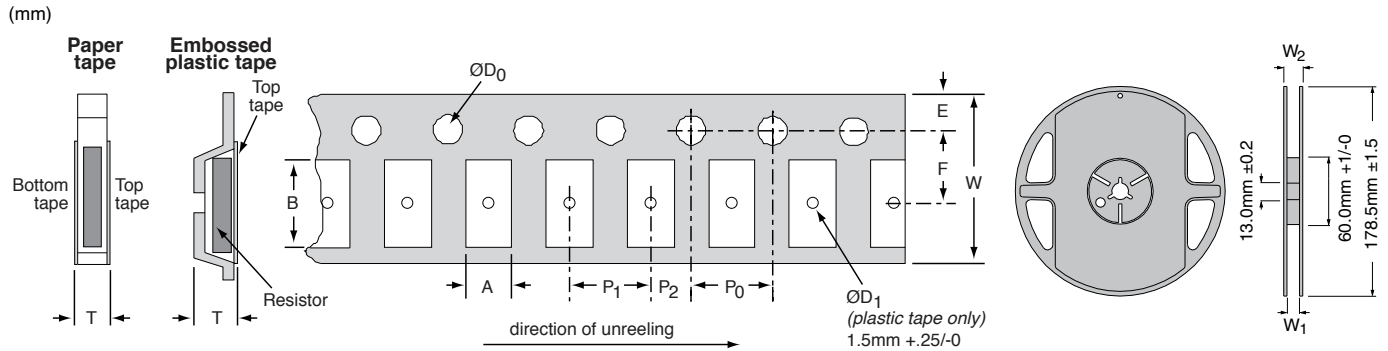
Type	Size	L	W	T	D1	D2	A	B	C	Weight (g) per 1K pcs
ASV02	0402	1.00 \pm 0.10	0.50 \pm 0.05	0.35 \pm 0.05	0.20 \pm 0.10	0.20 \pm 0.10	0.5	0.45	0.6	0.63
ASV03	0603	1.60 \pm 0.10	0.80 \pm 0.10	0.45 \pm 0.10	0.30 \pm 0.20	0.30 \pm 0.20	0.9	0.6	0.9	2.042
ASV05	0805	2.00 \pm 0.10	1.25 \pm 0.10	0.50 \pm 0.10	0.35 \pm 0.20	0.40 \pm 0.20	1.2	0.7	1.3	4.368
ASV05 (Ultra)	0805	2.00 \pm 0.10	1.25 \pm 0.10	0.50 \pm 0.10	0.35 \pm 0.20	0.40 \pm 0.20	1.2	0.7	1.3	5.049
ASV06	1206	3.10 \pm 0.10	1.55 \pm 0.10	0.55 \pm 0.10	0.50 \pm 0.25	0.50 \pm 0.20	2	0.9	1.6	8.947
ASV06 (Ultra)	1206	3.10 \pm 0.10	1.55 \pm 0.10	0.55 \pm 0.10	0.50 \pm 0.25	0.50 \pm 0.20	2	0.9	1.6	9.541
ASV10	1210	3.10 \pm 0.10	2.60 \pm 0.15	0.55 \pm 0.10	0.50 \pm 0.25	0.50 \pm 0.20	2	0.9	2.8	15.959
ASV11	2010	5.00 \pm 0.10	2.50 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.25	0.50 \pm 0.20	3.8	0.9	2.8	24.241
ASV12	2512	6.35 \pm 0.10	3.10 \pm 0.15	0.55 \pm 0.10	0.60 \pm 0.25	0.50 \pm 0.20	4.90	1	3.4	39.448

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ASV Series

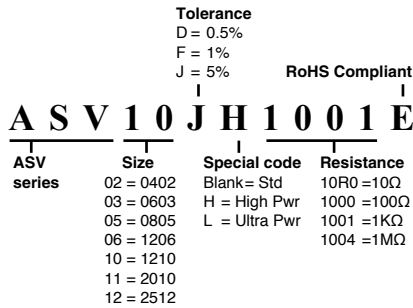
Pulse Withstanding Chip Resistor

TAPE AND REEL



	A	B	W	E	F	P0	P1	P2	D0	T	Tape size	W1	W2	Qty.
Paper tape														
ASV02	0.65±0.10	1.15±0.10	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.70±0.1	8mm	9.0±0.5	12.5±0.5	10K
ASV03	1.10±0.10	1.90±0.10	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.70±0.1	8mm	9.0±0.5	12.5±0.5	5K
ASV05	1.60±0.10	2.40±0.20	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1	9mm	9.0±0.5	12.5±0.5	5K
ASV06	1.90±0.10	3.50±0.20	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1	10mm	9.0±0.5	12.5±0.5	5K
ASV10	2.90±0.10	3.50±0.20	8.0±0.2	1.75±0.1	3.50±0.05	4.00±0.10	4.00±0.05	2.00±0.05	1.50+0.1,-0	0.85±0.1	11mm	9.0±0.5	12.5±0.5	5K
Embossed plastic tape														
ASV11	2.8±0.10	5.5±0.10	12.0±0.3	1.75±0.1	5.5±0.05	4.00±0.10	4.00±0.1	2.00±0.05	1.50+0.1,-0	1.2+0	12mm	13.0±0.5	15.5±0.5	4K
ASV12	3.5±0.10	6.7±0.10	12.0±0.3	1.75±0.1	5.5±0.05	4.00±0.10	4.00±0.1	2.00±0.05	1.50+0.1,-0	1.2+0	12mm	13.0±0.5	15.5±0.5	4K

ORDERING INFORMATION



Marking for 0805~2512

Examples

1000	=	100Ω
2201	=	2.2KΩ
1002	=	10KΩ
4992	=	49.9KΩ
1003	=	100KΩ
1004	=	1MΩ

Marking for 0603, 3-digit E24

Example: 101=100Ω; 102=1KΩ (1st and 2nd are E24 code and 3rd code is multiplier)

E24 codes: 10, 11, 12, 13, 15, 16, 18, 20, 22, 24, 27, 30, 33, 36, 39, 43, 47, 51, 56, 62, 68, 75, 82, 91

Marking for 0603, 1%, 3-digit E96 (ex. E24)

Code	E96	Code	E96	Code	E96	Code	E96
2	102	28	191	52	340	75	590
3	105	29	196	53	348	76	604
4	107	31	205	54	357	77	619
6	113	32	210	55	365	78	634
7	115	33	215	56	374	79	649
8	118	34	221	57	383	80	665
9	121	35	226	58	392	81	681
10	124	36	232	59	402	82	698
11	127	37	237	60	412	83	715
13	133	38	243	61	422	84	732
14	137	39	249	62	432	86	768
15	140	40	255	63	442	87	787
16	143	41	261	64	453	88	806
17	147	42	267	65	464	89	825
19	154	43	274	66	475	90	845
20	158	44	280	67	487	91	866
21	162	45	287	68	499	92	887
22	165	46	294	69	511	93	909
23	169	47	301	70	523	94	931
24	174	48	309	71	536	95	953
25	178	49	316	72	549	96	976
26	182	50	324	73	562		
27	187	51	332	74	576		

Code	Multiplier
A	10 ⁰
B	10 ¹
C	10 ²
D	10 ³
E	10 ⁴
F	10 ⁵
G	10 ⁶
X	10 ⁻¹
Y	10 ⁻²

Examples

13C = 13K3Ω
68B = 4K99Ω
68X = 49.9Ω