APSRP-T Series-Prosemi Shunt APSRP-T Rev.A2

Features

- Metal type Low-Resistance shunt resistor.
- Low TCR.
- Very low inductance.
- Halogen free, lead free and RoHS compliant.
- AEC-Q200 qualified available.

Applications

- Power modules.
- Frequency converters.
- Current sensor for power hybrid sources high current for automotive.
- Lithium battery protection board.
- Industrial Instrument and equipment

Part Number

APSRP	27	S	12	F	0M20	-	T4
【1】	【2】	【3】	【4】	【5】	【6】		【7】

【1】Series Name:Prosemi Shunt Resistor for Automotive.

【2】Chip Size: 27:2726, 40:4026, 12:1216.

【3】Material: S:CuMnSn, M: CuMn, F: FeCr, K: Karma.

【4】Power Rating: 5=5W, 7=7W, 8=8W, 9=9W, 10=10W, 12=12W.

【5】Resistance Precision: D: ±0.5%, F: ±1%, G: ±2%, J: ±5%

【6】Resistance Code: R002: 2mΩ, 0M50: 0.5mΩ.

【7】Special Code: T4: 4 terminals

Electrical Characteristics

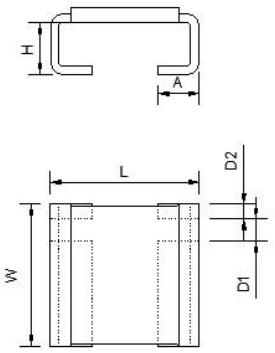
Size	Power Rating at 70℃*(W)	Resistance Range(mΩ)** 0.5%, 1.0%, 2.0%, 5.0%	TCR (ppm/℃)	Element Material	Operation Temperature Range
1216	5	0.2	±75	S	-65℃~+170℃
	5	0.3	±50		
	5	0.5	±50		
	3	1	±50	M	
	3	2	±50	K/F	
	3	3	±50		

2726	12	0.2	±75	S	-65℃~+170℃
	11	0.3	±75		
	9	0.5	±75	M	
	8	0.7	±75		
	7	1	±75		
	6	2	±50	K/F	
	5	3	±50		
	4	4	±50		
	3	5	±50		
4026	12	0.2	±75	S	
	11	0.3	±75		
	9	0.5	±75	M	
	8	0.7	±75		
	7	1	±75		
	6	2	±50	K/F	
	5	3	±50		
	4	4	±50		
	3	5	±50		

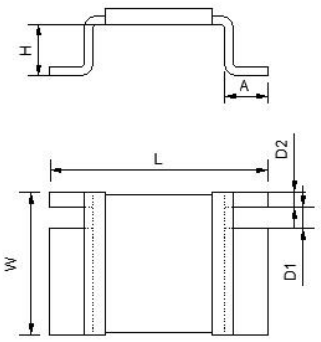
"*" : Power at terminal temperature of 70℃.

"* *": Development schedule will vary depending on resistance value. Please contact us for resistance values.

Physical Dimensions



1216/2726

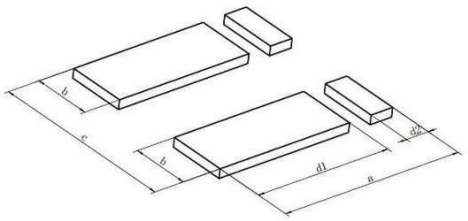


4026

Unit:mm

Size	L	W	H	A	D1	D2
1216	3.1±0.2	4.0±0.2	1.5±0.1	1.1±0.1	0.7±0.1	0.5±0.1
2726	6.9±0.2	6.6±0.2	2.6±0.2	1.95±0.1	1.0±0.1	0.7±0.1
4026	10.1±0.2	6.6±0.2	2.6±0.2	1.95±0.1	1.0±0.1	0.7±0.1

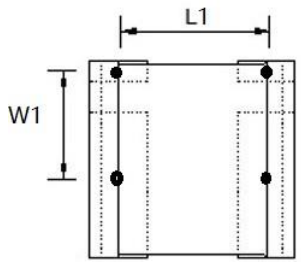
Recommended Solder Pad Layout



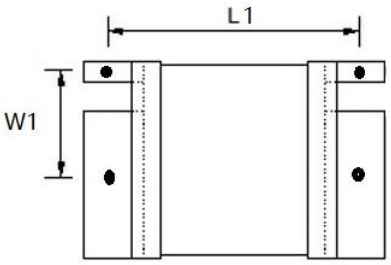
Unit: mm

Size	a	b	c	d1	d2
1216	4.1	1.5	3.6	2.9	0.7
2726	7.3	2.9	7.8	5.6	0.9
4026	7.3	2.9	10.8	5.6	0.9

Four pin testing position



1216/2726



4026

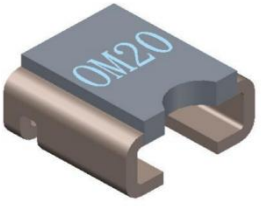
Unit: mm

Size	L1	W1
1216	2.0	2.2
2726	5.0	3.9
4026	8.1	3.8

Product Marking



1216



2726



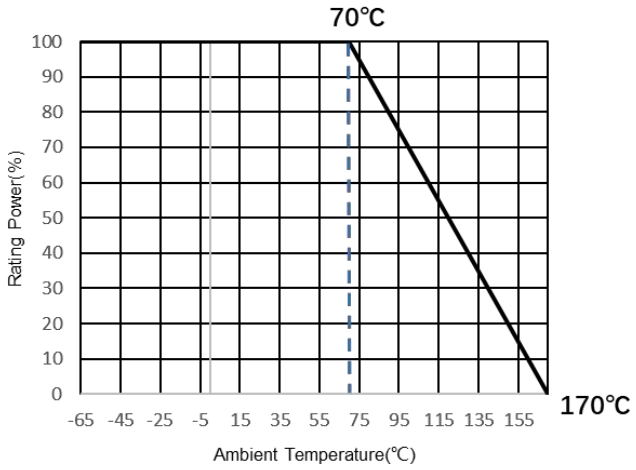
4026

1、The characters and directions are shown in the figure above；

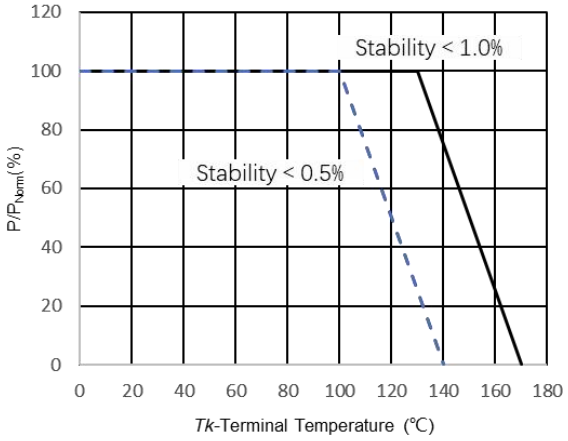
2、Encoding rules: "0M50":0.5 m Ω；"R001":1mΩ；"2M50":2.5m Ω ；

Power Derating Curve

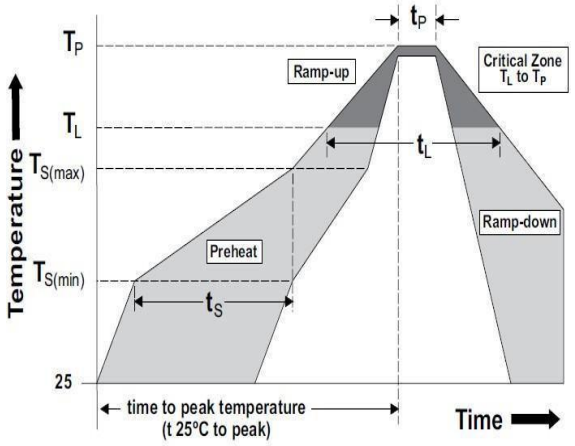
DREATING-AMBIENT TEMPERATURE



DREATING-TERMINAL TEMPERATURE



Recommended Solder Curve



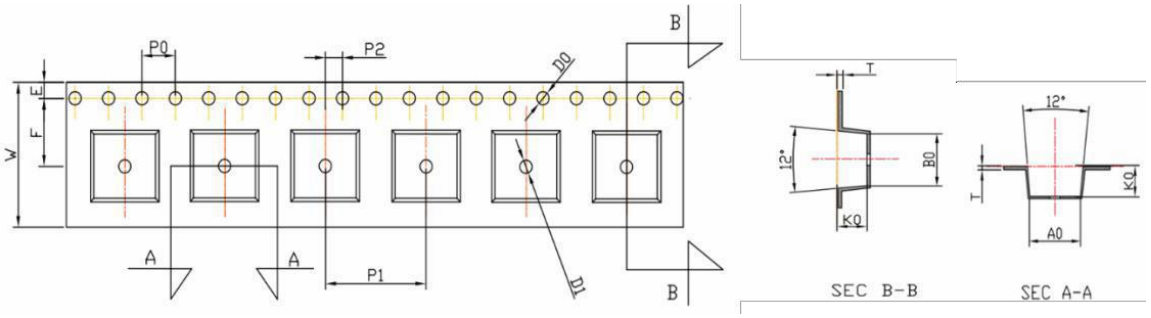
Reflow Condition		Pb – Free assembly
Pre heat	- Temperature Min (T_s(min))	150°C
	- Temperature Max (T_s(max))	200°C
	- Time (Min to Max) (t_s)	60 – 120 secs
Average ramp up rate (Liquidus Temp (T_L) to peak		5°C/second max
T_s(max) to T_L - Ramp-up Rate		5°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (t_L)	60 – 150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		20 – 40 seconds
Ramp-down Rate		5°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max.
Wave Soldering		Not applicable
Hand Soldering		350°C, 5 seconds max.

Product Characteristics

Item	Test condition/ Methods	Limited	Standard
Resistance	Measuring resistance value at room temperature 25℃±5℃	Refer to Spec	IEC60115-1 4.5
Temperature Coefficient of Resistance	TCR (ppm/°C) = (R2-R1/R1*(T2-T1))X 10^6 R1: Resistance value measured at room temperature (Ω) R2: Resistance measured at 125 ° C (Ω) T1: Room temperature (° C) T2:125 °C	Refer to Spec	MIL-STD-202 Method 304
Short Time Overload	Apply 3 times rated power for 5 seconds, and measure the resistance change after standing for 24 hours.	-1%≤△R≤1%	IEC 60115-1 4.13
High Temperature Storage	170℃ for 1000 hours, No power.	-1%≤△R≤1%	MIL-STD-202 Method 108
Temperature Cycling	-55℃ (15min)/+150℃(15min), 1000 cycles, transition time less than 1 minute	-1%≤△R≤1%	JESD22-A104
Bias Humidity	+85℃，85%RH，10% of rated power, 1000 hours	-1%≤△R≤1%	MIL-STD-202 Method103
Operational life	70℃± 2℃，1000hours, at rated power	-1%≤△R≤1%	MIL-STD-202 Method 108
Mechanical shock	Condition C ,100 g's ,6 msec, 3 mutually perpendicular axes, in 6 directions, three impacts each for a total of 18 times 18 shocks.	-1%≤△R≤1%	MIL-STD-202 Method 213
Vibration	5g's for 20 minutes 12 cycles each of 3 orientations. Test from 10 Hz - 2000 Hz	-1%≤△R≤1%	MIL-STD-202 Method 204
Resistance to Soldering Heat	Condition K, temperature above 217°C, 60s – 150s	-0.5%≤△R≤0.5%	MIL-STD-202 Method 210
Solderability	245±5℃ time: 5sec+0/-0.5sec.	≥95%	J-STD-002

Packaging

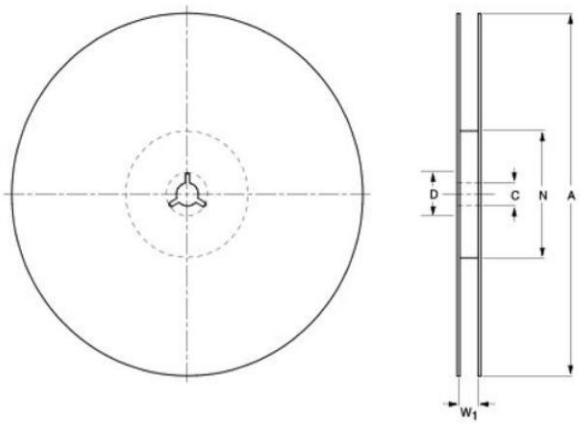
Tape Dimensions



Series	A0(mm)	B0(mm)	W(mm)	E(mm)	F(mm)	T(mm)
1216	3.20±0.10	4.20±0.10	12.00±0.30	1.75±0.10	5.50±0.10	0.30±0.05
2726	6.90±0.10	7.20±0.10	16.00±0.30	1.75±0.10	7.50±0.10	0.40±0.05
4026	6.90±0.10	10.40±0.10	24.00±0.30	1.75±0.10	11.50±0.10	0.40±0.05

Series	P0(mm)	P1(mm)	P2(mm)	D0(mm)	D1(mm)	K0(mm)
1216	4.00±0.10	8.00±0.10	2.00±0.1	1.50±0.10	1.50±0.10	2.30±0.10
						2.80±0.10
2726	4.00±0.10	12.00±0.10	2.00±0.1	1.50+0.10/-0	1.50±0.10	3.60±0.10
						4.50±0.10
4026	4.00±0.10	12.00±0.10	2.00±0.1	1.50±0.10	1.50±0.10	3.60±0.10
						4.40±0.10

Reel Dimensions

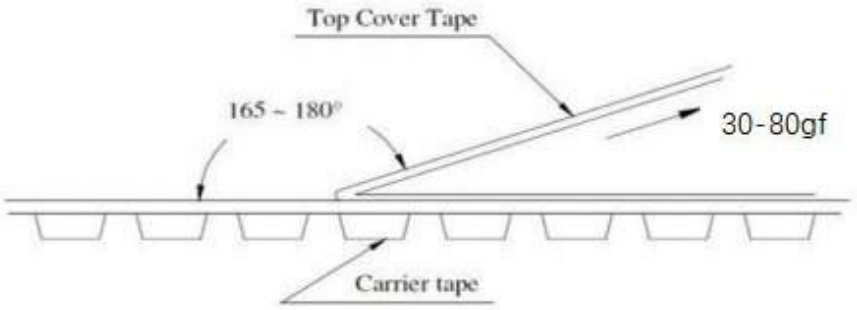


Series	A(mm)	N(mm)	C(mm)	D(mm)	W1(mm)
1216	330.00±2	100.0±1.0	13.5±0.50	21±0.80	12.4 +2/-0
2726	330.00±2	100.0±1.0	13.5±0.50	21±0.80	16.4 +2/-0
4026	330.00±2	100.0±1.0	13.5±0.50	21±0.80	24.4 +2/-0

Quantity of Package

Type	Quantity(pcs）
1216	0.2~0.3mΩ：2500 0.5-3mΩ：3000
2726	0.2~0.5mΩ：1000 0.7-5mΩ：1500
4026	0.2-0.5mΩ：1000 0.7-5mΩ：1500

Peeling Test



Storage

1. The temperature condition must be controlled at 25±5℃, The R.H. must be controlled at 60±15%. Store in accordance with this requirement, and the validity period is two years after the date of manufacture.
2. Please avoid the mentioned harsh environment below when storing to ensure product performance and its' solderability. Places exposed to sea breeze or other corrosive gas, such as Cl_2, H_2S, NH_3, SO_2 and NO_2.
3. When the product is moved and stored, please ensure the correct orientation of the box. Do not drop or squeeze the box. Otherwise, the electrode or the body of the product may be damaged.

© No:POR0220260810001MH(Engineering)

Revision History

Date	Revision	Changes
2025/5/15	A0	New Approval
2026/4/16	A1	Add 1216-0.2、0.3、2、3mΩ Resistance
2026/08/10	A2	Updated the product characteristic tolerance from ≤±1.0% to -1%≤△R≤1%

© No:POR0220260810001MH(Engineering)