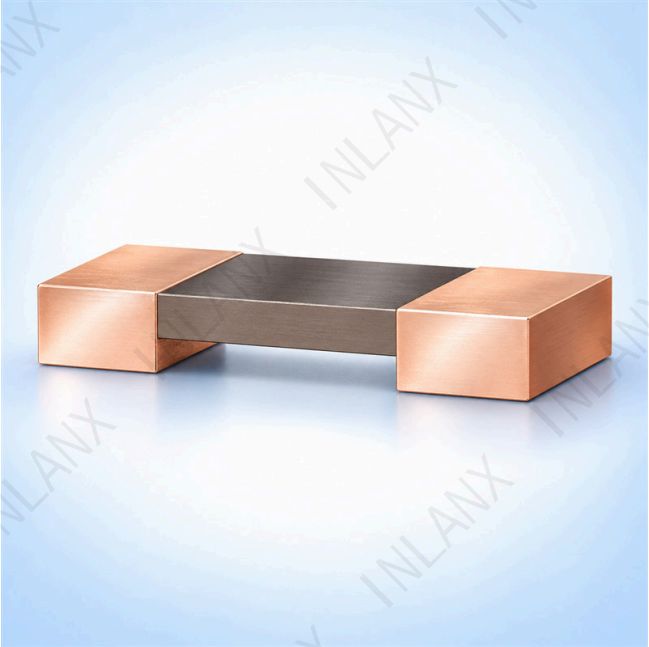
ASH-M-3 Alloy Shunt Resistors

Features

- Tolerance: ±5%, ±1%, ±0.5%
- Operating temperature: -65°C to 170°C
- Electron-beam welded; pulse resistant
- Inductance <3 nH
- RoHS, REACH, halogen-free; AEC-Q200



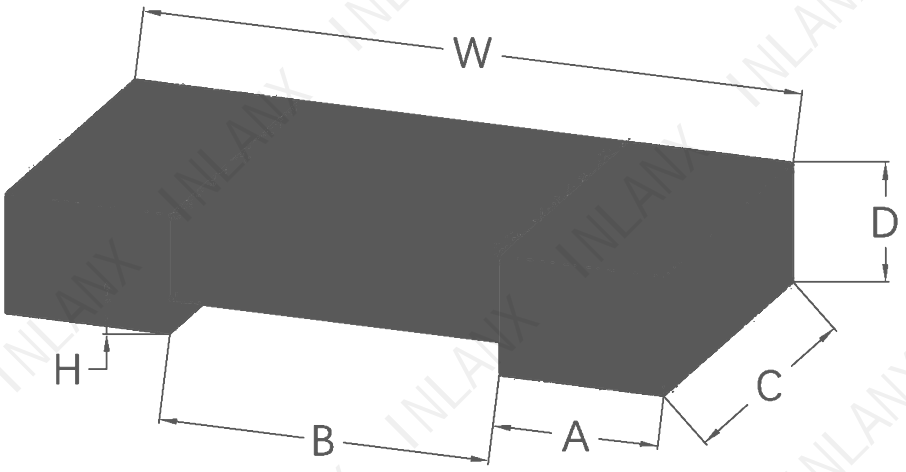
Applications

Current sensing, battery management, energy storage, power modules, variable-frequency and servo drives, automation and industrial instruments.

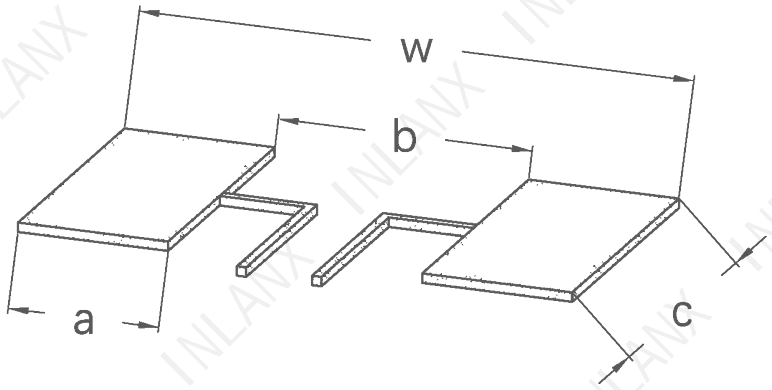
Standard Dimensions • mm

Type	Size (in)	W	A	C	H
ASH-M-33	2512	6.3±0.2	1.2±0.2	3.1±0.3	≥0.3

Mechanical Drawing • mm



PCB Pad Layout • mm



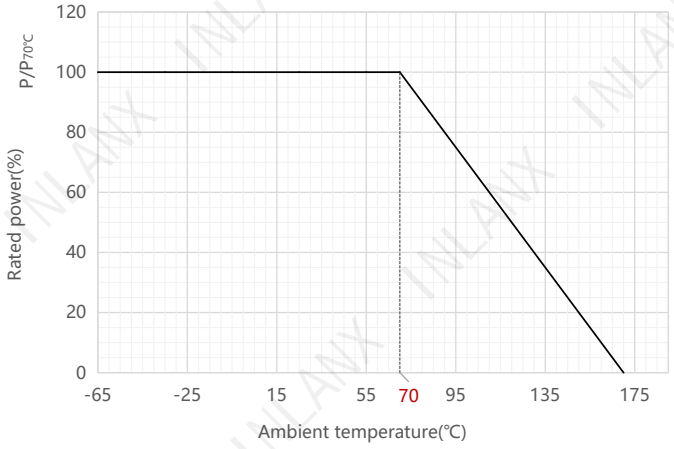
Solder pad type	w	c	a	b
ASH-M-3	7	3.8	1.8	3.4

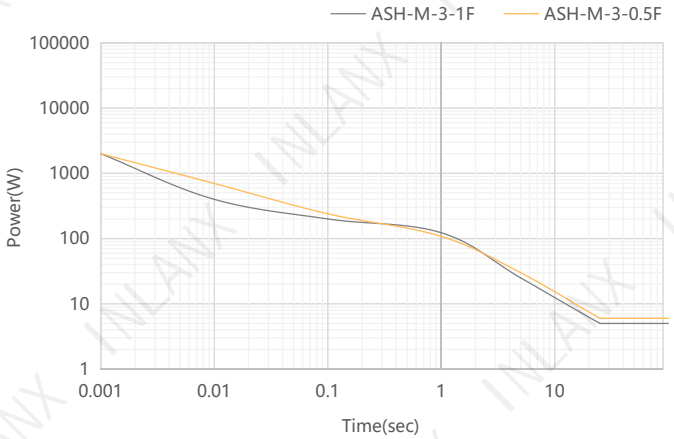
Technical Specifications

Size (in)	Element material	Resistance (mΩ)	D±0.2 (mm)	*TCR (ppm/℃)	P 70 °C (W)
2512	Manganin	0.5	1.5	±50	6
2512	Manganin	1.0	1.0	±50	6

TCR test conditions: -40°C to +150°C.

Derating & Pulse Power





Endurance Tests

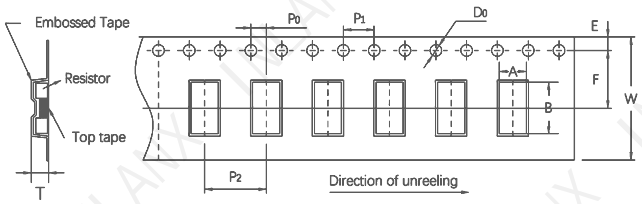
Iterms	Additional Requirements	Reference	Limits
Dimension	Verified according to the specification .	GB/T 5729-1994-4.4.2	As Spec

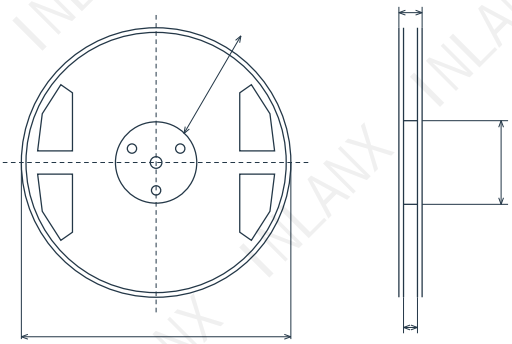
Iterms	Additional Requirements	Reference	Limits
High Temperature Exposure	1000 hrs. (T=170°C) , unpowered. Measurement at 24±4 hoursafter test conclusion .	MIL-STD-202Method 108	±0.5%
Temperature Cycling	1000 Cycles(-55°C to +155°C) , unpowered. Minimum dwell time 15min. at each temperature extreme.maximum transition time1 min. . Measurement atleast 24hoursafter test conclusion .	JESD22-A-104	±0.5%
HumidityBias	1000hrs. (85℃/85%RH) . Note: Specify conditions: 10% of operating power.Measurement at 24±4 hoursafter test conclusion .	MIL-STD-202Method 103	±0.5%
High Temperature Operating Life	1000 hrs.(T=125°C). 100% rated power was applied to the products intermittently: 90 minutes ON and 30 minutes OFF . Measurement at 24±4 hoursafter test conclusion .	MIL-STD-202Method 108	±0.5%
Resistance to Soldering Heat	250℃±5℃ , 30s±5s	MIL-STD-202Method 210	±0.5%
Solderability	1)Steam ageing for 8 hours (93°C); 2) Weld bath temperature 245°C±5°C, duration5±0.5S .	J-STD-002	95% Coverage Minimum
Vibration	20 min.(5 g's) , test from10Hz-2000 Hz, 12 cycles each of 3 orientations .	MIL-STD-202Method 204	±0.5%
Board Flex Test	Apply an external force once to the circuit board, bend at least Dx = 2mm, duration 60+5 S .	AEC-Q200-005	±0.5%
Terminal Strength (SMD)	Apply an external force once to the side of the test device, the force is 17.7N (1.8kg), duration 60+1S .	AEC-Q200-006	±0.5%
Mechanical Shock	1) Pulse waveform: Half-Sine pulse; 2) Accelerate peak: 100g's; 3) Pulse duration: 6ms; 4) Orientation & Shock time: ±X, ±Y, ±Z, 3 times each orientation, total 18 times .	MIL-STD-202H Method 213	±0.5%
ESD	1) Direct Contact (DC): ±6kV ; 2) Air Discharge (AD): ±12kV, ±16kV, ±25kV .	AEC-Q200-002 REV-B	±0.5%
Resistance to Solvents	Note: Add Aqueous wash chemical - OKEM Clean or equivalent.Do not use banned solvents .	MIL-STD-202 Method215	There was no missing, faded, smeared, blurred, or shifted (dislodged) with the marks. There was no crack, separation, crazing, swelling, softening, degradation on the samples.
Flame Retardance	1) Test current: 100%, 115%, 130%, 150% (Long-term operating current) . 2) Test duration: 1h .	AEC-Q200-001	The temperature is not higher than 350 ° C for more than 10 seconds, no flame, no explosion.

Marking Examples

Type	Mark	Explanation
ASH-M-2512	R001 1%	Resistance: 1mΩ Tolerance: ±1%
ASH-M-2512	0m50 0.5%	Resistance: 0.5mΩ Tolerance: ±0.5%

Tape & Reel Packaging • mm





Size-Resistance	A±0.2	B±0.2	W±0.3	E±0.1	F±0.1	P0±0.1	P1±0.1	P2±0.1	D0±0.1	T±0.2	Quantity (pcs)
2512-0.5	3.5	6.7	12	1.75	5.5	2	4	8	1.5	1.7	2000
2512-1	3.5	6.7	12	1.75	5.5	2	4	8	1.5	1.2	3000

Size (in)	φA	φB	φC	W	T
2512	178	60	13	16.5	21

Ordering Information

Example: ASH -M -3 -1 F -×. M: Manganin; 3: 2512 size; resistance in mΩ; J ±5%, F ±1%, D ±0.5%; ×: special requirement.

Standard measurement: 20±2°C, 65±5% RH; where judgement is not in doubt, measurements may be made at 5–35°C and 45–85% RH.

Revision History

Version	Date	Description of amendment
A1.0	8-Nov-2023	First issue
A1.1	22-Nov-2023	Correction of the thickness (D) dimensions of the product