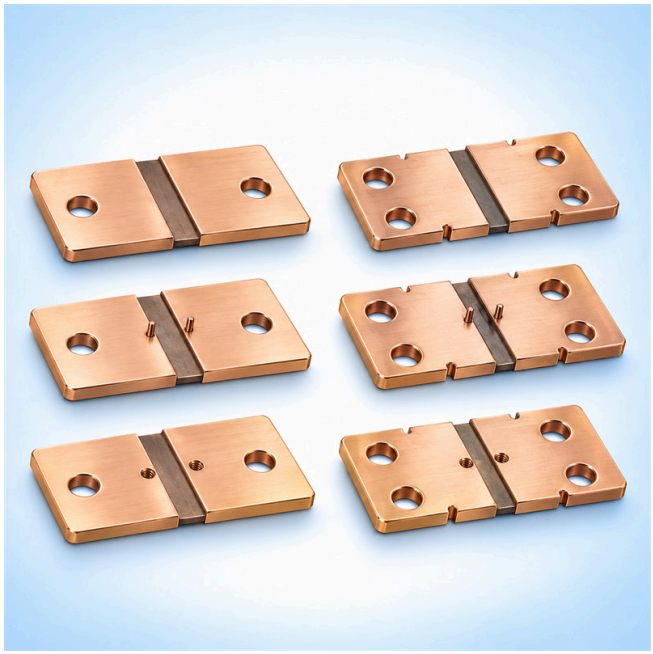
FHR High-current Shunt Resistors

Features

- High current capability
- Thermal EMF <1 µV/°C; inductance <3 nH
- Operating temperature: -65°C to 170°C
- RoHS, REACH and AEC-Q200 compliant
- Custom dimensions and structures available



Applications

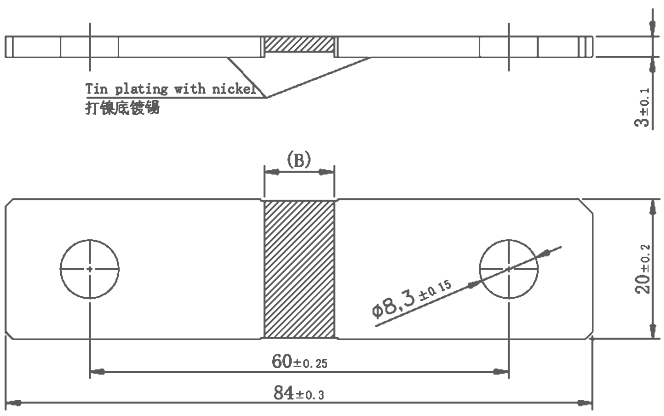
Current sensing, high-current power supplies, power-battery management and energy storage.

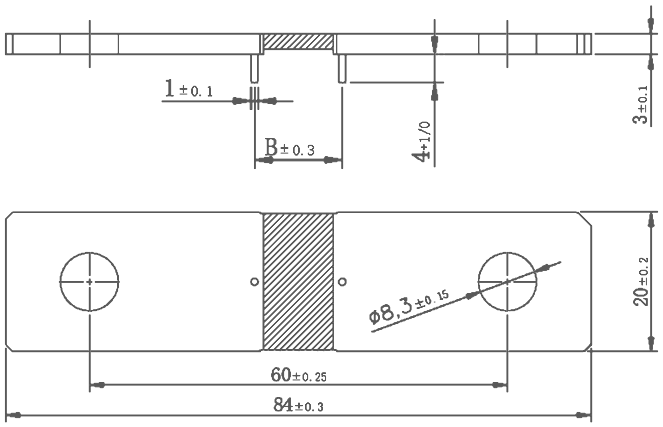
Ordering Information

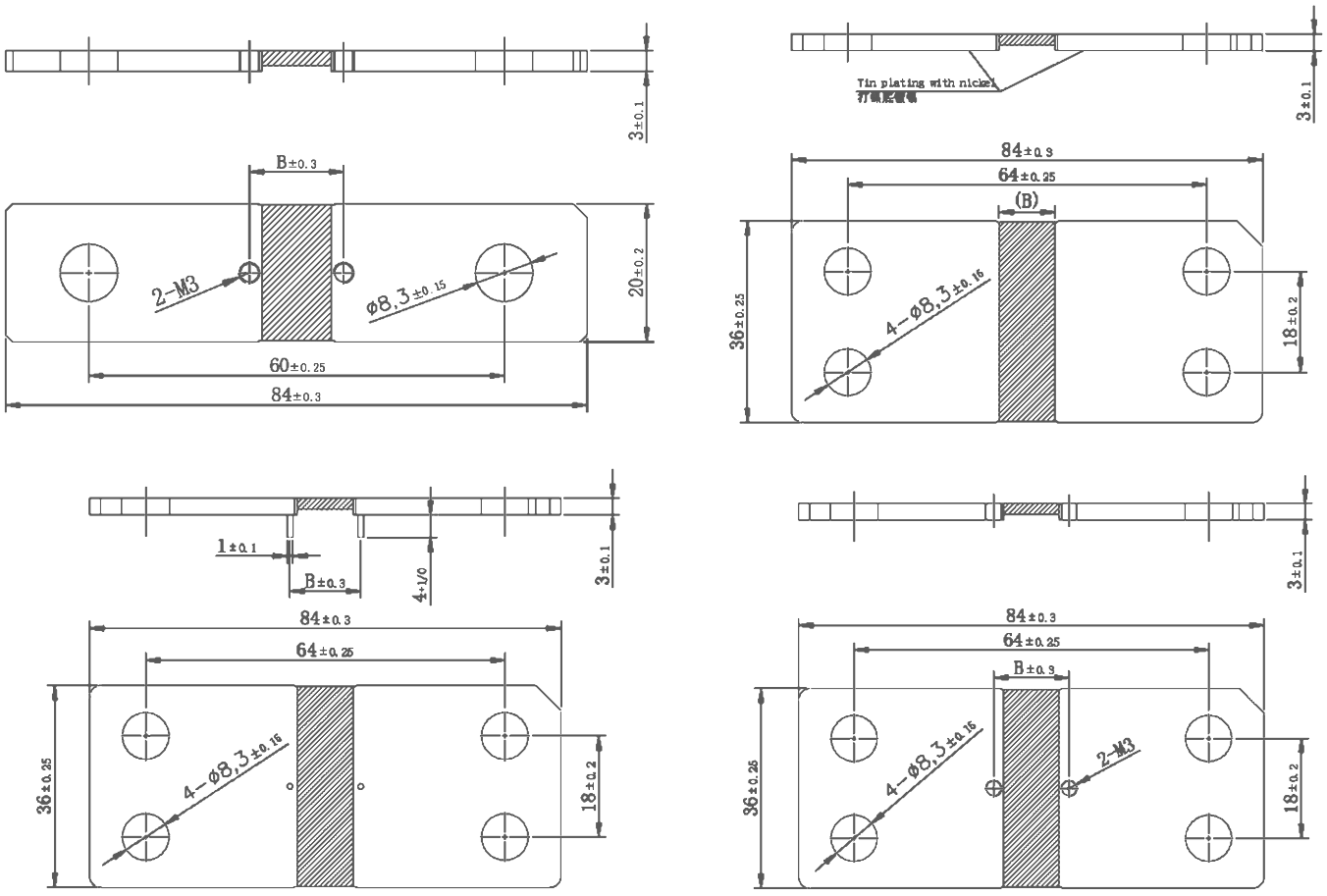
Example: FHR -M -0.025 J -8436 L2-X1. S: CuMn7Sn; M: Manganin; resistance in mΩ; J ±5%; 8420/8518/8436: 84×20/85×18/84×36 mm; L/P: 3/4 mm electrodes; 2/4 mounting holes; X flat, P pin, M threaded-hole; 1 internal code.

Standard 8420/8518 versions have two mounting holes and 3 mm electrodes; standard 8518 mounting-hole diameter is 7 mm. Detailed dimensions follow the approved drawing.

Mechanical Dimensions • mm







Electrical Specifications

Type	Power (W)	Resistance (mΩ)	B (mm)	Material	Rthi (K/W)	Sampling form	TCR (ppm/°C)
FHR-S-0.035J-8420-X2	36	0.035	5	S	1	X: Flat type	±125
FHR-S-0.035J-8420-P4	36	0.035	7.6	S	1	P: Pin type	±150
FHR-S-0.035J-8420-M3	36	0.035	8.6	S	1	M: Threaded-hole type	±150
FHR-M-0.05J-8420-X2	36	0.05	5	M	1.5	X: Flat type	±125
FHR-M-0.05J-8420-P4	36	0.05	7.6	M	1.5	P: Pin type	±150
FHR-M-0.05J-8420-M3	36	0.05	8.6	M	1.5	M: Threaded-hole type	±150
FHR-M-0.1J-8420-X2	36	0.1	10	M	2	X: Flat type	±100
FHR-M-0.1J-8420-P4	36	0.1	12.6	M	2	P: Pin type	±150
FHR-M-0.1J-8420-M3	36	0.1	13.6	M	2	M: Threaded-hole type	±150
FHR-M-0.2J-8420-X2	36	0.2	20	M	3	X: Flat type	±75
FHR-M-0.2J-8420-P4	36	0.2	22.6	M	3	P: Pin type	±100
FHR-M-0.2J-8420-M3	36	0.2	23.6	M	3	M: Threaded-hole type	±100
FHR-M-0.05J-8518-X1	36	0.05	4.5	M	1.5	X: Flat type	±150
FHR-M-0.05J-8518-P4	36	0.05	7.1	M	1.5	P: Pin type	±150
FHR-M-0.05J-8518-M3	36	0.05	8.1	M	1.5	M: Threaded-hole type	±150

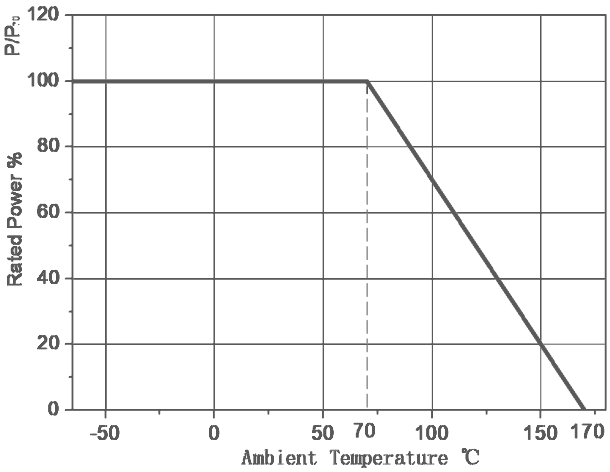
Type	Power (W)	Resistance (mΩ)	B (mm)	Material	Rthi (K/W)	Sampling form	TCR (ppm/°C)
FHR-M-0.1J-8518-X1	36	0.1	10	M	2	X：Flat type	±100
FHR-M-0.1J-8518-P4	36	0.1	12.6	M	2	P：Pin type	±150
FHR-M-0.1J-8518-M3	36	0.1	13.6	M	2	M：Threaded-hole type	±150
FHR-M-0.2J-8518-X1	36	0.2	20	M	3	X：Flat type	±75
FHR-M-0.2J-8518-P4	36	0.2	22.6	M	3	P：Pin type	±100
FHR-M-0.2J-8518-M3	36	0.2	23.6	M	3	M：Threaded-hole type	±100
FHR-M-0.025J-8436L2-X1	50	0.025	5	M	1.5	X：Flat type	±125
FHR-M-0.025J-8436L2-P4	50	0.025	7.6	M	1.5	P：Pin type	±150
FHR-M-0.025J-8436L2-M3	50	0.025	8.6	M	1.5	M：Threaded-hole type	±150
FHR-M-0.05J-8436L2-X1	50	0.05	10	M	2	X：Flat type	±100
FHR-M-0.05J-8436L2-P4	50	0.05	12.6	M	2	P：Pin type	±150
FHR-M-0.05J-8436L2-M3	50	0.05	13.6	M	2	M：Threaded-hole type	±150
FHR-M-0.1J-8436L2-X1	50	0.1	20	M	3	X：Flat type	±75
FHR-M-0.1J-8436L2-P4	50	0.1	22.6	M	3	P：Pin type	±100
FHR-M-0.1J-8436L2-M3	50	0.1	23.6	M	3	M：Threaded-hole type	±100
FHR-M-0.025J-8436L4-X1	50	0.025	5	M	1.5	X：Flat type	±125
FHR-M-0.025J-8436L4-P4	50	0.025	7.6	M	1.5	P：Pin type	±150
FHR-M-0.025J-8436L4-M3	50	0.025	8.6	M	1.5	M：Threaded-hole type	±150
FHR-M-0.05J-8436L4-X1	50	0.05	10	M	2	X：Flat type	±100
FHR-M-0.05J-8436L4-P4	50	0.05	12.6	M	2	P：Pin type	±150
FHR-M-0.05J-8436L4-M3	50	0.05	13.6	M	2	M：Threaded-hole type	±150
FHR-M-0.1J-8436L4-X1	50	0.1	20	M	3	X：Flat type	±75
FHR-M-0.1J-8436L4-P4	50	0.1	22.6	M	3	P：Pin type	±100
FHR-M-0.1J-8436L4-M3	50	0.1	23.6	M	3	M：Threaded-hole type	±100
FHR-M-0.02J-8436P4-X1	50	0.02	5	M	1.5	X：Flat type	±125
FHR-M-0.02J-8436P4-P4	50	0.02	7.6	M	1.5	P：Pin type	±150
FHR-M-0.02J-8436P4-M3	50	0.02	8.6	M	1.5	M：Threaded-hole type	±150
FHR-M-0.025J-8436P4-X1	50	0.025	6	M	1.6	X：Flat type	±125
FHR-M-0.025J-8436P4-P4	50	0.025	8.6	M	1.6	P：Pin type	±150
FHR-M-0.025J-8436P4-M3	50	0.025	9.6	M	1.6	M：Threaded-hole type	±150

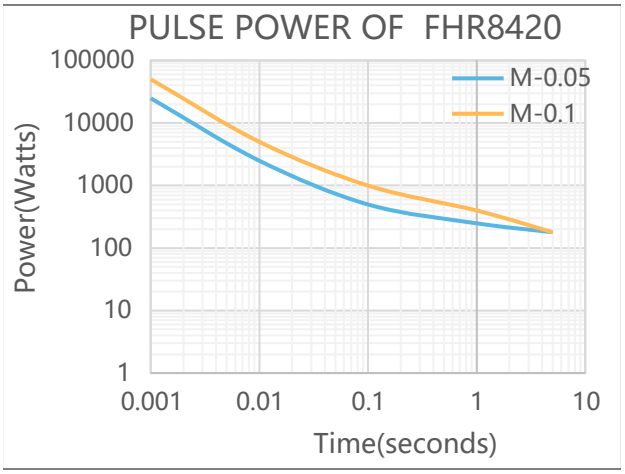
Endurance Tests

Items	Additional Requirements	Reference	Limits
Operational Life	Condition D Steady State TA=70℃ at rated power.	MIL-STD-202 Method 108	±0.5%

Items	Additional Requirements	Reference	Limits
High Temperature Exposure	1000hrs.@T=170℃.Unpowered.	MIL-STD-202 Method 108	±0.5%
Biased Humidity	1000hrs 85℃/85%RH。Note: Specified conditions:10% of operating power.	MIL-STD-202 Method 103	±0.5%
Temperature Cycling	1000 Cycles (-55℃ to +150℃)	JESD22 Method JA-104	±0.5%
Solderability	245℃±5℃,5s±0.5s	MIL-STD-202 Method 208H	95% Coverage Minimum
Short Time Overload	5×Rated power for 5s.	MIL-STD-202 Method 201	±0.5%
Resistance to Soldering Heat	260℃±5℃，10s±1s.	MIL-STD-202 Method 210	±0.5%
Mechanical Shock	100g , 6ms , axes ±X 、±Y and ±Z, 3 Shocks per axis, total 18 times.	MIL-STD-202 Method 213	±0.5%
Vibration	(10 - 2000 Hz) ,5 g's for 20 min, 12 cycles each of 3 axis.	MIL-STD-202 Method 204	±0.5%

Derating & Pulse Power





Packaging & Revision

Foam or blister-tray packaging: 144 pcs/box for 8420/8518; 96 pcs/box for 8436. Source revision A1.0, 30-May-2023, first issue.