

Automotive Grade High-Precision Manganese-Copper Alloy Shunt

■ MBRAS 6918

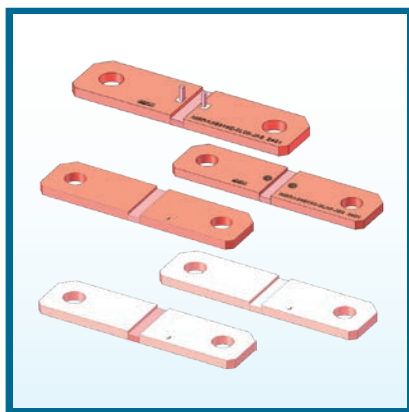
AEC-Q200 Compliant

Features

- The MBRAS 6918 series is designed for automotive-grade current sensing, capable of measuring currents from hundreds to thousands of amperes.
- Due to special alloy materials, the MBRAS 6918 series has good long-term stability and is capable to withstand pulse current several times, which is higher than the rated current.
- The special heat treatment process of the MBRAS 6918 series make it a low current coefficient with very good compensation characteristics, minimizing resistance changes under varying currents.
- With thermal EMF of less than 1.0μV/°C to copper and inductance less than 3nH, The MBRAS 6918 series has little effect on the voltage output of the millivolt level and also performs perfect at high frequency applications.

Applications

- Automotive Electronics
- Precision Power Supply
- Instrumentation
- Medical Equipment
- Test End Measurement Equipment
- Medical Equipment



◆ Electrical Specification

Series	Resistance Value	Power	Voltage Terminal Structure	Max. Operating Current	Operating Temperature	TCR ppm/°C+20°C Ref)	Tolerance	Thermal Resistance	Weight
MBRAS 6918	50μΩ	25W	PIN type	700 A	-55℃~170℃	±200(-55℃~-+20℃) ±150(+20℃~-+170℃)	± 0.5 % ± 1.0 % ± 2.0 % ± 5.0 %	1.0 ℃/W	27g±5g
			M3 type	700 A		±250(-55℃~-+20℃) ±200(+20℃~-+170℃)			
			Standard type	700 A		±150(-55℃~-+20℃) ±100(+20℃~-+170℃)			
			Standard type (nickel-plated)	700 A		±200(-55℃~-+20℃) ±150(+20℃~-+170℃)			
			Standard type (partial nickel-plated)	700 A		±150(-55℃~-+20℃) ±100(+20℃~-+170℃)			
	100μΩ	25W	PIN type	500 A		±175(-55℃~-+20℃) ±100(+20℃~-+170℃)	± 0.5 % ± 1.0 % ± 2.0 % ± 5.0 %	1.7 ℃/W	
			M3 type	500 A		±175(-55℃~-+20℃) ±100(+20℃~-+170℃)			
			Standard type	500 A		±150(-55℃~-+20℃) ±100(+20℃~-+170℃)			
			Standard type (nickel-plated)	500 A		±200(-55℃~-+20℃) ±150(+20℃~-+170℃)			
			Standard type (partial nickel-plated)	500 A		±150(-55℃~-+20℃) ±100(+20℃~-+170℃)			

◆ Part Number information

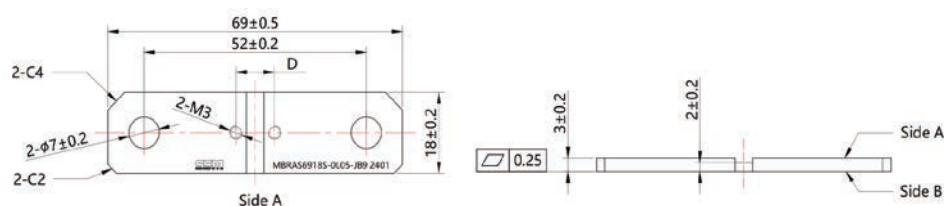
M	B	R	A	S	6	9	1	8	R	-	0	L	1	0	-	J	A	9
Series (5 characters)					Size (4 characters)				TCR (1 character)		Resistance (6 characters)				Tolerance (1 characters)		Voltage Terminal Structure (2 characters)	
MBRAS					6918				R = ±100 ppm/°C E = ±150 ppm/°C S = ±200 ppm/°C (+20°CRef) (+20°C~+170°C)		-0L05- = 50 μΩ -0L10- = 100 μΩ				D = ± 0.5 % F = ± 1.0 % G = ± 2.0 % J = ± 5.0 %		A9 = PIN type. B9 = M3 type. S9 = Standard type. SN = Standard type (nickel-plated) . S4 = Standard type (partial nickel-plated).	

◆ Dimensions

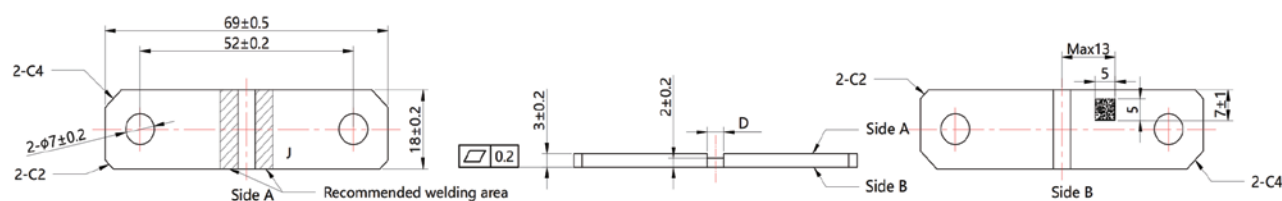
PIN Type



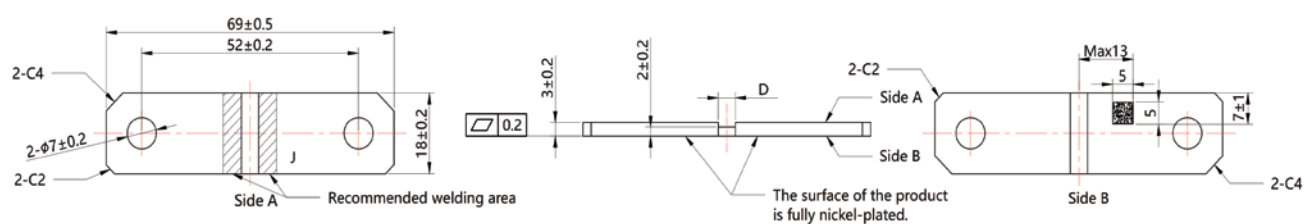
M3 Type



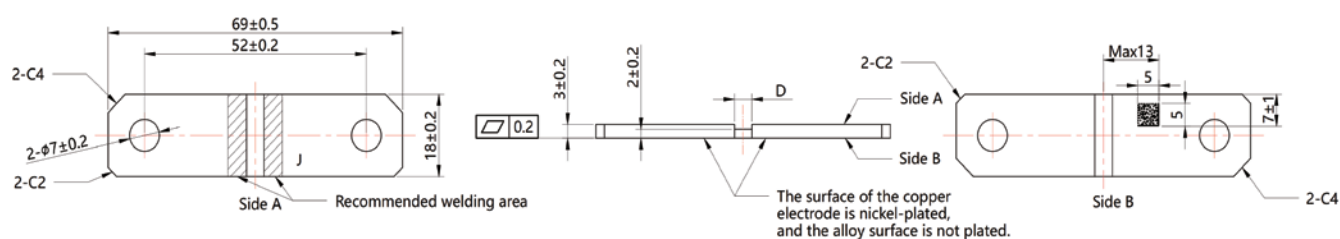
Standard Type



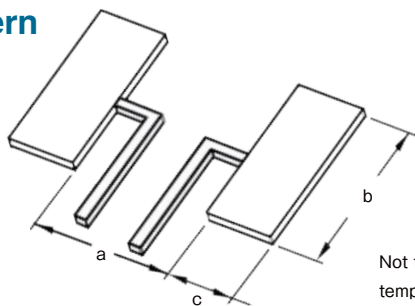
Standard Type (Nickel-Plated)



Standard Type (Partial Nickel-Plated)



◆ Land Pattern



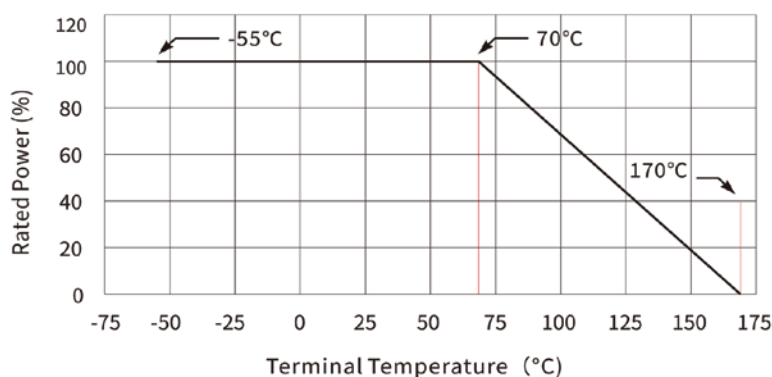
Not following the recommended land pattern design can seriously affect the temperature coefficient measurement results and current sensing accuracy!

Series	Resistance Value	Voltage Terminal Structure	Unit:mm			
			D	a	b	c
MBRAS 6918	50 $\mu\Omega$	PIN type	7.0 $\pm$ 0.2	\	\	\
		M3 type	9.0 $\pm$ 0.2	\	\	\
		Standard type	4.1 $\pm$ 0.3	4.8	19	4
		Standard type(nickel-plated)	4.1 $\pm$ 0.3	4.8	19	4
		Standard type(partial nickel-plated)	4.1 $\pm$ 0.3	4.8	19	4
	100 $\mu\Omega$	PIN type	13.5 $\pm$ 0.2	\	\	\
		M3 type	14.5 $\pm$ 0.2	\	\	\
		Standard type	8.1 $\pm$ 0.3	8.8	19	4
		Standard type(nickel-plated)	8.1 $\pm$ 0.3	8.8	19	4
		Standard type(partial nickel-plated)	8.1 $\pm$ 0.3	8.8	19	4

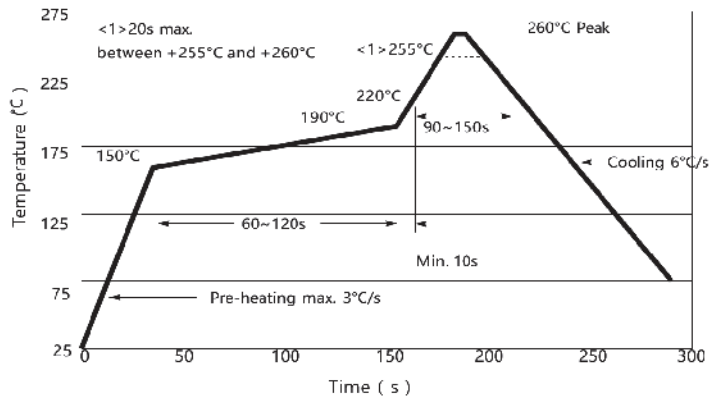
◆ Performance

Test	Test Method	Standards	Max.
Thermal Shock	-55°C, 15min~transition time<20s~+155°C, 15min, 1000 cycles	MIL-STD-202 Method 107	$\Delta R \leq \pm 0.5\%$
Short Time Overload	5x rated voltage, 5s	IEC 60115-1 4.13	$\Delta R \leq \pm 0.5\%$
Low Temperature Storage	-55°C for 24h, unpowered	IEC 60115-1 4.36	$\Delta R \leq \pm 0.5\%$
Bias Humidity	+85°C, 85%RH, powered 10% rated power for 1000h	AEC-Q200 TEST 7 MIL-STD-202 Method 103	$\Delta R \leq \pm 0.5\%$
High Temperature Storage	+170°C for 1000h, unpowered	AEC-Q200 TEST 3 MIL-STD-202 Method 108	$\Delta R \leq \pm 1.0\%$
Mechanical Shock	Half sine wave, peak acceleration 100g's, pulse duration 6ms, 3 times in each of six directions, on three different axes	AEC-Q200 TEST 13 MIL-STD-202 Method 213	$\Delta R \leq \pm 0.5\%$
Vibration	10-2KHz, 5g's, 20 min per cycle, 12 in each of the three directions of X.Y.Z loops	AEC-Q200 TEST 14 MIL-STD-202 Method 204	$\Delta R \leq \pm 0.5\%$
Load Life	+70°C for 1000h, rated power, 90min on, 30min off +70°C refers to terminal temperature	AEC-Q200 TEST 8 MIL-STD-202 Method 108	$\Delta R \leq \pm 1.0\%$
Resistance to Soldering Heat	+260°C, 10s	AEC-Q200 TEST 15 MIL-STD-202 Method 210	$\Delta R \leq \pm 0.5\%$
TCR	-55°C and +170°C, +20°C Ref.	MIL-STD-202G Method 304	Within the nominal TCR

◆ Derating Curve

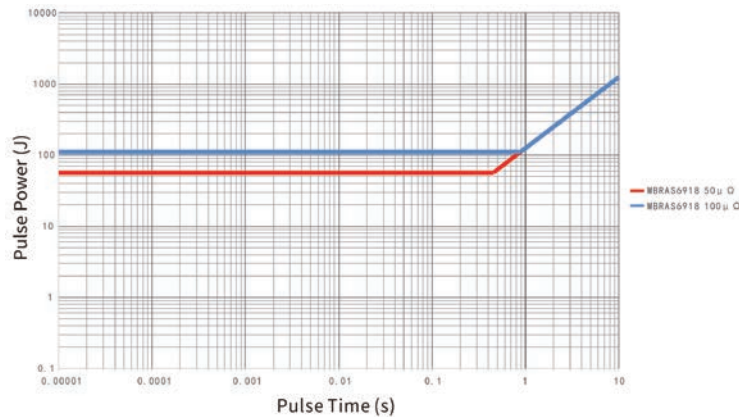


◆Reflow Soldering Profile

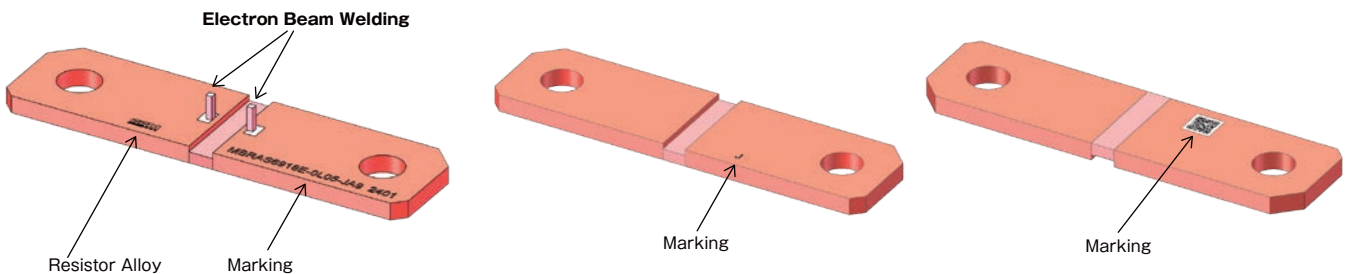


Resistor Surface Temperature:
Pre-Heat: +150°C+190°C,60~120sec.
Reflow: Above +220°C,90~150sec.
Applicable Solder Composition: Sn-Ag-Cu

◆Maximum Pulse Energy Curve

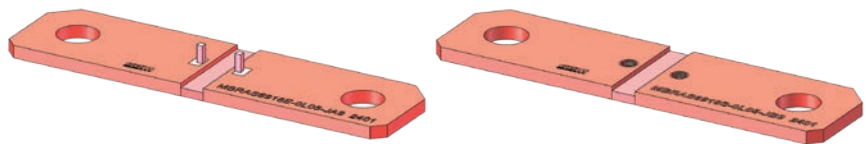


◆Construction



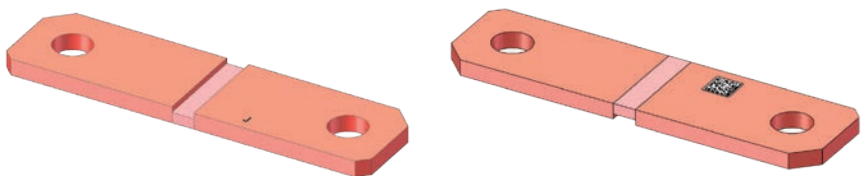
◆Marking

PIN type & M3 type:LOGO+Model+DC



LOGO:SSM
MBRAS6918E-OL05-JA9:Model
2401:DC

Standard type:Tolerance+DM Code



J:Tolerance
DM Code:Model +Traceability Number
(31 characters,including a space
in the middle of the string)
MBRAS6918E-OL05-JA9 AL23H13P001
Model Traceability Number

◆ Popular Part Numbers

Part Number	Size	Tolerance	Resistance	TCR (+20°C Ref)	Power	Max. Operating Current
MBRAS6918E-0L05-DA9	6918	±0.5%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-FA9	6918	±1.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-GA9	6918	±2.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-JA9	6918	±5.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918S-0L05-DB9	6918	±0.5%	50μΩ	±200ppm/°C	25W	700A
MBRAS6918S-0L05-FB9	6918	±1.0%	50μΩ	±200ppm/°C	25W	700A
MBRAS6918S-0L05-GB9	6918	±2.0%	50μΩ	±200ppm/°C	25W	700A
MBRAS6918S-0L05-JB9	6918	±5.0%	50μΩ	±200ppm/°C	25W	700A
MBRAS6918R-0L05-DS9	6918	±0.5%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-FS9	6918	±1.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-GS9	6918	±2.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-JS9	6918	±5.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918E-0L05-DSN	6918	±0.5%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-FSN	6918	±1.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-GSN	6918	±2.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918E-0L05-JSN	6918	±5.0%	50μΩ	±150ppm/°C	25W	700A
MBRAS6918R-0L05-DS4	6918	±0.5%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-FS4	6918	±1.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-GS4	6918	±2.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L05-JS4	6918	±5.0%	50μΩ	±100ppm/°C	25W	700A
MBRAS6918R-0L10-DA9	6918	±0.5%	100μΩ	±100ppm/°C	25W	500A
MBRAS6918R-0L10-FA9	6918	±1.0%	100μΩ	±100ppm/°C	25W	500A
MBRAS6918R-0L10-GA9	6918	±2.0%	100μΩ	±100ppm/°C	25W	500A
MBRAS6918R-0L10-JA9	6918	±5.0%	100μΩ	±100ppm/°C	25W	500A
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