General

- Chip size from 3921 to 5931
- Resistance value from 0.2mΩ to 4mΩ
- Low thermal EMF
- Low TCR
- Lead free, RoHS compliant for global
- Applications and halogen free

Application

- Switching model power supply.
- Battery pack.
- Notebook, personal computer.
- Test Instrument.
- Power Amplifier.

Electrical Specifications

Type	Power Rating at 70℃(W)	Resistance Range (mΩ)	TCR (ppm/℃)	Resistance tolerance	Operation Temp. Range
3921	5	0.2、0.3、0.5	±150	±1%(F) ±2%(G) ±5%(J)	-55℃~+170℃
		1、2、3、4	±75		
5931	7	0.2、0.3、0.5	±150		
		1、2、3	±75		

Part Number information

SMS 39 M 5 F R002 T

【1】【2】【3】【4】【5】【6】【7】

【1】Series Name: SART Shunt Type

【2】Chip size: 39:3921 59:5931

【3】Material Code: M:MnCu F:FeCr

【4】Power Code: 5:5W 7:7W

【5】Resistance Tolerance: F:±1% G:±2% J:±5%

【6】Resistance Code:0L20=0.2mΩ R002=2mΩ

【7】Packaging Code: T: Tape& Reel B:Bulk Pack

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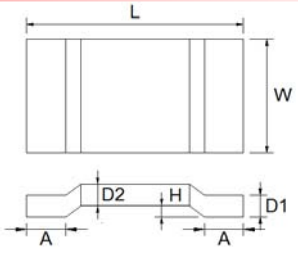
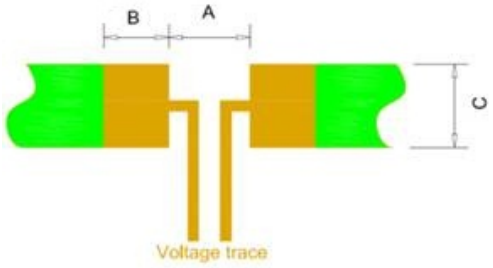
Dimensions



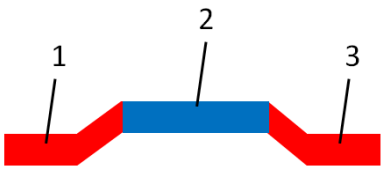
Type	Materials	Resistance Range (mΩ)	L (mm)	W (mm)	A (mm)	H (mm)	D1 (mm)	D2 (mm)
3921	MnCu	0.2	10.00±0.30	5.20±0.30	2.00±0.30	0.50±0.10	1.70±0.10	1.70±0.10
	MnCu	0.3					1.42±0.10	1.42±0.10
	MnCu	0.5					0.85±0.10	0.85±0.10
	FeCr	1					1.37±0.10	1.37±0.10
	FeCr	2					0.70±0.10	0.70±0.10
	FeCr	3					0.47±0.10	0.47±0.10
	FeCr	4					0.35±0.10	0.35±0.10
5931	MnCu	0.2	15.00±0.30	7.70±0.30	4.20±0.30	0.50±0.10	1.50±0.10	1.50±0.10
	MnCu	0.3					0.96±0.10	0.96±0.10
	MnCu	0.5					0.58±0.10	0.58±0.10
	FeCr	1					0.94±0.10	0.94±0.10
	FeCr	2					0.47±0.10	0.47±0.10
	FeCr	3					0.32±0.10	0.32±0.10

Recommended Land Patterns



Type	A (mm)	B (mm)	C (mm)
3921	5.60	2.70	6.20
5931	5.60	5.20	8.75

Materials



No.	Materials
1	Copper electrode
2	MnCu/FeCr
3	Copper electrode

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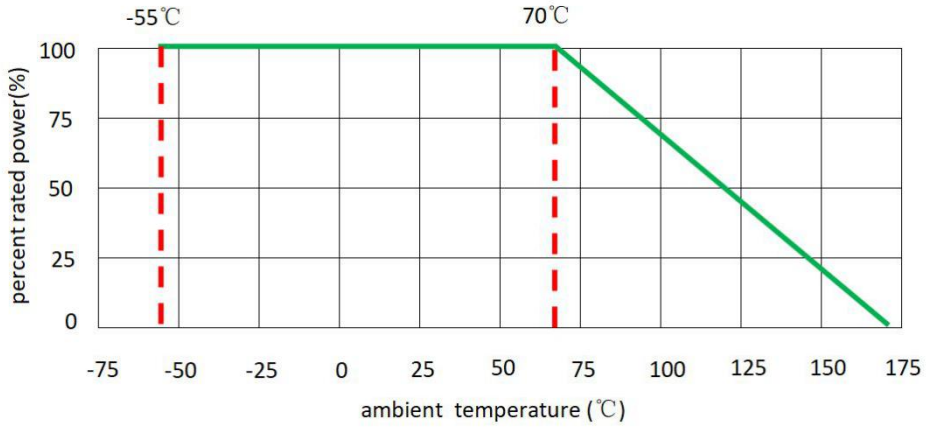
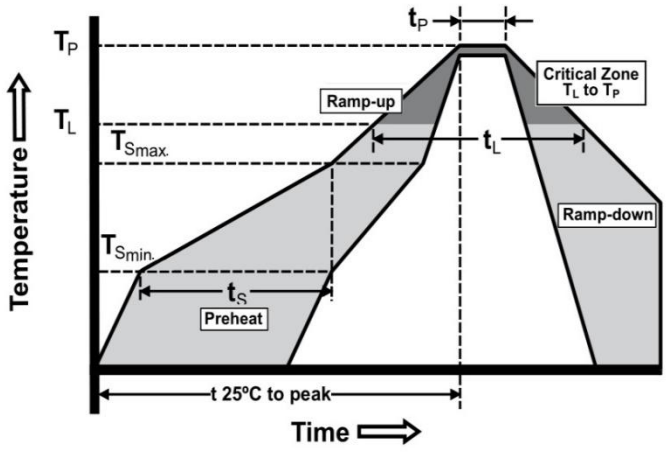
Power Derating Curve



Recommended Solder Curve

1. Infrared Reflow
   - Temperature: 260℃
   - Time: 5sec Max.
   - Recommend Reflow profile:



Profile Feature	Pb-Free Assembly
Average Ramp-up Rate (Ts_{max} to Tp)	3℃/sec Max.
Preheat Temperature Min.(Ts_{min}) Temperature Max.(Ts_{max}) Time(Ts_{min} to Ts_{max})	150℃ 200℃ 60sec~120sec
Peak Temperature(Tp)	260℃
Time within 5℃ of actual Peak Temperature(Tp)	5sec
Melting tin time(T_L)	20sec~30sec
Ramp-down Rate	6℃/sec Max.
Time 25℃ to peak Temperature	8 min Max.

2. Wave soldering
   - Reservoir Temperature: 260℃
   - Time in Reservoir: 10sec Max.

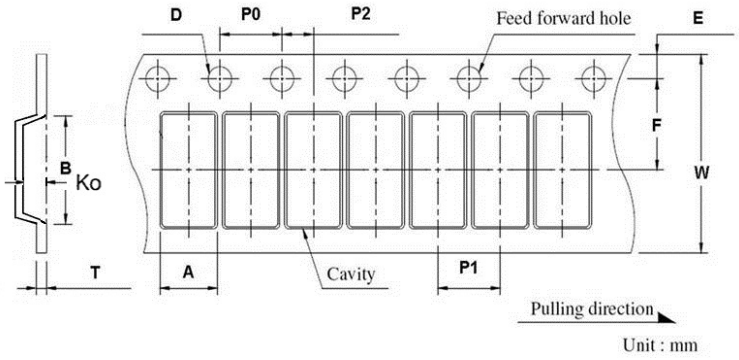
3. Hand Soldering
   - Temperature: 350℃
   - Time: 5sec Max.

Product Characteristics

Item	Test condition/ Methods	Performance	Standard
Resistance	Measuring resistance value at room temperature 25℃±5℃	Refer to SART Spec	IEC60115-1 4.5
Temperature coefficient of resistance	TCR =$(R-R_0)/R_0(T2-T1)X\ 10^6$ T1 T2 Test temperature：+25℃~+125℃	Refer to SART Spec	MIL-STD-202 Method 304
Short time Overload	5 times the rated power for 5 seconds	|△R|≤±1%	IEC 60115-1 4.13
Resistance to Soldering Heat	260℃± 5℃ time：12sec± 0.5sec	|△R|≤±1%	MIL-STD-202 Method 210
Thermal shock	-55℃ (15min)/+150℃(15min), 1000 cycles	|△R|≤±1%	MIL-STD-202 Method107G
Low temperature operation	Rating power at -65℃ for 45 min	|△R|≤±1%	MIL-STD-26E
High Temperature Storage	170℃ for 1000hours, No power	|△R|≤±1%	IEC6011501-4.25
Temperature Humidity Bias Test	+85℃，85% RH，10%bias, 1000hours	|△R|≤±0.5%	MIL-STD-202 Method103
Mechanical shock	100 g's ,6 msec, 5pulses	|△R|≤±0.5%	MIL-STD-202 Method 213
Vibration	The frequency varies from 10HZ to 2000HZ, 1 min, 3 directions, and 12 hours	|△R|≤±0.5%	MIL-STD-202 Method 204
Load life	70℃± 2℃, 1000 hours, at rated power 1.5 hours "ON", 0.5 hours "OFF"	|△R|≤±1%	MIL-STD-202 Method 108
Moisture resistance	MIL-STD-202,method106， No power, 7b not required	|△R|≤±1%	MIL-STD-202 Method 106

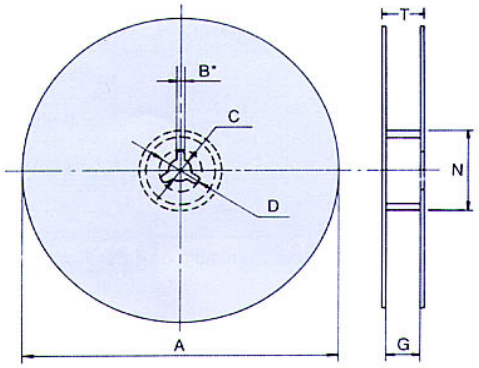
Packaging

1. Embossed Tape Dimensions



Type	A (mm)	B (mm)	E (mm)	F (mm)	W (mm)
3921	6.00±0.10	10.6±0.10	1.75±0.10	11.50±0.10	24.00±0.20
5931	8.60±0.10	15.6±0.10	1.75±0.10	11.50±0.10	24.00±0.20
Type	P0 (mm)	P1 (mm)	P2 (mm)	D (mm)	K0 (mm)
3921	4.00±0.10	8.00±0.10	2.00±0.05	1.50±0.10	1.20±0.20/2.00±0.20
5931	4.00±0.10	8.00±0.10	2.00±0.05	1.50±0.10	1.20±0.20/2.00±0.20

2. Reel Dimensions

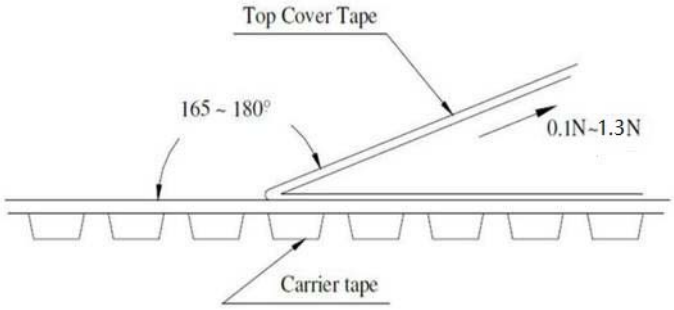


Type	A (mm)	N (mm)	C (mm)	D (mm)	B (mm)	G (mm)	T (mm)
3921	330.0±2.00	100.0±4.00	13.20±0.20	21.50±0.25	2.6±0.2	24.4+2.0/-0	28.5Max
5931	330.0±2.00	100.0±4.00	13.20±0.20	21.50±0.25	2.6±0.2	24.4+2.0/-0	28.5Max

3. Quantity of Package

Type	3921	5931
Quantity(pcs）	2500	2000

4. Peeling Test



Storage

- The ambient temperature shall between 5℃~30℃.
- The relative humidity recommended for storage is between 25%RH~60%RH.
- Sealed plastic bags with desiccant shall be used to reduce the oxidation of the termination and shall only be opened prior to use.
- The products shall not be stored in areas where harmful gases containing sulfur or chlorine are present.