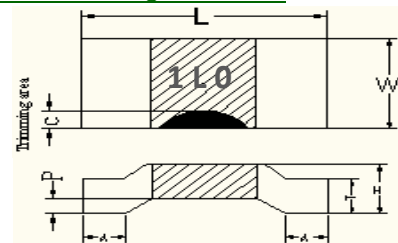


Features: Available in up to 2512/3W, 3920/5W, 5930/10W power rating
Resistance value from 0.2mΩ to 5mΩ
Current handling up to 129A in 3920 size
Excellent long term stability
RoHS compliant



Applications: Power modules
Frequency converters
Current sensor for power hybrid sources
High current handling for automotive engine controls and power management

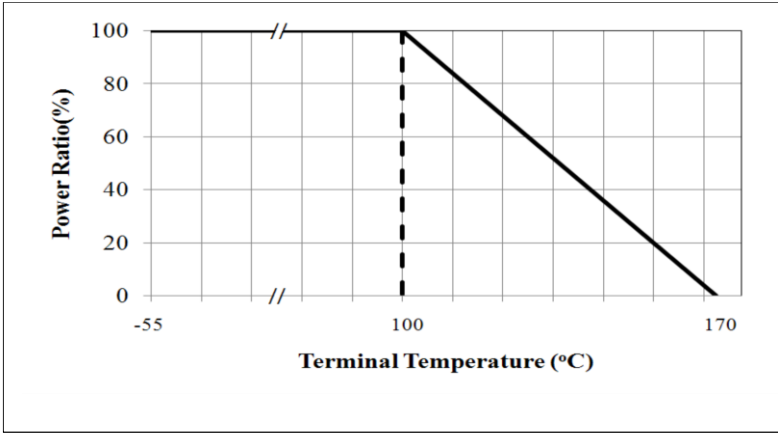
SR Series					
Type / Code	Ohm Range Ω / m Ω and Tolerance		Power Rating	TCR (ppm/°C)	Resistance material
	1%, 2% and 5%				
2512	0.0003	0.3	3W	±150 ppm/°C	MnCuSn
	0.0005	0.5		±115 ppm/°C	MnCu
	0.00075	0.75		±115 ppm/°C	MnCu
	0.001	1		±100 ppm/°C	MnCu
	0.002	2		±50 ppm/°C	FeCrAl
	0.003	3	2W	±50 ppm/°C	FeCrAl
	0.004	4			FeCrAl
	0.005	5	1.5W	±50 ppm/°C	FeCrAl
3920	0.0002	0.2	5W	±200 ppm/°C	MnCuSn
	0.0003	0.3		±150 ppm/°C	MnCu
	0.0005	0.5		±70 ppm/°C	MnCu
	0.001	1		±50 ppm/°C	MnCu
	0.002	2	4W	±50 ppm/°C	FeCrAl
	0.003	3	3W		FeCrAl
	0.004	4	2.5W		FeCrAl
	0.005	5	2W		FeCrAl
5930	0.0002	0.2	10W	±100 ppm/°C	MnCu
	0.0003	0.3	7W		MnCu
	0.0005	0.5	6W	±75 ppm/°C	MnCu
	0.001	1		±50 ppm/°C	FeCrAl
	0.002	2	4W		FeCrAl
	0.003	3	3W		FeCrAl

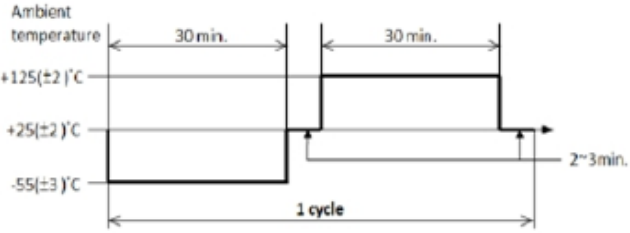


Type / Code	L	W	H	T	A	C (max.)	P	Unit
SR2512...L300	0.256 ± 0.008	0.128 ± 0.008	0.046 ± 0.006	0.032 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	1.17 ± 0.15	0.82 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...L500	0.256 ± 0.008	0.128 ± 0.008	0.042 ± 0.006	0.028 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	1.07 ± 0.15	0.72 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...L750	0.256 ± 0.008	0.128 ± 0.008	0.037 ± 0.006	0.024 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.95 ± 0.15	0.60 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...1L00	0.256 ± 0.008	0.128 ± 0.008	0.029 ± 0.006	0.015 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.73 ± 0.15	0.38 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...2L00	0.256 ± 0.008	0.128 ± 0.008	0.038 ± 0.006	0.024 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.96 ± 0.15	0.61 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...3L00	0.256 ± 0.008	0.128 ± 0.008	0.030 ± 0.006	0.016 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.76 ± 0.15	0.41 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...4L00	0.256 ± 0.008	0.128 ± 0.008	0.026 ± 0.006	0.012 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.66 ± 0.15	0.31 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR2512...5L00	0.256 ± 0.008	0.128 ± 0.008	0.026 ± 0.006	0.012 ± 0.006	0.035 ± 0.008	0.016	0.014 ± 0.004	inches
	6.50 ± 0.20	3.25 ± 0.20	0.66 ± 0.15	0.31 ± 0.15	0.90 ± 0.20	0.4	0.35 ± 0.10	mm
SR3920...L200	0.402 ± 0.008	0.205 ± 0.008	0.078 ± 0.006	0.058 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	1.98 ± 0.15	1.48 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...L300	0.402 ± 0.008	0.205 ± 0.008	0.076 ± 0.006	0.056 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	1.92 ± 0.15	1.42 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...L500	0.402 ± 0.008	0.205 ± 0.008	0.054 ± 0.006	0.034 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	1.36 ± 0.15	0.86 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...1L00	0.402 ± 0.008	0.205 ± 0.008	0.036 ± 0.006	0.017 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	0.92 ± 0.15	0.42 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...2L00	0.402 ± 0.008	0.205 ± 0.008	0.047 ± 0.006	0.027 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	1.19 ± 0.15	0.69 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...3L00	0.402 ± 0.008	0.205 ± 0.008	0.037 ± 0.006	0.017 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	0.94 ± 0.15	0.44 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...4L00	0.402 ± 0.008	0.205 ± 0.008	0.033 ± 0.006	0.014 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	0.85 ± 0.15	0.35 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm
SR3920...5L00	0.402 ± 0.008	0.205 ± 0.008	0.033 ± 0.006	0.014 ± 0.006	0.071 ± 0.012	0.024	0.020 ± 0.004	inches
	10.20 ± 0.20	5.20 ± 0.20	0.85 ± 0.15	0.35 ± 0.15	1.80 ± 0.30	0.6	0.50 ± 0.10	mm

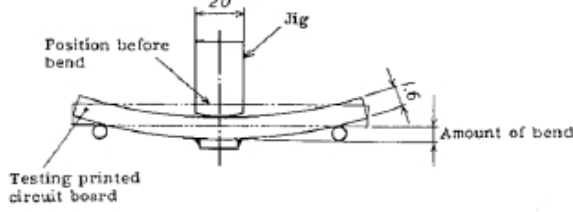
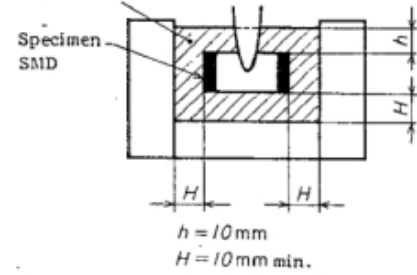
SR5930...L200	0.591 ± 0.008	0.305 ± 0.008	0.076 ± 0.006	0.056 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	1.92 ± 0.15	1.42 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm
SR5930...L300	0.591 ± 0.008	0.305 ± 0.008	0.057 ± 0.006	0.037 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	1.44 ± 0.15	0.94 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm
SR5930...L500	0.591 ± 0.008	0.305 ± 0.008	0.043 ± 0.006	0.023 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	1.08 ± 0.15	0.58 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm
SR5930...1L00	0.591 ± 0.008	0.305 ± 0.008	0.054 ± 0.006	0.034 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	1.37 ± 0.15	0.87 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm
SR5930...2L00	0.591 ± 0.008	0.305 ± 0.008	0.037 ± 0.006	0.018 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	0.95 ± 0.15	0.46 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm
SR5930...3L00	0.591 ± 0.008	0.305 ± 0.008	0.035 ± 0.006	0.016 ± 0.006	0.165 ± 0.008	0.039	0.020 ± 0.004	inches
	15.00 ± 0.20	7.75 ± 0.20	0.90 ± 0.15	0.40 ± 0.15	4.20 ± 0.20	1	0.50 ± 0.10	mm

Derating Curve



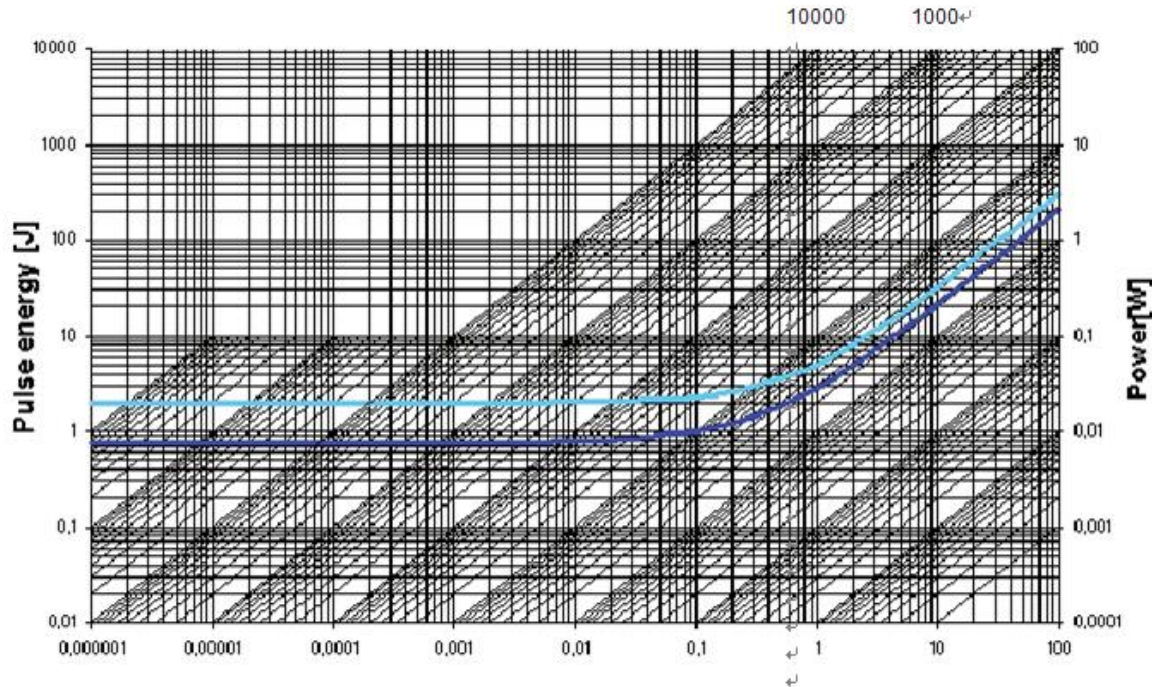
Environmental Performance Characteristics		
Item	Test Condition	Specification
Short Time Overload	5 times rated power for 5 seconds	$\Delta R: \pm(1\%+0.0005\Omega)$
Temperature Coefficient of Resistance (TCR)	+25 °C / +125 °C (JIS-C5202-5.2) $TCR (ppm/^{\circ}C) = \frac{\Delta R}{R \times \Delta t} \times 10^6$	Refer to Electrical Specifications
Moisture Resistance	The specimens shall be placed in a chamber and subjected to a relative humidity of 90~98% and a temperature of 25°C/65°C, 10 cycles. (MIL-STD-202, Method 106)	$\Delta R: \pm(1\%+0.0005\Omega)$
High Temperature Exposure	The chip (mounted on board) is exposed in the heat chamber, 125°C for 1000 hr. (JIS-C5202-7.2)	$\Delta R: \pm(1\%+0.0005\Omega)$
Load Life	Apply rated power for 1000 hours with 1.5 hours ON and 0.5 hour OFF. (JIS-C5202-7.10)	$\Delta R: \pm(1\%+0.0005\Omega)$
Rapid Change of Temperature	The chip (mounted on board) is exposed, -55 ± 3°C (30 min) / +125 ± 2°C (30 min) for 5 cycles. The following conditions as the figure below. (JIS_C5202-7.4)  Ambient temperature 30 min. 30 min. +125(±2)°C +25(±2)°C -55(±3)°C 2~3min. 1 cycle	$\Delta R: \pm(1\%+0.0005\Omega)$

Operating temperature range of -55 to 170°C.
Storage condition: 22~28°C, humidity of 40~75%.

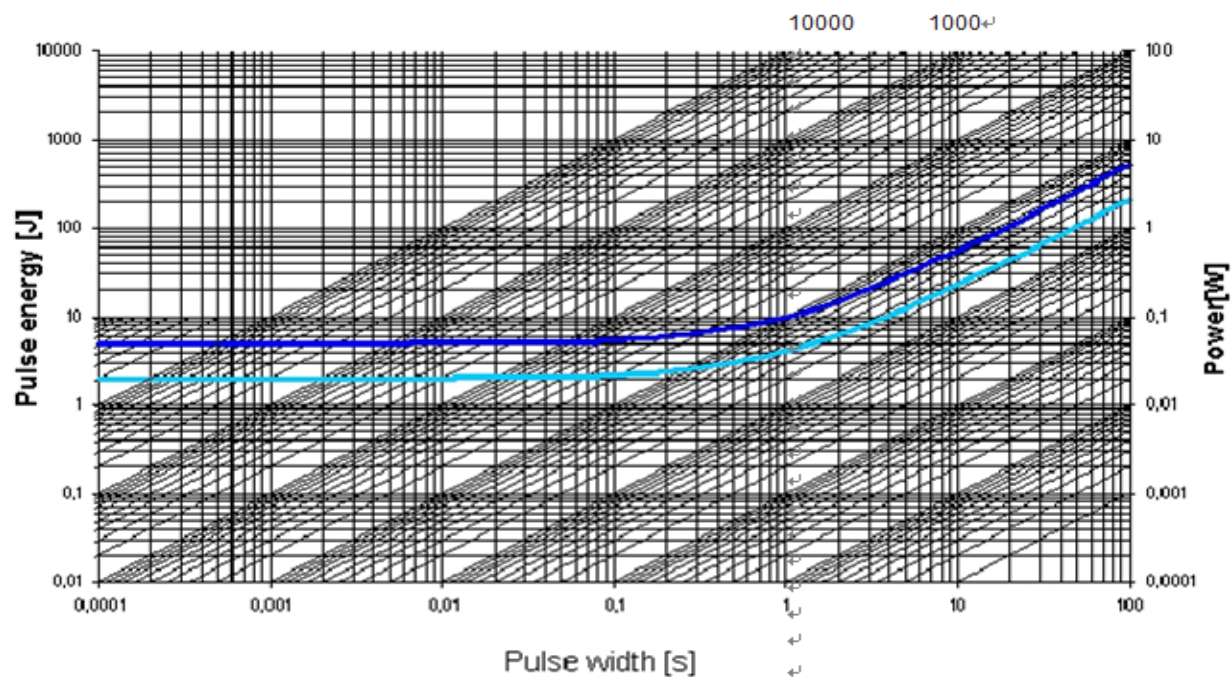
Function Performance Characteristics		
Item	Test Condition	Specification
Bending Strength	Mount the chip to test 90mm(L)*40mm(W) FR4 printed circuit board substrate. Apply pressure in direction of arrow unit band width reaches 2mm (+0.2/-0mm) illustrated in the picture below and hold for 10 ± 1 sec. (JIS-C5202-6.1) Unit: mm 	$\Delta R: \pm(1\%+0.0005\Omega)$
Solderability	The part shall be immersed into the flux specified in the solder bath 235°C ± 5°C for 2 seconds ± 0.5 seconds. It shall be immersed to a point 10mm from its root. (Sn96.5/Ag3.0/Cu0.5) (JIS-C5 202 6.11) 	Solder shall cover 95% or more of the electrode area

Note: The terminal temperature of component should be below 100 °C.

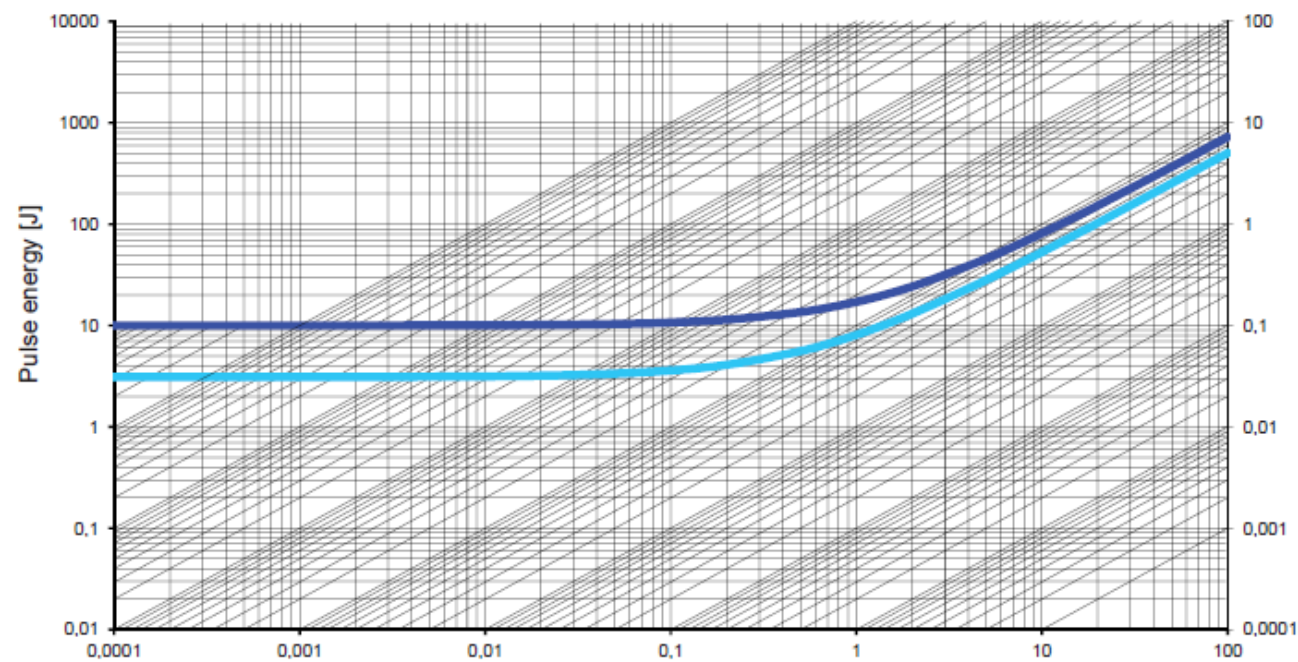
Pulse Power Characteristics – SR2512

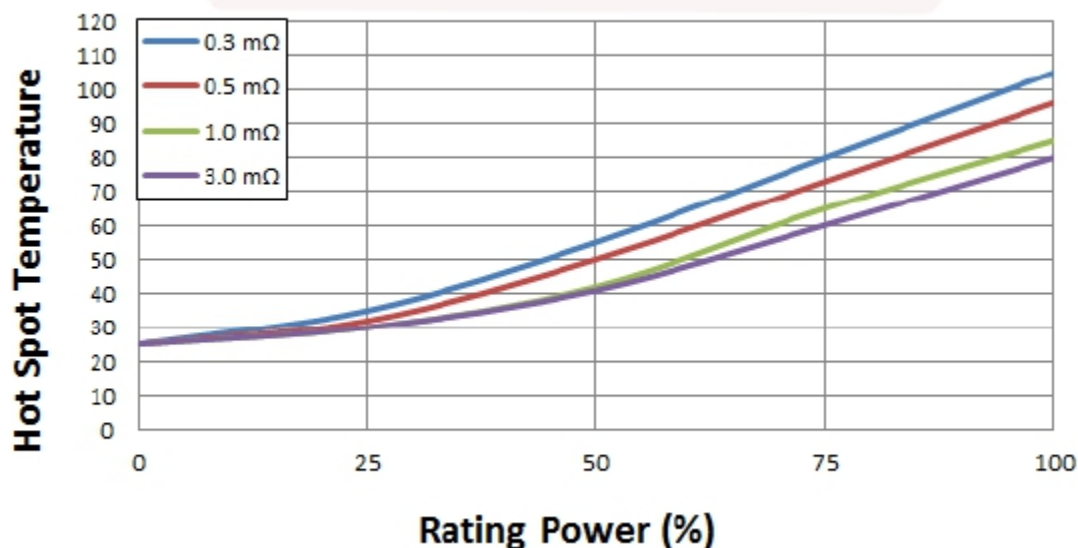


Pulse Power Characteristics – SR3920



Pulse Power Characteristics – SR5930





Temperature rise test boards use aluminum substrate (MCPCB).

Part Numbers Description

SR 3920 E F L 0L30

(1) (2) (3) (4) (5) (6)

(1)Series Name: SR

(2) Chip size: 2512、3920、5930

(3)Packaging Material: Emboss (E)

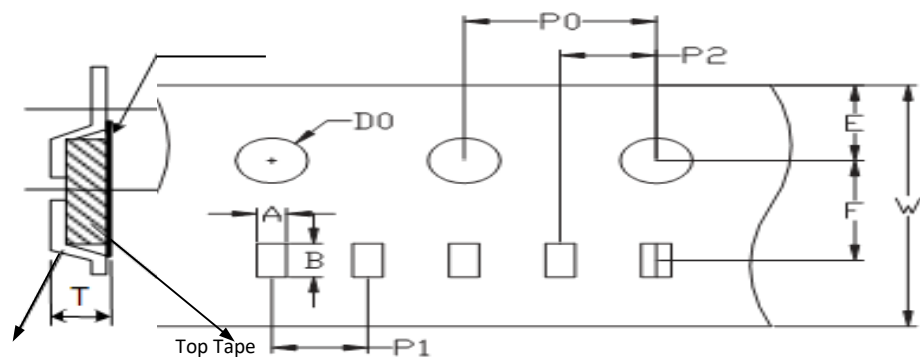
(4) Resistance Tolerance: $\pm 1\%$ (F), $\pm 2\%$ (G), $\pm 5\%$ (J)

(5)Power rating: D=1.0W,E=1.5W,F=2.0W,G=2.5W,H=3W,I=3.5W,J=4.0W,K=4.5W,L=5W,M=6W,N=7W,O=8W,P=9W,Q=10W

(6)Resistance Code: Ex: 0L30 means 0.3mOhm, 5L00 means 5.0mOhm ...etc.

Packing information

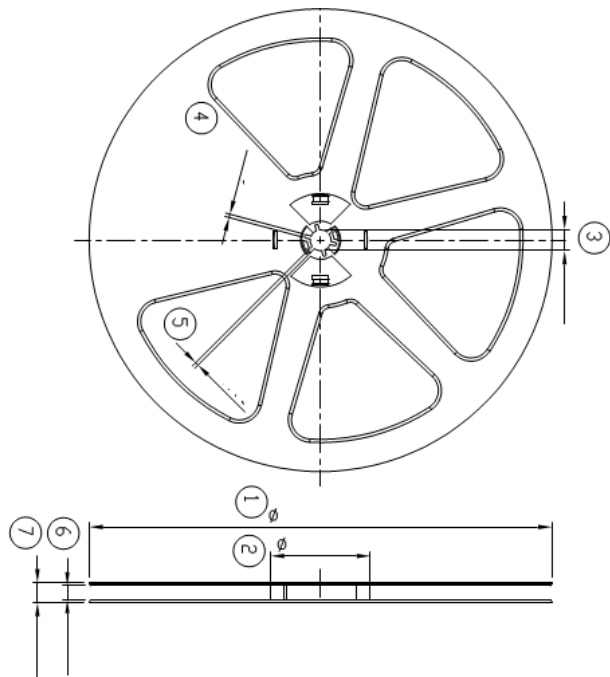
Carrier Tape Specification						
Type / Code	A	B	E	F	W	Unit
2512	0.140 $\pm$ 0.004	0.266 $\pm$ 0.004	0.069 $\pm$ 0.004	0.217 $\pm$ 0.002	0.472 $\pm$ 0.008	inches
	3.55 $\pm$ 0.10	6.75 $\pm$ 0.10	1.75 $\pm$ 0.10	5.50 $\pm$ 0.05	12.00 $\pm$ 0.20	mm
3920	0.217 $\pm$ 0.004	0.425 $\pm$ 0.004	0.069 $\pm$ 0.004	0.295 $\pm$ 0.002	0.630 $\pm$ 0.008	inches
	5.50 $\pm$ 0.10	10.80 $\pm$ 0.10	1.75 $\pm$ 0.10	7.50 $\pm$ 0.05	16.00 $\pm$ 0.20	mm
5930 (all Ω ranges)	0.327 $\pm$ 0.004	0.606 $\pm$ 0.004	0.069 $\pm$ 0.004	0.453 $\pm$ 0.004	0.945 $\pm$ 0.012	inches
	8.30 $\pm$ 0.10	15.40 $\pm$ 0.10	1.75 $\pm$ 0.10	11.50 $\pm$ 0.10	24.00 $\pm$ 0.30	mm
Type / Code	P0	P1	P2	D0	T	Unit
2512 <u>0.3, 0.5, 0.75, 2.0mΩ</u>	0.157 $\pm$ 0.002	0.157 $\pm$ 0.004	0.079 $\pm$ 0.002	0.059 $\pm$ 0.004	0.055 $\pm$ 0.004	inches
	4.00 $\pm$ 0.05	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.40 $\pm$ 0.10	mm
2512 1.0m Ω , 3.0m Ω	0.157 $\pm$ 0.002	0.157 $\pm$ 0.004	0.079 $\pm$ 0.002	0.059 $\pm$ 0.004	0.043 $\pm$ 0.004	inches
	4.00 $\pm$ 0.05	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.10 $\pm$ 0.10	mm
2512 4.0m Ω , 5.0m Ω	0.157 $\pm$ 0.002	0.157 $\pm$ 0.004	0.079 $\pm$ 0.002	0.059 $\pm$ 0.004	0.031 $\pm$ 0.004	inches
	4.00 $\pm$ 0.05	4.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	0.8 $\pm$ 0.10	mm
3920 <u>0.2, 0.3, 0.5, 2.0mΩ</u> ,	0.157 $\pm$ 0.002	0.315 $\pm$ 0.004	0.079 $\pm$ 0.004	0.059 $\pm$ 0.004	0.078 $\pm$ 0.004	inches
	4.00 $\pm$ 0.05	8.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.97 $\pm$ 0.10	mm
3920 <u>1.0, 3.0, 4.0, 5.0mΩ</u>	0.157 $\pm$ 0.002	0.315 $\pm$ 0.004	0.079 $\pm$ 0.004	0.059 $\pm$ 0.004	0.049 $\pm$ 0.004	inches
	4.00 $\pm$ 0.05	8.00 $\pm$ 0.10	2.00 $\pm$ 0.05	1.50 $\pm$ 0.10	1.25 $\pm$ 0.10	mm
5930 0.2m Ω ,0.3m Ω , 1.0m Ω	0.157 $\pm$ 0.004	0.472 $\pm$ 0.004	0.079 $\pm$ 0.004	0.059 $\pm$ 0.004	0.091 $\pm$ 0.004	inches
	4.00 $\pm$ 0.10	12.00 $\pm$ 0.10	2.00 $\pm$ 0.10	1.50 $\pm$ 0.10	2.30 $\pm$ 0.10	mm
5930 0.5m Ω , 2.0m Ω , 3m Ω	0.157 $\pm$ 0.004	0.472 $\pm$ 0.004	0.079 $\pm$ 0.004	0.059 $\pm$ 0.004	0.055 $\pm$ 0.004	inches
	4.00 $\pm$ 0.10	12.00 $\pm$ 0.10	2.00 $\pm$ 0.10	1.50 $\pm$ 0.10	1.40 $\pm$ 0.10	mm



Reel Specification

unit: mm

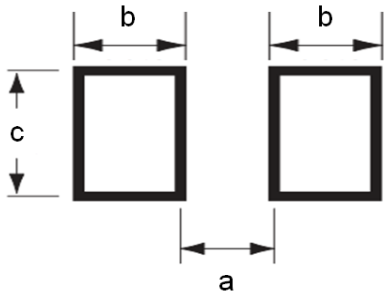
Chip Size	Reel Width	①	②	③	④	⑤	⑥	⑦
2512	10"	$\phi 250\pm1$	$\phi 62\pm0.5$	13 ± 0.5	2 ± 0.5	2 ± 0.5	12.5 ± 0.1	16.5 ± 0.1
3920	13"	$\phi 330\pm1$	$\phi 99\pm0.5$	13.5 ± 0.5	2.3 ± 0.5	2.5 ± 0.5	20.7 ± 0.1	16.7 ± 0.1
5930	13"	$\phi 330\pm1$	$\phi 99\pm0.5$	13.5 ± 0.5	2.5 ± 0.5	2.5 ± 0.5	25.4 ± 0.1	29.4 ± 0.1



Size EIA (EIAJ) Type/2512	Cover Tape Width	Packing Quantity (pcs/reel)	
		Emboss Type	4mm pitch
	12mm	4,000 pcs/reel	
Size EIA (EIAJ) Type/3920	Cover Tape Width	Packing Quantity (pcs/reel)	
		Emboss Type	8mm pitch
	16mm	3,000 pcs/reel	
Size EIA (EIAJ) Type/5930	Cover Tape Width	Packing Quantity (pcs/reel)	
		Emboss Type	12mm pitch
	24mm	2,000 pcs/reel	

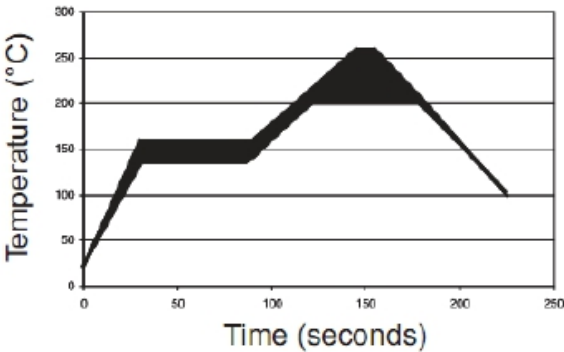
Recommended Pad Layout

Recommended PAD Layout				
Type / Code	a	b	c	Unit
2512	0.15	0.071	0.134	inches
	3.8	1.8	3.4	mm
3920	0.22	0.106	0.244	inches
	5.6	2.7	6.2	mm
5930	0.22	0.205	0.344	inches
	5.6	5.2	8.75	mm



Soldering Recommendations:

- Peak reflow temperatures and durations
 - ✓ IR Reflow Peak = 260°C max for 10 seconds
 - ✓ Not suitable for wave soldering
- Compatible with lead and lead-free solder reflow processes
- Recommended IR reflow profile:



ECN

Engineering Change Notice : The customer will be informed with ECN if there is significant modification on the characteristics and materials described in Approval Sheet.