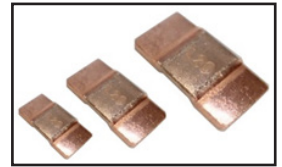


FEATURES

- METAL ALLOY CURRENT SENSING SHUNT RESISTORS
- HIGH POWER & CURRENT RATED
- AEC-Q200 QUALIFIED
- WIDE TEMPERATURE -55°C TO +170°C
- STABLE TCR
- HALOGEN-FREE & ROHS COMPLIANT
- TAPED AND REELED FOR AUTOMATIC INSERTION

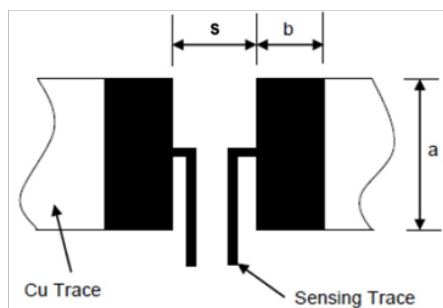
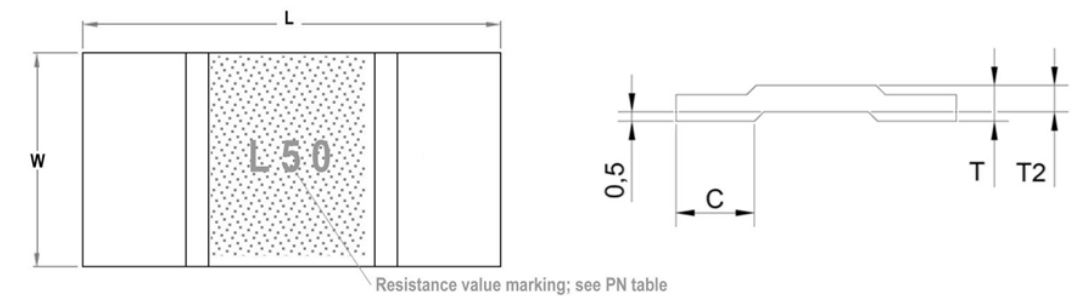


CHARACTERISTICS

Case Size Thickness; See PN Table	2512 6.3 X 3.1mm	3920 10 X 5.2mm	5930 15 X 7.6mm
Resistance Values	0.2mΩ, 0.3mΩ, 0.5mΩ, 1mΩ	0.3mΩ, 0.5mΩ, 0.7mΩ, 1mΩ, & 2mΩ	0.1mΩ, 0.2mΩ, 0.5mΩ, & 1mΩ
Power Ratings See PN table	5W, 6W	6W, 7W, 9W, & 10W	9W, 10W, & 15W
Resistance Value Tolerance	F = ± 1%, G = ± 2%, J = ± 5%		
Operating Temperature Range	-55°C ~ +170°C (derated >70°C by 1%/°C), See Figure 1		
Temperature Coefficient of Resistance TCR	±50, ±70, ±75, ±100, ±115, ±150, ±175, ±200 ppm/ °C		
Reflow Soldering Heat Rated	+260°C for 10 seconds; Three Times		

DIMENSIONS (mm)

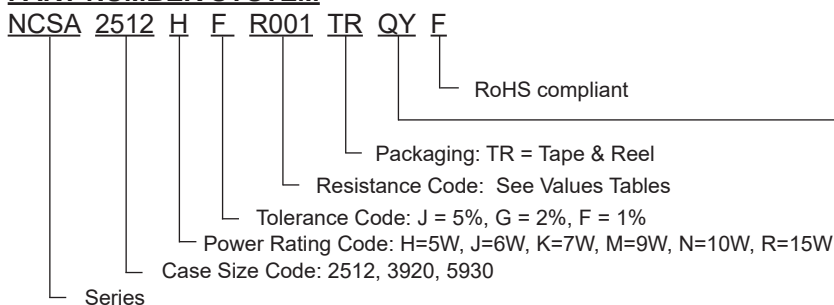
Series	L	W	T See PN Table	T2 See PN Table	C	a	b	c
NCSA2512	6.3 ± 0.2	3.1 ± 0.3	1.0 to 1.50	0.50 to 1.0	1.2 ± 0.3	3.4	1.8	3.4
NCSA3920	10 ± 0.3	5.2 ± 0.4	1.14 to 1.87	0.64 to 1.37	2.2 ± 0.2	6.2	2.7	5.6
NCSA5930	15 ± 0.3	7.6 ± 0.4	1.46 to 2.40	0.96 to 1.90	4.2 ± 0.4	8.75	5.2	5.6



Reflow Soldering Heat Profile and Limits
 → www.niccomp.com/...URL...
 Wave soldering? – Please review your wave soldering process profile with NIC: tpmg@niccomp.com



PART NUMBER SYSTEM



"QY" denotes suitable for automotive equipment, sourced to special production and inspection at TS-16949 certified production site

PART NUMBER SPECIFICATIONS TABLE

Part Number Table	Case Size	Resistance Value (mΩ)	Power Rating	Current Rating ¹	Temperature Coefficient of Resistance - TCR	Thickness T	Thickness T2	Component Marking
NCSA2512H_R001TRQYF	2512	1.0	5W	70.7 A	±100 ppm/°C	1.00 ±0.1 mm	0.50 ±0.1 mm	1L0
NCSA2512J_M50TRQYF	2512	0.5	6W	109.5 A	±115 ppm/°C	1.38 ±0.1 mm	0.88 ±0.1 mm	L50
NCSA2512J_M30TRQYF	2512	0.3	6W	141.4 A	±175 ppm/°C	1.50 ±0.1 mm	1.00 ±0.1 mm	L30
NCSA2512J_M20TRQYF	2512	0.2	6W	173.2 A	±175 ppm/°C	1.50 ±0.1 mm	1.00 ±0.1 mm	L20
NCSA3920J_R002TRQYF	3920	2.0	6W	54.8 A	±50 ppm/°C	1.14 ±0.1 mm	0.64 ±0.1 mm	2L0
NCSA3920K_R001TRQYF	3920	1.0	7W	83.7 A	±50 ppm/°C	0.91 ±0.1 mm	0.41 ±0.1 mm	1L0
NCSA3920K_M70TRQYF	3920	0.7	7W	100.0 A	±70 ppm/°C	1.05 ±0.1 mm	0.55 ±0.1 mm	L70
NCSA3920M_M50TRQYF	3920	0.5	9W	134.2 A	±70 ppm/°C	1.33 ±0.1 mm	0.83 ±0.1 mm	L50
NCSA3920N_M30TRQYF	3920	0.3	10W	182.6 A	±150 ppm/°C	1.87 ±0.1 mm	1.37 ±0.1 mm	L30
NCSA5930H_R001TRQYF	5930	1.0	5W	70.7 A	±50 ppm/°C	1.46 ±0.1 mm	0.96 ±0.1 mm	1L0
NCSA5930N_M50TRQYF	5930	0.5	10W	141.4 A	±75 ppm/°C	1.10 ±0.1 mm	0.60 ±0.1 mm	L50
NCSA5930R_M20TRQYF	5930	0.2	15W	273.9 A	±100 ppm/°C	2.00 ±0.1 mm	1.50 ±0.1 mm	L20
NCSA5930R_M10TRQYF	5930	0.1	15W	387.3 A	±200 ppm/°C	2.40 ±0.1 mm	1.90 ±0.1 mm	L10

"_" = Tolerance Code: F=±1%, G=±2%, J=±5%

¹ Current Rating for terminal temperature -55°C to +70°C, derate per Figure 1

- Component temperature (ambient + temp. rise) should not exceed +170°C and operating temperature should be verified in the end application.
- Circuit design, component layout, PCB pad size and thickness, airflow, and other cooling techniques can affect the component operating temperature.

Figure 1. Derating Over Temperature

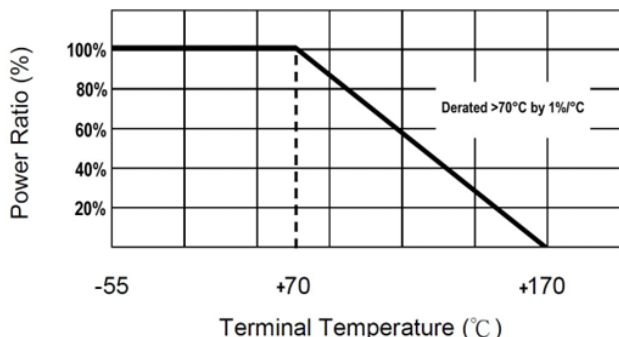


Figure 2. Current Rating

$$I = \sqrt{P \div R}$$

I: Rated Current (I)
P: Rated Power (W)
R: Resistance Value (Ω)

Operating Temperature	Rating	Example	Current Rating Example 0.5 mΩ / 6W
-55°C to +70°C	100%	6W rated	109.5A
+100°C	30% derated	Derated to 4.2W	91.65A
+140°C	70% derated	Derated to 1.8W	60A

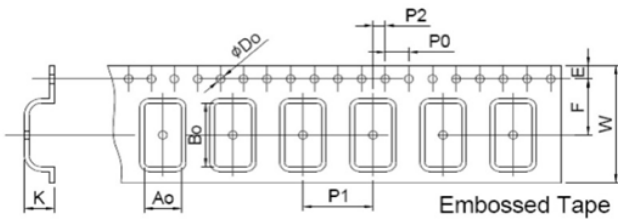


Environmental and Reliability Tests

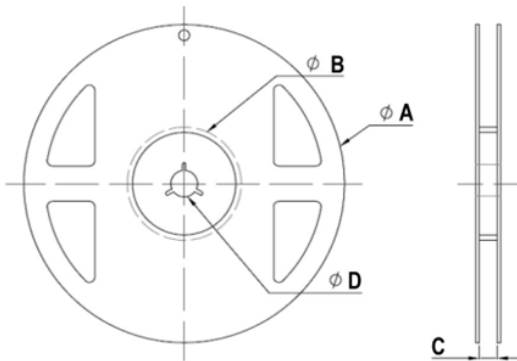
Methods: Per AEC-Q200 REVD

Test Item	Reference standard	Condition of Test	Test Limits
Temperature Coefficient of Resistance	IEC 60115-1 4.8	-At +25/+125 °C	Refer 5.0
Short Time Overload	IEC60115-1 4.13	5 X rated power for 5s	± 0.5%
High Temperature Exposure (Storage)	AEC-Q200-REV D-Test 3 MIL-STD-202 Method 108	1000 hrs. @ T=125°C. Unpowered. Measurement at 24±2 hours after test conclusion.	± 1%
Temperature Cycling	AEC-Q200-REV D-Test 4 JESD22 Method JA-104	1000 Cycles (-55°Cto+125°C) Measurement at 24±4 hours after test conclusion. 30min maximum dwell time at each temperature extreme. 1 min. maximum transition time.	± 1%
Moisture Resistance	AEC-Q200-REV D-Test 6 MIL-STD-202 Method 106	T=24 hours / Cycle,10Cycles . Notes : Steps 7a & 7b not required. Unpowered .	± 1%
Biased Humidity	AEC-Q200-REV D-Test 7 MIL-STD-202 Method 103	1000 hours 85°C/85%RH. Note: Specified conditions: 10% of operating power. Measurement at 24±2 hours after test conclusion.	± 1%
Operational Life	AEC-Q200-REV D-Test 8 MIL-STD-202 Method 108	1000 hours TA=125°C at 35% rated power. Measurement at 24±2 hours after test conclusion.	± 1%
External Visual	AEC-Q200-REV D-Test 9 MIL-STD-883 Method 2009	Electrical test not required. Inspect device construction, marking and workmanship.	N/A
Physical Dimension	AEC-Q200-REV D-Test 10 JESD22 Method JB-100	Verify physical dimensions to the applicable device detail specification. Note: User(s) and Suppliers spec. Electrical test not required.	N/A
Resistance to Solvents	AEC-Q200-REV D-Test 12 MIL-STD-202 Method 215	a:Isopropyl Alcohol : Mineral Spirits= 1 : 3 b:Terpene Defluxer (Bioact EC-7R) c:Deionized water : Propylene Glycol Monomethyl Ether : monoethanolamine = 42 : 1 : 1	Marking and protective layer can not be detached
Mechanical Shock	AEC-Q200-REV D-Test 13 MIL-STD-202 Method 213	Wave Form : Tolerance for half sine shock pulse. Peak value is 100g's. Normal duration(D) is 6(ms)	± 0.5%
Vibration	AEC-Q200-REV D-Test 14 MIL-STD-202 Method 204	5 g's for 20 min., 12 cycles each of 3 orientations. Note: Test from 10-2000 Hz.	± 0.5%
Resistance to Soldering Heat	AEC-Q200-REV D-Test 15 MIL-STD-202 Method 210	Condition B : Immerse the specimens in and eutectic solder at 260±5°C for 10±1S .	± 0.5%
Thermal Shock	AEC-Q200-REV D-Test 16 MIL-STD-202 Method 107	-55 C/+155 C. Note: Number of cycles required-300, Maximum transfer time-20 seconds, Dwell time-15 minutes. Air-Air.	± 1%
ESD	AEC-Q200-REV D-Test 17	verify the voltage setting at 500V	± 1%
Solderability	AEC-Q200-REV D-Test 18 J-STD-002	Method B, aging 4 hours at 155 °C dry heat Lead-free solder bath at 235±3 °C Dipping time: 3±0.5 seconds	> 95% area covered
Flammability	AEC-Q200-REV D-Test 20 UL-94	V-0 or V-1 are acceptable. Electrical test not required.	V-0 or V-1
Board Flex (Bending)	AEC-Q200-REV D-Test 21	2mm deflection	± 0.5%
Terminal Strength (SMD)	AEC-Q200-REV D-Test 22	Force of 1.8kg for 60 seconds.	± 0.5%

PACKAGING SPECIFICATIONS



Tape packaging dimension											Unit: mm	
Packaging	Size	A0	B0	W	F	E	P1	P2	P0	D0	K	
Embossed Carrier Tape	2512	3.6	6.7	12	5.5	1.75	8.0	2.0	4.0	1.5	1.7	
	3920	5.7	10.5	16	7.5	1.75	8.0	2.0	4.0	1.5	2.25	
	5930	8.3	15.6	24	11.5	1.75	12.0	2.0	4.0	1.5	2.4	



Case Size	Reel Dimensions and Quantities				
	Quantity	A(mm)	B(mm)	C(mm)	D(mm)
2512	4000	330±2.0	100±1.0	13 ±1.0	13.0±0.2
3920	3000			17.4±1.0	
5930	1500			25.2±1.0	