NCSP Series

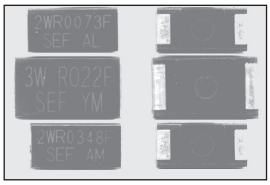
Surface Mount Current Sensing Chip Resistor

ROHS/REACH COMPLIANT HALOGEN FREE

NIC COMPONENTS Performance Passives By Design

FEATURES

- SURFACE MOUNTABLE, MOLDED FLAT PACK
- ULTRA LOW VALUES (3mΩ ~ 1Ω)
- EXTEND TEMPERATURE RANGE (+180°C)
- Pb-FREE REFLOW COMPATIBLE



CHARACTERISTICS

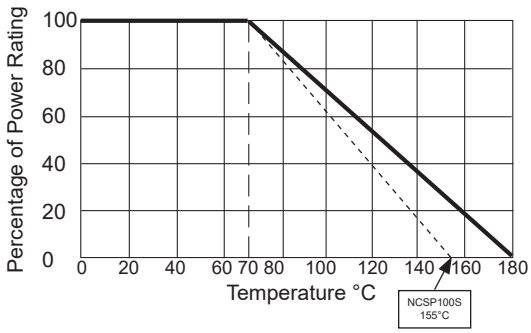
Type	Size	Power Rating at 70°C	Resistance Tolerance	Temperature Coefficient (°C)	Resistance Range	Resistance Range (Codes)	Operating Temp. Range (°C)
NCSP100S	6.3 x 3.2	1 Watt	1% (F) 5% (J)	For Values 0.051Ω ~ 0.100Ω: ±50ppm For Values <0.051Ω and >0.100Ω: ±100ppm	0.003Ω ~ 0.200Ω	R003 ~ R200	-55°C ~ +155°C
NCSP100L	7.5 x 4.5				0.003Ω ~ 0.510Ω	R003 ~ R510	-55°C ~ +180°C
NCSP200	12.5 X 6.0	2 Watt			0.005Ω ~ 1.000Ω	R005 ~ 1R00	
NCSP300	14.5 X 8.0	3 Watt			0.005Ω ~ 1.800Ω	R005 ~ 1R80	

Operating Voltage: $\sqrt{\text{Power rating (Watts) x Resistance (Ohms)}}$

Short Time Overload Voltage: $2x\sqrt{\text{Power rating (Watts) x Resistance (Ohms)}}$

Operating Current: $\sqrt{\text{Power rating (Watts) / Resistance (Ohms)}}$

Power Derating Curve: For operation above 70°C, power rating must be derated according to the following chart:



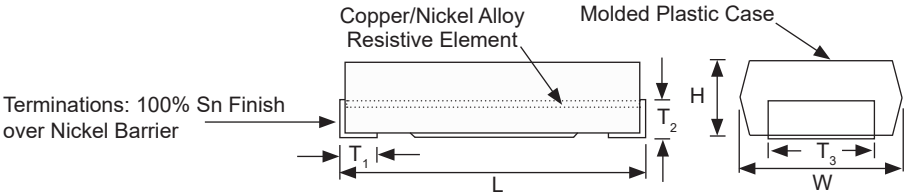
PART NUMBER SYSTEM

NCSP200 F R051 D TR F

- F: RoHS compliant
- TR: Packaging: TR = Tape & Reel
- D: TCR Code: D = ±50ppm, E = ±100ppm
- R051: Resistance Code: See characteristics table
- F: Tolerance Code: J=±5% and F=±1%
- NCSP200: Series

DIMENSIONS (mm)

Type	L ± 0.5	W ± 0.3	H ± 0.3	T_1 ± 0.3	T_2 ± 0.3	T_3 ± 0.3
NCSP100S	6.3	3.2	1.0	0.8	0.8	3.2
NCSP100L	7.5	4.5	2.0	1.2	1.1	2.5
NCSP200	12.5	6.0	3.0	2.0	1.5	4.0
NCSP300	14.5	8.0	3.0	2.0	1.5	6.0



ENVIRONMENTAL SPECIFICATIONS

Item	Specification	Test Method
Temperature Coefficient of Resistance	As Specified	Measured from 20°C through a temperature range of -55°C ~ +125°C
Short Time Overload	ΔR < 0.5%	Applied voltage equivalent to 2x the rated power for 10 minutes
Withstanding Voltage (Between terminations and center of component body)	ΔR < 0.2% with no evidence of insulation breakdown	500VAC for 1 minute
Insulation Resistance (Between terminations and center of component body)	>100MΩ	100VDC
Resistance to dry heat	ΔR < 0.5%	260°C ± 5°C for 10 seconds
Humidity (Steady State)	ΔR < 0.5% IR > 20MΩ No Mechanical Damage	+40°C, 90~95% RH for 1,000 hours
Endurance (1,000 hours)	ΔR < 1.0% No mechanical damage	Rated power at 70°C Power on 90 minutes Power off 30 minutes
Temperature Cycling (5 cycles)	ΔR < 0.5% No mechanical damage	-55°C 30 minutes +25°C 3 minutes +155°C 30 minutes +25°C 3 minutes
Resistance to Soldering Heat	ΔR < 0.5% No mechanical damage	260°C ± 5°C for 10 seconds
Vibration	ΔR < 0.5% No mechanical damage	1.5mm in X, Y, Z axis 10Hz ~ 55Hz ~ 10Hz 1 minute sweep for 2 hours in each direction
Solderability	Coverage of more than 75% of termination	245°C ± 5°C for 2 seconds Solder: Sn3Ag0.5Cu

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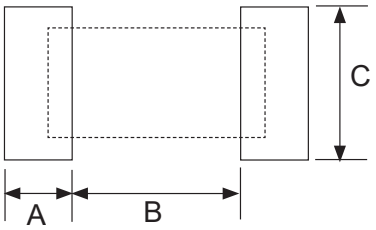
COMPONENTS Performance Passives By Design

LAND PATTERN DIMENSIONS (mm)

Type	A	B	C
NCSP100S	2.0	3.2	3.0
NCSP100L	2.0	4.5	3.0
NCSP200	2.8	7.9	4.5
NCSP300	2.8	9.9	6.5



Reflow Soldering Heat Profile and Limits

→ www.niccomp.com/resource/files/resistive/NIC-ChipR-Reflow-Sept2020-Rev2.pdf

Wave soldering? – Please review your wave soldering process profile with NIC: tpmg@niccomp.com

EMBOSSED PLASTIC CARRIER DIMENSIONS (mm)

Type	A ±0.1	B ±0.1	P ±0.1	P_1 ±0.1	K ±0.1	W ±0.2	F ±0.1	E ±0.1	D_o +0.1	T ±0.05
NCSP100S	3.6	6.8	8.0	4.0	1.3	12.0	5.5	1.75	1.50	0.3
NCSP100L	5.1	8.2			2.5	16.0	7.5			
NCSP200	6.6	13.2			3.5	24.0	11.5			
NCSP300	8.6	15.2	12.0							

REEL DIMENIONS (mm) AND QUANTITY

Type	A	B	C	W	Quantity
NCSP100S	180±2.0	60	13.0 ±0.5	13.0 ±0.5	1,000
NCSP100L				17.5 ±0.5	
NCSP200	254±0.3	80 ±0.5		25.5 ±0.5	
NCSP300	330 ±0.2