

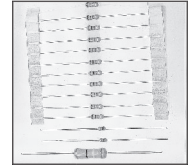
## FEATURES

- ECONOMICALLY PRICED FOR COMMERCIAL AND INDUSTRIAL APPLICATIONS
- WIDE SELECTION OF POWER RATINGS AND RESISTANCE VALUES
- EIA COLOR CODING RESISTANT TO INDUSTRIAL SOLVENTS
- AVAILABLE ON TAPE AND REEL FOR AUTOMATIC INSERTION AND BULK PACK FOR SMALLER PRODUCTION RUNS
- NEW REDUCED SIZES AT HIGHER POWER RATINGS
- ±5% TOLERANCE STANDARD

**RoHS  
Compliant**

includes all homogeneous materials

\*See Part Number System for Details



## STANDARD TYPES, RATINGS AND AVAILABILITY

Type	NCF25R	NCF25	NCF50	NCF50R	NCF100	NCF200
Power Rating at 70°C	0.25W	0.25W	0.50W	0.50W	1.0W	2.0W
Max. Working Voltage at 70°C	250V	250V	350V	350V	500V	750V
Max. Overload Voltage at 70°C	500V	500V	700V	700V	1000V	1500V
Resistance Range   ±5% (J) Tol.	1.0Ω~10MegΩ	0.5Ω~10MegΩ	1.0Ω~10MegΩ	1.0Ω~10MegΩ	1.0Ω~10MegΩ	1.0Ω~10MegΩ
Resistance Value Availability	E-24	E-24	E-24	E-24	E-24	E-24

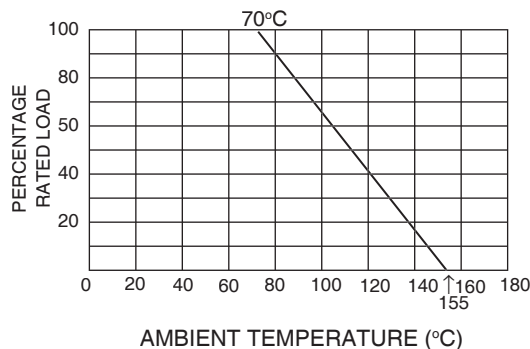
## PERFORMANCE CHARACTERISTICS

Requirements		Performance		Test Method & Conditions	
Operating Temperature Range		-55 ~ +155°C (derated above +70°C - see chart)		JIS C5202	MIL-R-10509F
Temperature Coefficient (ppm/°C)	(ppm/°C)	0.25W & Over	NCF25R	5.2 1- to = 80°C	4.6.12
	0 ~ -450	≤100KΩ	≤22KΩ		
	0 ~ -700	110KΩ ~ 1megΩ	24KΩ ~ 470KΩ		
	0 ~ -1000	1.1megΩ ~ 2.2megΩ	510KΩ ~ 2.2megΩ		
Noise (μV/V)	(μV/V)	(NCF25R)	0.25W & Over	JIS C5202 5.9 Method II	
	0.1	-	0.5Ω ~ 10KΩ		
	0.3	1.0Ω ~ 10KΩ	11Ω ~ 91KΩ		
	0.5	11Ω ~ 91KΩ	100KΩ ~ 1megΩ		
	1.0	100KΩ ~ 10megΩ	1.1megΩ ~ 10megΩ		
Short Time Overload		ΔR ≤ ±(1%+0.05Ω)		5.5 Cond. A	4.6.6
Temperature Cycling		ΔR ≤ ±(0.5%+0.05Ω)		7.4-55°C/+85°C	4.6.4
Soldering Effect		ΔR ≤ ±(1%+0.05Ω)		6.4 350°C 3 sec.	4.6.10
Vibration		ΔR ≤ ±(0.5%+0.05Ω)		6.3 Cond. A	4.6.16
Moisture Resistance	R > 100K	ΔR ≤ ±5%		7.9 40°C	4.6.11
	R ≤ 100K	ΔR ≤ ±(3%+0.05Ω)		90-95%RH 1000hrs	
Load Life	R > 100K	ΔR ≤ ± 3%		7.10	4.6.13
	R ≤ 100k	ΔR ≤ ±(3%+0.05Ω)		70°C 1000hrs	

\* Maximum allowable continuous voltage (Vdc or rms) for all resistors is the lower of the two values: "MAXIMUM WORKING VOLTAGE" as specified, or

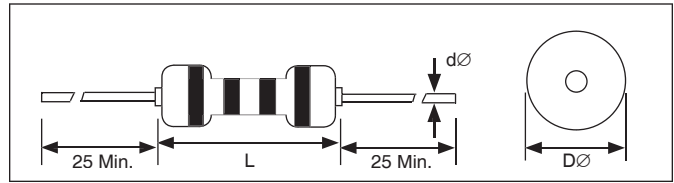
$$\sqrt{\text{Power rating (WATTS) x Resistance (OHMS)}}$$

## Derating Curve



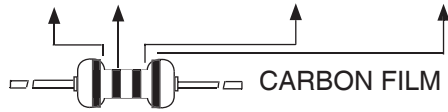
## DIMENSIONS (mm)

Type	D $\phi$	L	d $\phi$ $\pm$ 0.05
NCF25R	1.8 $\pm$ 0.2	3.3 $\pm$ 0.4	0.45
NCF25	2.5 $\pm$ 0.5	6.3 $\pm$ 0.5	0.56
NCF50	3.5 $\pm$ 0.5	9.0 $\pm$ 0.5	0.65
NCF50R	2.3 $\pm$ 0.5	6.5 $\pm$ 0.5	0.56
NCF100	4.5 $\pm$ 0.5	11.0 $\pm$ 0.5	0.80
NCF200	5.5 $\pm$ 0.5	15.0 $\pm$ 0.5	0.80



## COLOR CODING

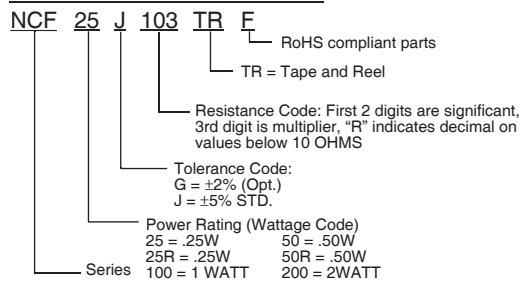
Color	Significant Figure			Multiplier	Tolerance
	1st	2nd	3rd		
Black	0	0	0	1	-
Brown	1	1	1	10	F ( $\pm$ 1%)
Red	2	2	2	100	G ( $\pm$ 2%)
Orange	3	3	3	1,000	-
Yellow	4	4	4	10,000	-
Green	5	5	5	100,00	D ( $\pm$ 0.5%)
Blue	6	6	6	1,000,000	C ( $\pm$ 0.25%)
Violet	7	7	7	10,000,000	B ( $\pm$ 0.1%)
Grey	8	8	8	-	-
White	9	9	9	-	-
Gold	-	-	-	0.1	J ( $\pm$ 5%)
Silver	-	-	-	0.01	K ( $\pm$ 10%)



## SIGNIFICANT VALUES OF NOMINAL RESISTANCE E-24 5% (J)

1.0	2.2	4.7
1.1	2.4	5.1
1.2	2.7	5.6
1.3	3.0	6.2
1.5	3.3	6.8
1.6	3.6	7.5
1.8	3.9	8.2
2.0	4.3	9.1

## PART NUMBER SYSTEM



## PACKAGING & REEL QUANTITIES

Tape and Reel - 5K NCF25R, 25 and 50R  
 2.5K NCF50  
 2K NCF100  
 1K for NCF200

# Zero-Ohm Resistors

## FEATURES

- STANDARD 1/8 WATT AND 1/4 WATT SIZES
- FOR JUMPERS OR CROSSOVERS ON PCB'S
- TAPE AND REEL FOR AUTOMATIC INSERTION
- SINGLE BLACK BAND INDICATES ZERO RESISTANCE

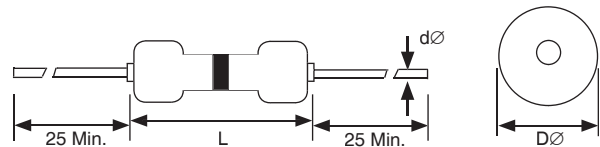
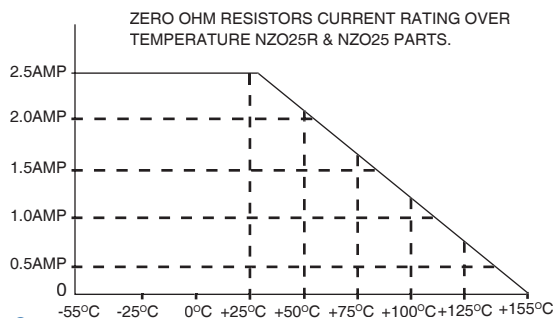
## SPECIFICATIONS

OPERATING TEMPERATURE RANGE: -55°C to +155°C

RESISTANCE: 0.01 OHM or less

CURRENT RATING: 2.5 AMPS (-55°C to +70°C)

DERATED GRAPH BELOW



## DIMENSIONS (mm)

Type	D $\phi$	L	d $\phi$ $\pm$ 0.05
NZO25R	1.8 $\pm$ 0.1	3.2 $\pm$ 0.2	0.5
NZO25	2.3 $\pm$ 0.2	6.5 $\pm$ 0.5	0.6

## PART NUMBER SYSTEM

