

Precision Metal Film Resistors

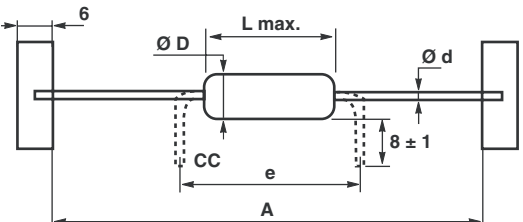


FEATURES

- 0.063 W to 0.5 W at 70 °C
- Approved according to CECC 40101
- Wide ohmic range from 1 Ω to 4.7 MΩ
- Good initial precision up to ± 0.1 %
- Operating temperatures:
 - 55 °C to + 155 °C for TCR ≥ 25 ppm/°C
 - 25 °C to + 85 °C for TCR ≤ 15 ppm/°C
- Epoxy coating
- Termination: Pure matt tin
- Compliant to RoHS directive 2002/95/EC


RoHS
COMPLIANT

DIMENSIONS in millimeters

	TYPE	Ø D max.	L max.	A ± 1	Ø d	CC e	MAX. UNIT WEIGHT
	N.. 3..	1.8	3.9	53	0.5	5.08	0.15 g
	N.. 4..	2.5	6.2	53	0.6	NA	0.3 g
	N.. 5..	3.3	8.7	53	0.6	NA	0.5 g

TECHNICAL SPECIFICATIONS

MODEL	NT3S	NP3S	NY3	NK3	NT4S	NP4S	NY4	NK4	NT5S	NP5S	NY5	NK5	
Power Rating, P_r at + 70 °C	0.125 W	0.25 W			0.25 W	0.5 W			0.5 W				
Stability Class	1 %			2 %	1 %			2 %	1 %			2 %	
Preferred Standard Ohmic Values Series	E192 for 0.1 %/0.25 %/0.5 % E96 for 1 %			E24	E192 for 0.1 %/0.25 %/0.5 % E96 for 1 %			E24	E192 for 0.1 %/0.25 %/0.5 % E96 for 1 %			E24	
Ohmic Value Range in Relation to: Temperature Coefficient, TCR/ Tolerance	± 15 ppm/°C ⁽¹⁾	± 0.1 %	100 Ω	-	-	-	49.9 Ω	-	-	-	100 Ω	-	-
		± 0.25 %	200 kΩ	-	-	-	499 kΩ	-	-	-	499 kΩ	-	-
		± 0.5 %	10 Ω	-	-	-	10 Ω	-	-	-	10 Ω	-	-
		± 1 %	200 kΩ	-	-	-	499 kΩ	-	-	-	499 kΩ	-	-
	± 25 ppm/°C ⁽²⁾	± 0.1 %	-	100 Ω	-	-	-	10 Ω	-	-	-	100 Ω	-
		± 0.25 %	-	511 kΩ	-	-	-	1 MΩ	-	-	-	1 MΩ	-
		± 0.5 %	-	10 Ω	-	-	-	10 Ω	-	-	-	10 Ω	-
		± 1 %	-	511 kΩ	-	-	-	1 MΩ	-	-	-	1 MΩ	-
	± 50 ppm/°C ⁽²⁾	± 0.1 %	-	-	-	-	-	10 Ω	-	-	-	10 Ω	-
		± 0.25 %	-	-	-	-	-	1 MΩ	-	-	-	1 MΩ	-
		± 0.5 %	-	-	10 Ω	-	-	10 Ω	-	-	-	10 Ω	-
		± 1 %	-	-	1.5 MΩ	-	-	3.32 MΩ	-	-	-	4.7 MΩ	-
	± 100 ppm/°C ⁽²⁾	± 2 %	-	-	1 Ω	-	-	10 Ω	-	-	-	2.67 Ω	-
		± 5 %	-	-	1.5 MΩ	-	-	3.32 MΩ	-	-	-	4.7 MΩ	-
Limiting Element Voltage $U_{max. RMS}$	200 V				350 V				350 V				
Critical Resistance	-	-	160 kΩ	-	490 kΩ	245 kΩ			245 kΩ				
Thermal Resistance	170 °C/W				145 °C/W				110 °C/W				

Notes

- ⁽¹⁾ TCR requirement for temperature between - 25 °C and + 85 °C
⁽²⁾ TCR requirement for temperature between - 55 °C and + 125 °C



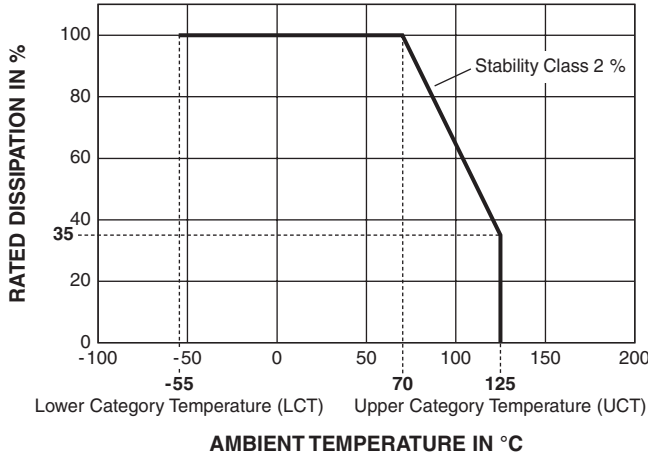
ENVIRONMENTAL SPECIFICATIONS												
MODEL	NT3S	NP3S	NY3	NK3	NT4S	NP4S	NY4	NK4	NT5S	NP5S	NY5	NK5
Temperature Range	- 25 °C to + 85 °C	- 55 °C to + 155 °C			- 25 °C to + 85 °C	- 55 °C to + 155 °C			- 25 °C to + 85 °C	- 55 °C to + 155 °C		
Climatic Category (LCT/UCT/days)	-	55/125/56			-	55/125/56			-	55/125/56		

OFFICIAL APPROVAL LIST						
MODEL	SPECIFICATION	NATIONAL REFERENCE	CECC REFERENCE	QUALIFIED RANGE	TOLERANCE	P _r at 70 °C
NY3	CECC 40101-002	RS 59Y	EY	10 Ω 301 kΩ	± 1 %	0.125 W
	CECC 40101-002	RS 48Y	AY			0.063 W
	CECC 40101-803	-	AC			0.063 W
NK3	CECC 40101-001	RC 9	DU	10 Ω 510 kΩ	± 2 % ± 5 %	0.250 W
	CECC 40101-001	RC 8U	AU			0.125 W
	CECC 40101-802	-	AV			0.125 W
NP4S	CECC 40101-002	RS 64P	FP	100 Ω 1 MΩ	± 0.5 % ± 1 %	0.250 W
	CECC 40101-002	RS 58P	BP			0.125 W
NY4	CECC 40101-002	RS 71Y	GY	10 Ω 1 MΩ	± 0.5 % ± 1 %	0.500 W
	CECC 40101-002	RS 64Y	FY			0.250 W
	CECC 40101-002	RS 58Y	BY			0.125 W
	CECC 40101-803	-	BC			0.125 W
NK4	CECC 40101-001	RC 32	EU	10 Ω 1 MΩ	± 2 % ± 5 %	0.500 W
	CECC 40101-001	RC 21U	BU			0.250 W
	CECC 40101-802	-	BV			0.250 W
NY5	CECC 40101-002	RS 69Y	HY	10 Ω 1 MΩ	± 0.5 % ± 1 %	0.500 W
	CECC 40101-002	RS 63Y	CY			0.250 W
	CECC 40101-803	-	CC			0.250 W
NK5	CECC 40101-001	RC 31U	CU	10 Ω 1 MΩ	± 2 % ± 5 %	0.500 W
	CECC 40101-802	-	CV			

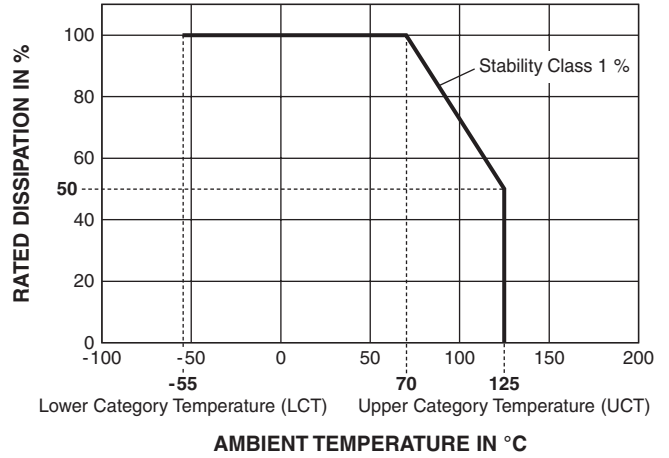
PERFORMANCE				
TEST	CONDITIONS	REQUIREMENTS		TYPICAL DRIFT
		STABILITY CLASS 1 CECC 40101-002/803	STABILITY CLASS 2 CECC 40101-001/802	
Short Time Overload	IEC 60115-1 6.25 P_r or 2 U_{max} 1 s for 0.063 W/5 s for ≥ 0.125 W	$\pm (0.25 \% + 0.05 \Omega)$	$\pm (0.5 \% + 0.05 \Omega)$	$\leq \pm 0.05 \%$
Load Life	IEC 60115-1 90°/30° cycles 1000 h at $P_r/70^\circ\text{C}$	$\pm (1 \% + 0.05 \Omega)$	$\pm (2 \% + 0.1 \Omega)$	$\leq \pm 0.25 \%$
Load Life at Maximum Category Temperature	IEC 60115-1 90°/30° cycles 1000 h at derated $P_r/125^\circ\text{C}$	$\pm (1 \% + 0.05 \Omega)$	$\pm (2 \% + 0.1 \Omega)$	$\leq \pm 0.25 \%$
	IEC 60115-1 1000 h at 155°C	-	-	
Sheft Life	1 year at ambient temperature	-	-	$\leq \pm 0.1 \%$
Seq. A1 Robustness of Terminations	IEC 60115-1 IEC 60068-2-21 Test U_{a1} : Traction 10N/10 s Test U_b : Bending + 90° → - 90° → 0° with 5N Test U_c : Twisting 2 times at 180°	$\pm (0.25 \% + 0.05 \Omega)$	$\pm (0.5 \% + 0.05 \Omega)$	$\leq \pm 0.1 \%$
Seq. A2 Resistance to Soldering Heat	IEC 60115-1 IEC 60068-2-20 Test T_b Method 1: Solder bath $260^\circ\text{C}/10$ s	$\pm (0.25 \% + 0.05 \Omega)$	$\pm (0.5 \% + 0.05 \Omega)$	$\leq \pm 0.05 \%$
Seq. B1 Rapid Change of Temperature	IEC 60115-1 IEC 60068-2-14 Test N_a 5 cycles (30' at LCT/30' at UCT) - $55^\circ\text{C}/125^\circ\text{C}$	$\pm (0.25 \% + 0.05 \Omega)$	$\pm (0.5 \% + 0.05 \Omega)$	$\leq \pm 0.05 \%$
Seq. B2 Vibration	IEC 60115-1 IEC 60068-2-6 Test F_c 10 Hz/500 Hz	$\pm (0.25 \% + 0.05 \Omega)$	$\pm (0.5 \% + 0.05 \Omega)$	$\leq \pm 0.1 \%$
Seq. A + B Climatic Sequence	IEC 60115-1 1. Dry heat at $125^\circ\text{C}/16$ h (IEC 60068-2-2) 2. Damp heat $55^\circ\text{C}/24$ h (IEC 60068-2-30 Test Db) 3. Cold at - $55^\circ\text{C}/2$ h (IEC 60068-2-1 Test Aa) 4. Low pressure $25^\circ\text{C}/1$ h (IEC 60068-2-13) 5. Damp heat $55^\circ\text{C}/120$ h (IEC 60068-2-30 Test Db)	$\pm (1 \% + 0.05 \Omega)$	$\pm (2 \% + 0.1 \Omega)$	$\leq \pm 0.25 \%$
Damp Heat, Steady State	IEC 60115-1 IEC 60068-2-78 $40^\circ\text{C}/93 \% \text{RH}/56$ days	$\pm (1 \% + 0.05 \Omega)$	$\pm (2 \% + 0.1 \Omega)$	$\leq \pm 0.5 \%$

POWER RATING CHARTS

CECC 40101-001/40101-802 NK3/NK4/NK5

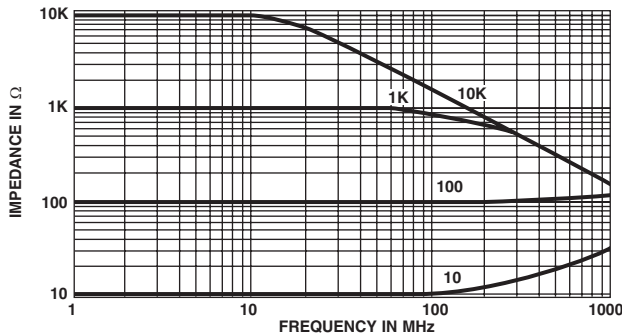


CECC 40101-002/40101-803 NY3/NY4/NP4S/NY5



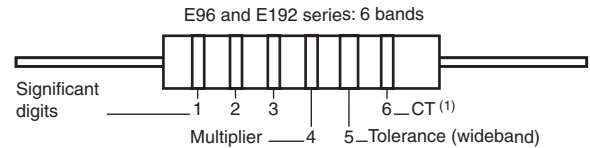
HIGH FREQUENCY

Typical behavior for NK4



MARKING

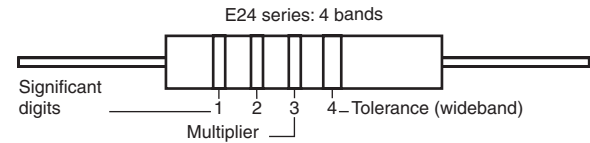
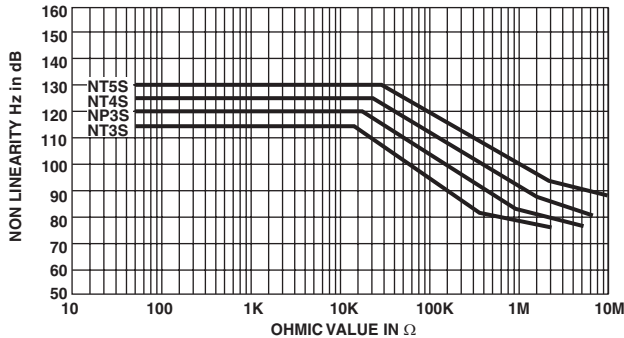
Resistor color code chart 6, 5 or 4 bands.



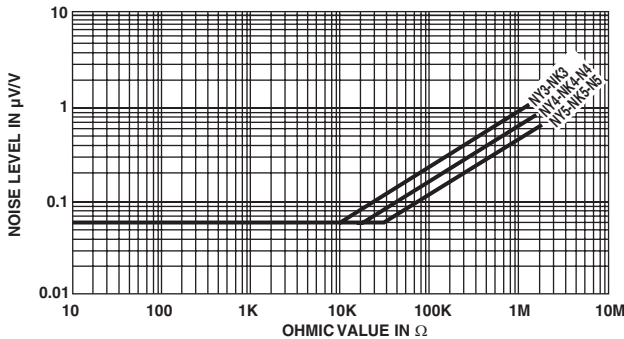
Note

⁽¹⁾ Only for TCR ≤ 25 ppm/°C

THIRD HARMONIC



NOISE



COLOR	DIGIT.	MULTIP.	TOL %	CT ppm/°C
Black	0	1		
Brown	1	10	1	
Red	2	10 ²	2	
Orange	3	10 ³		± 15
Yellow	4	10 ⁴		± 25
Green	5	10 ⁵	0.5	
Blue	6	10 ⁶	0.25	± 10
Purple	7	10 ⁷	0.1	± 5
Grey	8	10 ⁸		
White	9	10 ⁹		
Silver		10 ⁻²		
Gold		10 ⁻¹	5	

TAPE IN REEL

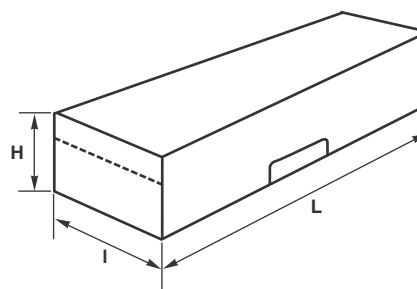
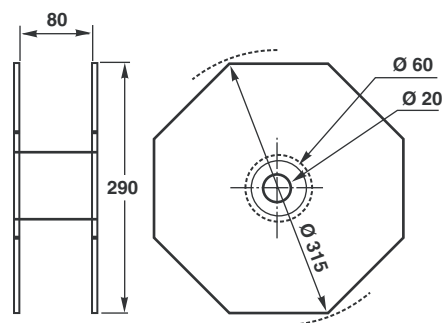
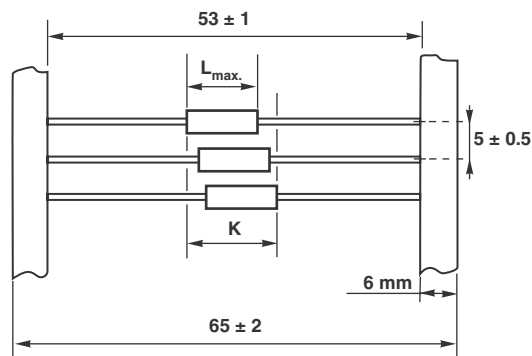
SERIES AND MODEL	QUANTITY PER REEL
NT4S/NP4S	5000
NK4/NY4	5000
SL3	5000
SL4	5000

TAPED IN AMMOPACK

SERIES AND MODEL	QUANTITY PER BOX	BOX DIMENSIONS L x l x H (mm)
NT3S/NP3S	500	260 x 80 x 26
NY3	500	
NK3/SL3	1000	
NT4S/NP4S	500	
NY4	500	
NK4/SL4	1000	260 x 80 x 37
NT5S/NP5S	500	260 x 85 x 28
NK5	500	

TAPED IN BAG

SERIES AND MODEL	QUANTITY PER BAG	BAG DIMENSIONS (mm)
NP3S/NT3S	100	85 x 140
NP4S/NT4S		
NP5S/NT5S		
NY3 CC/NK3 CC	500	

PACKAGING

The resistors are required to be inside a window which is the K dimension.

K being equal to the maximum body length of the resistor + 1.4 mm and being centered as per IEC 60286-1 and EIA-296 specification to the tape edges.

ORDERING INFORMATION

T3	XXX	100 kΩ	1 %	AM1000	e3
MODEL	CUSTOM DESIGN	OHMIC VALUE	TOLERANCE	PACKAGING	LEAD (Pb)-FREE



GLOBAL PART NUMBER INFORMATION

N	Y	3		1	0	0	0	2	F	A	2	2
GLOBAL MODEL	SIZE		SPECIAL		OHMIC VALUE				TOLERANCE		PACKAGING	
NY (50 ppm) NK (100 ppm) NT (15 ppm) NP (25 ppm)	3 4 5		As applicable. Contact us.		The first four digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point. 10002 = 100 k Ω 33001 = 33 k Ω 220R0 = 220 Ω 1R220 = 1.22 Ω				B = 0.1 % C = 0.25 % D = 0.5 % F = 1.0 % G = 2.0 % J = 5.0 %		AM500 = A20 AM1000 = A22 BA100 = S14 BA500 = S22 TR5000 = R26	



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