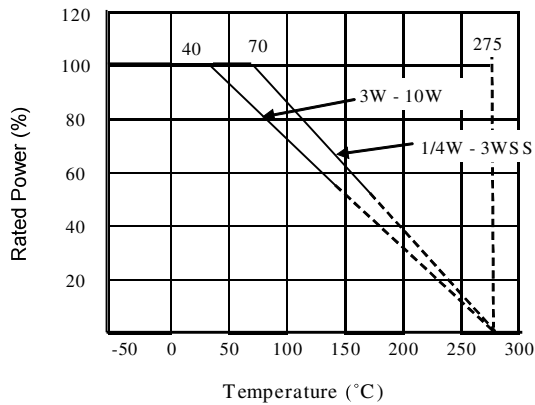
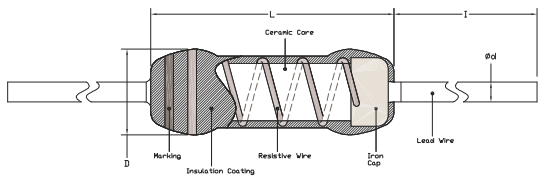


Dimensions and Construction



Features

- Flame-proof silicone coating, conforming to UL94V0
- Miniature series - Small body size, Higher power rating
- Suitable for automatic machine insertion
- Resistors are coated with layers of green color flame-proof lacquer

Type (Power Rating)	Dimensions			
	Inches (Millimeters)			
	L	D	l	d
KNP1/4 (1/4W)	0.248 ± 0.020 (6.30 ± 0.50)	0.091 ± 0.020 (2.30 ± 0.50)	1.102 ± 0.079 (28.00 ± 2.00)	0.024 ± 0.002 (0.60 ± 0.05)
KNP1/2SS (1/2W)				
KNP1/2 (1/2W)	0.354 ± 0.040 (9.00 ± 1.00)	0.130 ± 0.020 (3.30 ± 0.50)	1.063 ± 0.118 (27.00 ± 3.00)	0.028 ± 0.002 (0.70 ± 0.05)
KNP1SS (1W)				
KNP1 (1W)	0.472 ± 0.040 (12.00 ± 1.00)	0.177 ± 0.020 (4.50 ± 0.50)	1.260 ± 0.118 (32.00 ± 3.00)	
KNP2SS (2W)				
KNP2 (2W)	0.630 ± 0.040 (16.00 ± 1.00)	0.197 ± 0.040 (5.00 ± 1.00)		
KNP3SS (3W)				
KNP3 (3W)	0.689 ± 0.040 (17.50 ± 1.00)	0.256 ± 0.040 (6.50 ± 1.00)	1.378 ± 0.118 (35.00 ± 3.00)	0.031 ± 0.002 (0.80 ± 0.05)
KNP4 (4W)				
KNP5SS (5W)				
KNP5 (5W)	0.984 ± 0.079 (25.00 ± 2.00)	0.354 ± 0.040 (9.00 ± 1.00)	1.496 ± 0.118 (38.00 ± 3.00)	
KNP6 (6W)				
KNP7 (7W)	1.614 ± 0.059 (41.00 ± 1.50)	0.354 ± 0.020 (9.00 ± 0.50)		
KNP8 (8W)				
KNP10 (10W)	2.087 ± 0.040 (53.00 ± 1.00)			

Ordering Code / Information

KNP	1/4	-	XXXX	F	-	A	5
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Type	Power Rating	Nominal Resistance		Resistance Tolerance	Packaging	Quantity	
Flame-Proof Coating Wirewound Resistors	1/4	Resistors	3-Digit	E24 Series 2.2Ω=2R2 100Ω=101	F - 1% G - 2% J - 5%	A = Ammo (52mm) S = Spool (52mm) M = Ammo (26mm) R = Spool (26mm) N = Ammo (73mm) Q = Spool (73mm) B = Bulk (200 pcs) For 91mm taping consult factory	025 - 250 pcs 05 - 500 pcs 1 - 1,000 pcs 2 - 2,000 pcs 3 - 3,000 pcs 5 - 5,000 pcs
	1/2 1/2SS 1 1SS 2 2SS 3 3SS 4 5 5SS 6 7 8 10		4-Digit				

Application and Ratings

Product Type	Power Rating	T.C.R (ppm/°C) Max	Resistance Range E-24, E-96 F(±1%), G(±2%), J(±5%)	Operating Temperature Range
KNP1/4	1/4W	±300	0.1Ω - 47Ω	-50°C to +155°C
KNP1/2	1/2W		0.1Ω - 100Ω	
KNP1/2SS			0.1R - 47R	
KNP1	1W		0.1Ω - 100Ω	
KNP1SS			0.1Ω - 470Ω	
KNP2	2W		0.1Ω - 100Ω	
KNP2SS			0.1Ω - 680Ω	
KNP3	3W		0.1Ω - 1KΩ	
KNP3SS			0.1Ω - 1KΩ	
KNP4	4W		0.05Ω - 10KΩ	
KNP5			0.1Ω - 1KΩ	
KNP5SS	5W		0.1Ω - 4.3KΩ	
KNP6			0.1Ω - 18KΩ	
KNP7	6W		0.1Ω - 8.2KΩ	
KNP8				
KNP10	10W			

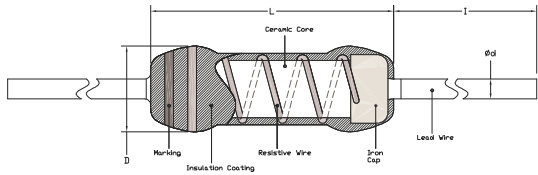
Test	Specification		Test Method
Resistance Value	Within Resistors specification		To be measure at 25°C
Resistance Temperature Coefficient	Within Specification of TCR		25°C/ +125°C
Short Time Overload	±(2.0% + 0.05Ω)	For 1%, 2% & 5% tolerance	Apply 2.5 times of rated voltage or maximum overload voltage for 5 secs which is lower
Resistance to Soldering Heat	±(2.0% + 0.05Ω)	For 1%, 2% & 5% tolerance	260°C ± 5°C, 10 seconds ± 1 second
Moisture Resistance	±(5% + 0.05Ω)	For 1% , 2% & 5% tolerance	40°C ± 2°C, 90% - 95% RH, 1000 hours
Load Life	±(5.0% + 0.1Ω)	For 1%, 2% & 5% tolerance	70°C ± 2°C ,1000 hours, 1.5 hours On,0.5 hours Off cycle
High Temperature Exposure	±(0.5% + 0.05Ω)	For 1% tolerance	125°C , 1000 hours. Unpowered. Measurement at 24 ± 2 hours after test conclusion
	±(1.0% + 0.05Ω)	For 2% & 5% tolerance	



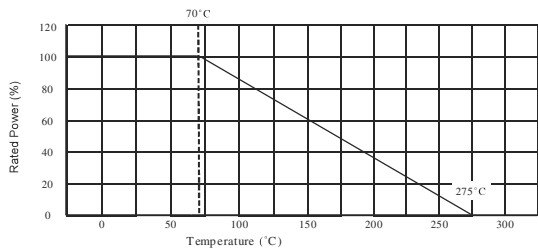
Features

- Higher power rating achieved, with smaller body size
- Flame-proof multi-layer coating meets UL94V0
- PCB space saving
- Resistors are coated with layers of green color flame-proof lacquer

Dimensions and Construction



Type	Dimensions			
	Inches (Millimeters)			
	L	D	l	d
KNH1 (1W)	0.248 ± 0.020 (6.30 ± 0.50)	0.095 ± 0.008 (2.40 ± 0.20)	1.102 ± 0.079 (28.00 ± 2.00)	0.022 ± 0.002 (0.55 ± 0.05)
KNH2 (2W)	0.354 ± 0.020 (9.00 ± 0.50)	0.130 ± 0.012 (3.30 ± 0.30)	1.024 ± 0.079 (26.00 ± 2.00)	
KNH3 (3W)	0.453 ± 0.040 (11.50 ± 1.00)	0.177 ± 0.020 (4.50 ± 0.50)	1.378 ± 0.079 (35.00 ± 2.00)	0.031 ± 0.002 (0.80 ± 0.05)
KNH4 (4W)	0.610 ± 0.040 (15.50 ± 1.00)	0.197 ± 0.020 (5.00 ± 0.50)	1.300 ± 0.079 (33.00 ± 2.00)	



Ordering Code / Information

KNH	1	-	XXXX	F	-	A	1
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Type	Power Rating	Nominal Resistance		Resistance Tolerance	Packaging	Quantity
High Power Flame-Proof WireWound Resistor	1	Resistors	3-Digit	F - 1% J - 5%	A = Ammo (52mm) S = Spool (52mm) N = Ammo (73mm) Q = Spool (73mm)	05 - 500 pcs 1 - 1,000pcs 2 - 2,000pcs
	2		4-Digit			
	3					
	4					

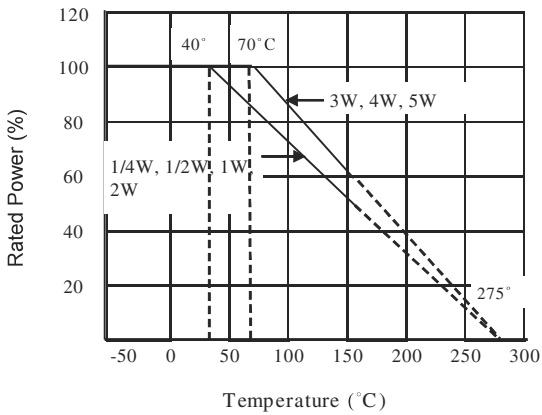
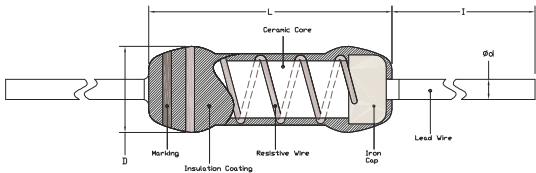
Application and Ratings

Product Type	Power Rating @ 70°C	T.C.R (ppm/°C) Max	Resistance Range F(±1%), J(±5%)	Dielectric Withstanding Voltage	Operating Temperature Range
KNH1	1W	±300	0.1Ω - 33Ω	300V	-40°C to +200°C
KNH2	2W		0.1Ω - 100Ω		
KNH3	3W		0.1Ω - 150Ω		
KNH4	4W		0.1Ω - 330Ω		

Test	Specification	Conditions
Resistance Value	Within resistors specification	To be measure at 25°C
Short Time Overload	±(2% + 0.05Ω)	2.5 times RCWV for 5 seconds
Dielectric Withstanding Voltage	Within resistors specification	In V-Block for 60 seconds
Temperature Coefficient of Resistance	Within resistors specification	-40°C to +200°C
Insulation Resistance	>100MΩ	In V-Block
Solderability	95% min. coverage	260°C ± 5°C for 5 ±0.5 seconds
Load Life In Humidity	±(5% + 0.05Ω)	40°C ± 2°C , 90-95% RH at RCWV for 1000hrs (1.5 hrs. on , 0.5 hrs. off)
Load Life	±(5% + 0.05Ω)	20°C at RCWV for 1000hrs (1.5 hrs. on , 0.5 hrs. off)
Resistance To Soldering Heat	±(1% + 0.05Ω)	350°C ± 10°C for 3 ±0.5 seconds
Overload Flame Retardant	No evidence of flaming or arcing	4 times RCWV for 1 Min.



Dimensions and Construction



Features

- Function as a wirewound resistors and when in presence of abnormal current, fusing capabilities activated to protect machine or equipment
- Saves the cost of having a fuse on PCB, hence increase cost savings
- Flameproof feature meets UL-1412 standard
- Flameproof coating meets UL-94V-0 standard
- Resistors are coated with layers of blue color flame-proof lacquer

Type	Dimensions			
	Inches (Millimeters)			
	L	D	l	d
FWW1/4 (1/4W)	0.244 ± 0.040 (6.20 ± 1.00)	0.091 ± 0.040 (2.30 ± 1.00)	1.102 ± 0.079 (28.00 ± 2.00)	0.022 ± 0.002 (0.55 ± 0.05)
FWW1/2SS (1/2W)				
FWW1/2 (1/2W)	0.258 ± 0.040 (9.10 ± 1.00)	0.126 ± 0.040 (3.20 ± 1.00)	1.063 ± 0.079 (27.00 ± 2.00)	0.031 ± 0.002 (0.78 ± 0.05)
FWW1SS (1W)				
FWW1 (1W)	0.441 ± 0.040 (11.20 ± 1.00)	0.165 ± 0.040 (4.20 ± 1.00)		0.031 ± 0.002 (0.78 ± 0.05)
FWW2SS (2W)				
FWW2 (2W)	0.598 ± 0.040 (15.20 ± 1.00)	0.197 ± 0.040 (5.00 ± 1.00)	1.260 ± 0.079 (32.00 ± 2.00)	0.031 ± 0.002 (0.78 ± 0.05)
FWW3SS (3W)				
FWW3 (3W)	0.673 ± 0.040 (17.10 ± 1.00)	0.236 ± 0.040 (6.00 ± 1.00)	1.181 ± 0.079 (30.00 ± 2.00)	0.031 ± 0.002 (0.78 ± 0.05)
FWW5SS (5W)				

Ordering Code / Information

FWW	1/4	-	XXXX	F	-	A	1
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Type	Power Rating	Nominal Resistance		Resistance Tolerance	Packaging	Quantity	
Fusible Flame-Proof Wirewound Resistors	1/4	Resistors	3-Digit	E24 Series 2.2Ω=2R2 100Ω=101	F - 1% G - 2% J - 5%	A = Ammo (52mm) S = Spool (52mm) M = Ammo (26mm) R = Spool (26mm) N = Ammo (73mm) Q = Spool (73mm) B = Bulk (200 pcs) For 91mm taping consult factory	025 = 250 pcs 05 = 500 pcs 1 = 1,000 pcs 2 = 2,000 pcs 3 = 3,000 pcs 5 = 5,000 pcs
	1/2		4-Digit	E96 Series 10.2Ω=10R2 10KΩ=1002			
	1/2SS						
	1						
	1SS						
	2						
	2SS						
	3						
	3SS						
	5SS						

Application and Ratings

Product Type	Power Rating	T.C.R (ppm/°C) Max	Resistance Range	Di-electric Withstanding voltage	Operating Temperature Range
FWW1/4 (1/4W)	1/4W	$< 1\Omega$ (± 350 ppm) $\geq 1\Omega$ (± 200 ppm)	0.1 Ω - 10 Ω	300V	-55°C to +155°C
FWW1/2SS (1/2W)	1/2W		0.1 Ω - 10 Ω	300V	
FWW1/2 (1/2W)	1/2W		0.1 Ω - 47 Ω	300V	
FWW1SS (1W)	1W		0.1 Ω - 47 Ω	500V	
FWW1 (1W)	1w		0.1 Ω - 100 Ω		
FWW2SS (2W)	2W		0.1 Ω - 100 Ω		
FWW2 (2W)	2W		0.1 Ω - 220 Ω		
FWW3SS (3W)	3W		0.1 Ω - 220 Ω		
FWW3 (3W)	3W		0.1 Ω - 330 Ω		
FWW5SS (5W)	4W		0.1 Ω - 330 Ω		

Test	Specification	Test Method
Resistance Value	Within Resistors specification	To be measure at 25°C
Resistance Temperature Coefficient	Within Specification of TCR	25°C/ +125°C
Short Time Overload	$\pm(2\% + 0.05\Omega)$ for 5% tolerance resistor	Apply 2.5 times of rated voltage or maximum overload voltage for 5 secs which is lower
Resistance to Soldering Heat	$\pm(2\% + 0.05\Omega)$ for 5% tolerance resistor	260°C \pm 5°C, 10 seconds \pm 1 second
Moisture Resistance	$\pm(5\% + 0.05\Omega)$ for 5% tolerance resistor	40°C \pm 2°C, 90% - 95% RH, 1000 hours
Load Life	$\pm(5\% + 0.05\Omega)$ for 5% tolerance resistor	70°C \pm 2°C ,1000 hours, 1.5 hours On,0.5 hours Off cycle
Clearing time current test	Open within 30 secs at 40 times rated power	Resistor fusing without flaming and arcing