

## KNS Series Datasheet

Power Shunt Resistors | Radial and Axial Version  
Low Inductance and Low Ohmic | Open Frame

### ORDERING CODE - Example

New SAP Part Nr.:

<b>KNS</b>	<b>250</b>	<b>J</b>	<b>B</b>	<b>-</b>	<b>RP-</b>	<b>R039</b>	<b>AA</b>
Serie	Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
		F = ±1% G = ±2% H = ±3% J = ±5%	B = Bulk	- Base on spec.	AX- Axial Version RP- Radial Version (10[mm] RM) RL- Radial Version (15[mm] RM) RC- Radial Version (20[mm] RM)		AA = Standard

Historical VTM Part Nr.:

<b>KN352 - 009</b>	<b>5</b>	<b>B</b>	<b>OR039</b>
Type	Tol.	Pack-Code	R Value
<b>KN352 - 0</b>	<b>5</b>	<b>B</b>	<b>OR068</b>
Type	Tol.	Pack-Code	R Value

### APPLICATIONS

- Automotive
- Power & Energy
- Consumer & Electronics

### FEATURES

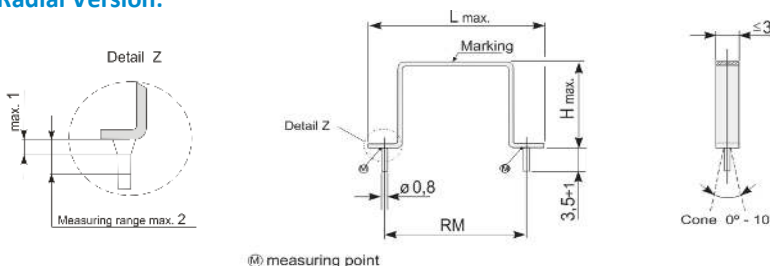
- All welded construction
- Very low inductance
- Open frame design
- Solderable terminals
- RoHS & REACH Compliant
- AEC - Q200 Qualified

### ELECTRICAL SPECIFICATIONS

Type		KNS100	KNS150	KNS200	KNS250	KNS300
Historical Part Number	RADIAL	KN350 - 009	KN351 - 010	KN351 - 009	KN352 - 009 KN352 - 010 KN352 - 011	KN353 - 009 KN353 - 010 KN353 - 011
	AXIAL	KN350 - 0	-----	KN351 - 0	KN352 - 0	-----
Nominal Power Rating P <sub>70</sub>		1,0	1,5	2,0	2,5	3,0
Resistance Range (Other values upon request)	[Ω]	Min.	OR003	OR003	OR003	OR005
		Max.	OR051	OR068	OR068	OR12
E-Series (preferred)		E24 >OR01 (Other upon request)				
Tolerances	±[%]	F = 1% ; G = 2% ; H = 3% ; J = 5%				
Temperature Coefficient	±[10 <sup>-6</sup> K <sup>-1</sup> ]	+200 ... +1200 (Depends on value)				
Working Temperature Range	[°C]	-55 ... +300				
Thermal Resistance	[KW <sup>-1</sup> ]	230	115	153	92	77
Max. Working Voltage	[V] <sub>RMS</sub>	$\sqrt{P_{70} \times R}$				
Dielectric Withstanding Voltage IEC115-1 clause 4.7 (1[min])	[V] <sub>RMS</sub>	Non insulated				

### DIMENSIONS [mm]

#### Radial Version:

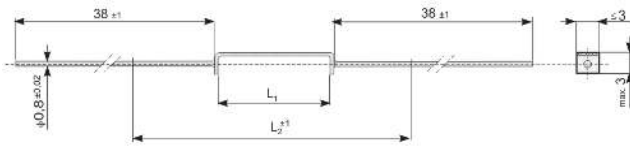


**Construction:** The resistive elements consist of a flat metal-band. Spot welded Cu-terminals ensure high stability of Contacts. Thus, this construction results in a non-inductive resistor of both high stability and overload capacity.

Type	[Forming Type]	Historical P/N:	H max.	L max.	RM
<b>KNS100</b>	[RP]	KN350-009	6,5	16	10
<b>KNS150</b>	[RL]	KN351-010	8,0	21	15
<b>KNS200</b>	[RP]	KN351-009	10,5	16	10
<b>KNS250</b>	[RP]	KN352-009	17,0	16	10
	[RL]	KN352-010	14,5	21	15
<b>KNS300</b>	[RC]	KN352-011	12,0	26	20
	[RP]	KN353-009	20,0	16	10
	[RL]	KN353-010	18,0	21	15
	[RC]	KN353-011	15,0	26	20

# KNS Series Datasheet

## Axial Version:



Type	[Forming Type]	Historical P/N:	L <sub>1</sub>	L <sub>2</sub>
KNS100	[AX]	KN350 - 0	12,0 ... 14,5	40
KNS200		KN351 - 0	17,5 ... 21,5	45
KNS250		KN352 - 0	29,0 ... 34,0	60

**Measuring length L<sub>2</sub>:** Resistance value is measured over the centered length L<sub>2</sub> on terminals free of oxide and contaminations. Differing conditions require adequate corrections ( $R_{\text{terminal}} = 0,4 \text{ [m}\Omega/\text{cm]}$ ).

## PERFORMANCE DATA

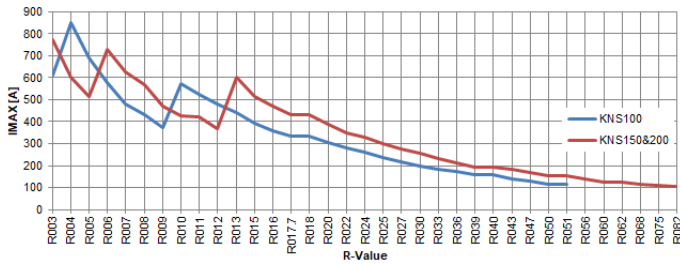
Type		KNS100	KNS150	KNS200	KNS250	KNS300
Historical Part Number	RADIAL	KN350 - 009	KN351 - 010	KN351 - 009	KN352 - 009 KN352 - 010 KN352 - 011	KN353 - 009 KN353 - 010 KN353 - 011
	AXIAL	KN350 - 0	-----	KN351 - 0	KN352 - 0	-----
Derating Linear	[°C]	70...300 (0W)				
Climatic Category		55/200/56				
Failure Rate <i>(Total, <math>\theta_{\text{J}}</math>, max, 60[%] cont. lev.)</i>	[10 <sup>-9</sup> h <sup>-1</sup> ]	appr. 100 depends on value				
Endurance <i>IEC60115-1 clause 4.25 (<math>P_{70}</math> @ 70[°C], 1000[h])</i>	±[%]	3,0				
Resistance to Soldering Heat <i>IEC60115-1 clause 4.18 (260<sup>±5</sup>[°C], 3,5<sup>±1</sup>[s])</i>	±[%]	0,25				
Damp Heat, Steady State <i>IEC60115-1 clause 4.24 ; IEC60068-2-78 (40[°C], 93[% r.h.], 56[d])</i>	±[%]	0,5	1,5		0,5	1,5
Rapid change of temperature <i>IEC60115-1 clause 4.19 and IEC60068-2-14 (30 [min] -55 [°C] and 30 [min] +125 [°C])</i>	±[%]	2,0	1,0		2,0	1,0
Biased Humidity <i>MIL-STD-202 Method 103 (85[°C], 85[%RH] 1.000[h])</i>	±[%]	1,0	2,5		1,0	2,5
Vibrations <i>Mil-STD-202 Method 204 (10 to 2000 [Hz], 5 [G] for 20 [min], 12 cycles, each of 3 orientation)</i>	±[%]	4,5	9,0		4,5	9,0
Mechanical Shock <i>Mil-STD-202 Method 213 (Method C, peak value 100 [G], Half sine)</i>	±[%]	2,0	3,0		2,0	3,0
ESD <i>IEC60115-1 Clause 4.38, AEC-Q200-002 Direct contact, 2discharges, Cs = 150 [pF], Rd = 2000 [Ω], V = 2[KV] (time/sec)</i>	±[%]	2,0	1,5		2,0	1,5
Terminal Strength	±[%]	0,5				
Terminal Tensile Strength	[N]	≥ 25				
Solderability <i>IEC60068-2-20 (245<sup>±5</sup>[°C] 3<sup>±0,5</sup>[s])</i>		Solder bath method (> 95% coverage)				
Marking <i>IEC60062</i>		Value imprinted				

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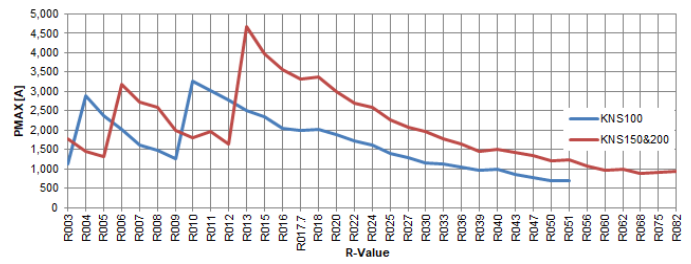
## PULSE PERFORMANCE

The graphs below show the capability of electrical pulse for each KNS series, based on the construction for each type and Ohmic value, for a pulse time equal to 50[ms].

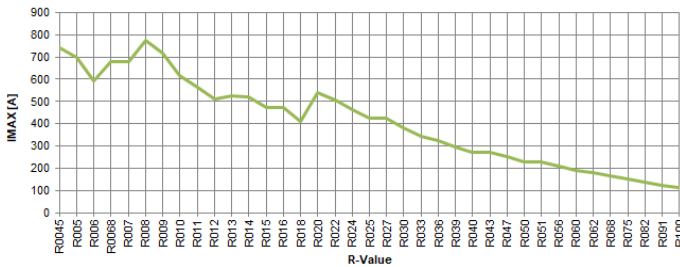
**Maximum Pulse current graph KNS100 KNS150&200**



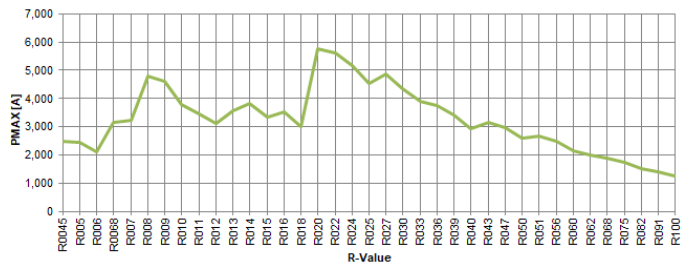
**Maximum Pulse Power graph KNS100 KNS150&200**



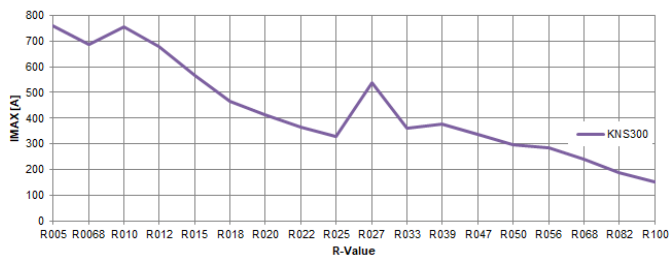
**Maximum Pulse current graph KNS250**



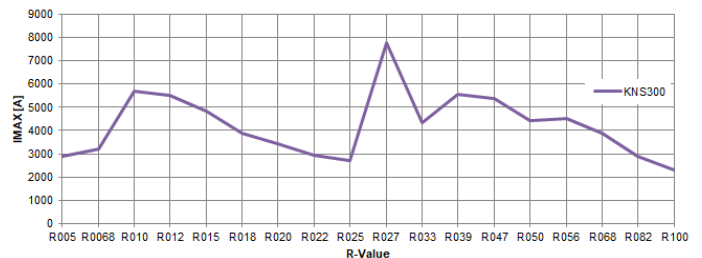
**Maximum Pulse power graph KNS250**



**Maximum Pulse current graph KN300**



**Maximum Pulse power graph KN300**



# KNS Series Datasheet

## PACKAGING

The standard packaging for KNS in radial and axial type is Bulk, dimensions below.

### Radial Version:



Type	Historical P/N:	Pack Code	Pieces	* Forming Type	Special
<b>KNS100</b>	KN350 – 009	B = Bulk	100	RP-	AA = Standard
<b>KNS200</b>	KN351 – 009		1000	RP-	
<b>KNS150</b>	KN351 – 010		1000	RL-	
<b>KNS250</b>	KN352 – 009		500	RP-	
	KN352 – 010		500	RL-	
	KN352 – 011		500	RC-	
<b>KNS300</b>	KN353 – 009		500	RP-	
	KN353 – 010		500	RL-	
	KN353 – 011		500	RC-	

\* RP- Radial (1 Pin 10[mm] RM) ; RL- Radial (1 Pin 15[mm] RM) ; RC- Radial (1 Pin 20[mm] RM)

### Axial Version:



Type	Historical P/N:	Pack Code	Pieces	Forming Type	Special
<b>KNS100</b>	KN350 – 0	B = Bulk	500	AX- = Axial	AA = Standard
<b>KNS200</b>	KN351 – 0		500		
<b>KNS300</b>	KN352 – 0		500		

### Ordering Code for Radial:

KNS	250	J	B	-	RP-	R039	AA
Serie	Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
		F = ±1% G = ±2% H = ±3% J = ±5%	B = Bulk	- Base on spec.	RP- Radial Version (10[mm] RM) or RL- Radial Version (15[mm] RM) or RC- Radial Version (20[mm] RM)		AA = Standard

### Ordering Code for Axial:

KNS	250	J	B	-	AX-	R039	AA
Serie	Power rating	Tol.	Pack-Code	TCR	Forming type	R Value	Special
		F = ±1% G = ±2% H = ±3% J = ±5%	B = Bulk	- Base on spec.	AX- Axial Version		AA = Standard