

KNS Series Datasheet

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

ORDERING CODE - Example

New SAP Part Nr.:

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.	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.:

KN352 – 009	5	B	OR039
Type	Tol.	Pack-Code	R Value
KN352 – 0	5	B	OR068
Type	Tol.	Pack-Code	R Value

APPLICATIONS

- Automotive
- Power & Energy
- Consumer & Electronics

FEATURES

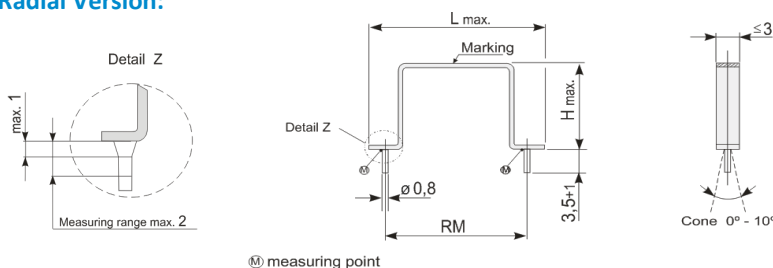
- All welded construction
- Very low inductance
- Open frame design
- Solderable terminals
- RoHS & REACH Compliant
- AEC - Q200 Qualified

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 ₇₀		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 ⁻⁶ *K ⁻¹]	+200 ... +1200 (Depends on value)				
Working Temperature Range	[°C]	-55 ... +300				
Thermal Resistance	[KW ⁻¹]	230	115	153	92	77
Max. Working Voltage	[V] _{RMS}	$\sqrt{P_{70} \times R}$				
Dielectric Withstanding Voltage IEC115-1 clause 4.7 (1[min])	[V] _{RMS}	Non insulated				

DIMENSIONS [mm]

Radial Version:

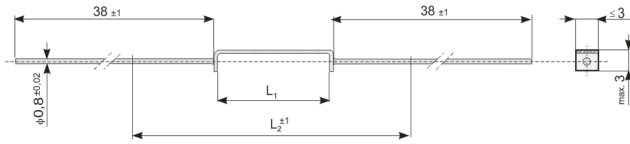


Construction: The resistive elements consist of a flat metal-band. Spot welded Cu-terminals ensure high stability of contacts. Thus, this construction results in a non-inductive resistor of both high stability and overload capacity.

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

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Axial Version:



Type	[Forming Type]	Historical P/N:	L ₁	L ₂
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 L₂: Resistance value is measured over the centered length L₂ 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, θ_{J}, max, 60[%] cont. lev.)</i>	[10 ⁻⁹ h ⁻¹]	appr. 100 depends on value				
Endurance <i>IEC60115-1 clause 4.25 (P₇₀ @ 70[°C], 1000[h])</i>	±[%]	3,0				
Resistance to Soldering Heat <i>IEC60115-1 clause 4.18 (260^{±5}[°C], 3,5^{±1}[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^{±5}[°C] 3^{±0,5}[s])</i>		Solder bath method (> 95% coverage)				
Marking <i>IEC60062</i>		Value imprinted				

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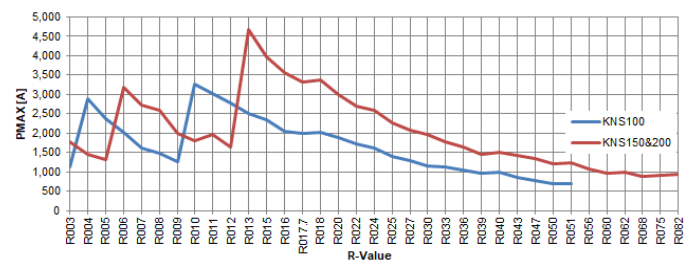
PULSE PERFORMANCE

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].

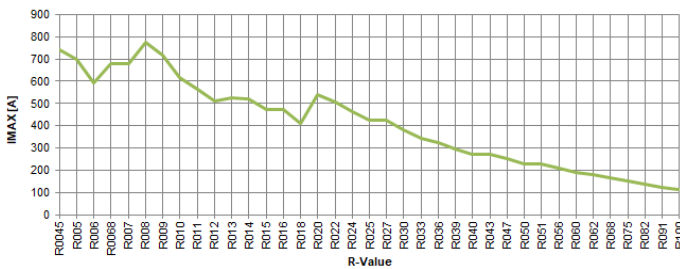
Maximum Pulse current graph KNS100 KNS150&200



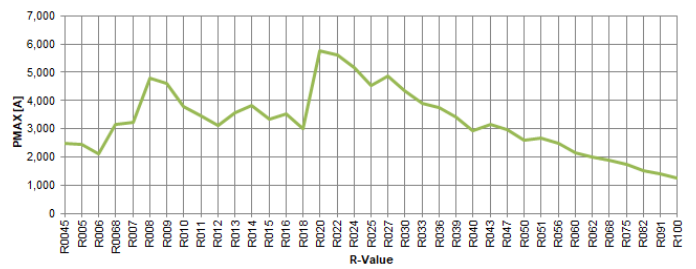
Maximum Pulse Power graph KNS100 KNS150&200



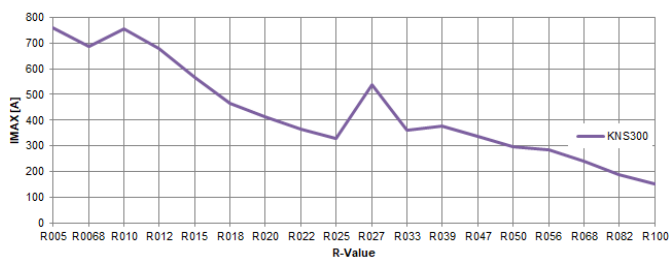
Maximum Pulse current graph KNS250



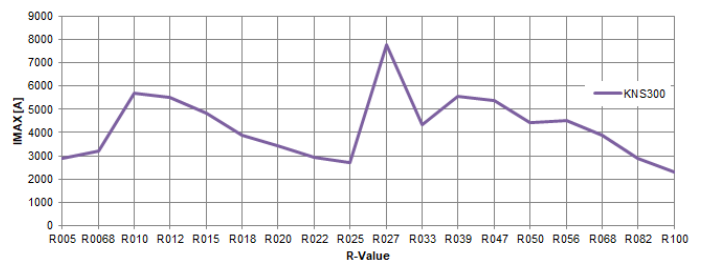
Maximum Pulse power graph KNS250



Maximum Pulse current graph KN300



Maximum Pulse power graph KN300



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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
KNS100	KN350 – 009	B = Bulk	100	RP-	AA = Standard
KNS200	KN351 – 009		1000	RP-	
KNS150	KN351 – 010		1000	RL-	
KNS250	KN352 – 009		500	RP-	
	KN352 – 010		500	RL-	
	KN352 – 011		500	RC-	
KNS300	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
KNS100	KN350 – 0	B = Bulk	500	AX- = Axial	AA = Standard
KNS200	KN351 – 0		500		
KNS300	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