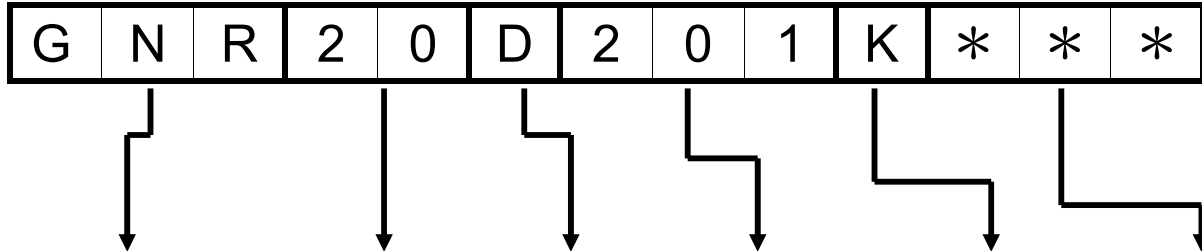


VARISTORS

Catalog number system



Product Series	Element Size	Type	Nominal Voltage at 1mA DC	Tolerance	Suffixes
GNR: General Nonlinear Resistor	05 :φ5mm 07 :φ7mm 10 :φ10mm 14 :φ14mm 20 :φ20mm 25 :φ25mm 32 :φ32mm 34 :34mm x 34mm 40 :φ40mm 53 :φ53mm 60 :60mm x 60mm	D: Disk S: Square B: Block	The first two digits are significant figures and the third one denotes the number of zeros following	J: ±5% K: ±10% L: ±15% or customer special requirement	A: F=7.5 4: L=4mm±1mm C: Crimped lead T: Ammo R: Reel

● 10D Specification

Model Number	Maximum Allowable Voltage		Varistor Voltage (V)	Clamping Voltage (Max.)		Maximum Peak current (8/20 μ s)(A)		Maximum Energy (Joule)		Rated Power (w)	Typical Capacitance (Reference) @1kHz(pF)
	AC _{rms} (V)	DC (V)		VC(V)	I _p (A)	1 Time	2 Times	10/1000 μ s	2ms		
10D180K	11	14	18(16~20)	36	5	1000	500	2.6	2.2	0.05	5200
10D220K	14	18	22(20~24)	43				3.2	2.6		4150
10D270K	17	22	27(24~30)	53				3.9	3.2		3450
10D330K	20	26	33(30~36)	65				4.8	4.0		3110
10D390K	25	31	39(35~43)	77				5.6	4.7		2630
10D470K	30	38	47(42~52)	93				6.8	5.6		2140
10D560K	35	45	56(50~62)	110				8.1	6.7		1820
10D680K	40	56	68(61~75)	135				9.8	8.2		2580
10D820K	50	65	82(74~90)	135				14.0	10.0		2100
10D101K	60	85	100(90~110)	165	17.0	12.0	1880				
10D121K	75	100	120(108~132)	200	20.0	14.5	1530				
10D151K	95	125	150(135~165)	250	25.0	18.0	1100				
10D181K	115	150	180(162~198)	300	32.0	21.0	450				
10D201K	130	170	200(185~225)	340	35.0	25.0	430				
10D221K	140	180	220(198~242)	360	39.0	27.5	410				
10D241K	150	200	240(216~264)	395	42.0	30.0	380				
10D271K	175	225	270(243~297)	455	49.0	35.0	350				
10D301K	190	250	300(270~330)	500	54.0	38.0	320				
10D331K	210	275	330(297~363)	550	58.0	42.0	300				
10D361K	230	300	360(324~396)	595	65.0	45.0	300				
10D391K	250	320	390(351~429)	650	70.0	50.0	300				
10D431K	275	350	430(387~473)	710	80.0	55.0	270				
10D471K	300	385	470(423~517)	775	85.0	60.0	230				
10D511K	320	415	510(459~561)	845	92.0	67.0	210				
10D561K	350	460	560(504~616)	925	92.0	67.0	200				
10D621K	385	505	620(558~682)	1025	92.0	67.0	190				
10D681K	420	560	680(612~748)	1120	92.0	67.0	170				
10D751K	460	615	750(675~825)	1240	100.0	70.0	160				
10D781K	485	640	780(702~858)	1290	105.0	75.0	150				
10D821K	510	670	820(738~902)	1355	110.0	80.0	140				
10D911K	550	745	910(819~1001)	1500	130.0	90.0	120				
10D102K	625	825	1000(900~1100)	1650	140.0	100	110				
10D112K	680	895	1100(990~1210)	1815	155.0	110	110				
10D182K	1000	1465	1800(1700~1980)	2970	247.0	183	70				

Operating Temperature Range : -40 to 85°C

Varistor Voltage : 10D series ...V_{1mA}

Storage Temperature Range : -40 to 125°C

Standard No. File No.	UL 1414 E181368	UL 1449 E166389	UL 497B E187844	CUL E166389	CSA C22.2 No.1 LR105317	VDE 42000 5938
180K~680K			Approved			Approved
820K~181K		Approved	Approved	Approved		Approved
201K~471K	Approved	Approved	Approved	Approved	Approved	Approved
511K		Approved	Approved	Approved		Approved
561K~821K	Approved	Approved	Approved	Approved		Approved
911K~182K						Approved

CERAMATE	TYPE	GNR10D□□□K	MODEL		PAGE	1/4
CITATION				DATE	Jul. 21, 2004	
SUBJECT	QUALITY APPROVAL and STRUCTURE			REV.	C01	

1. SAFETY STANDARDS APPROVAL

Standard No.	UL 1414	UL 1449	UL 497B	CUL	CSA C22.2 No.1	VDE 42000
File No.	E181368	E166389	E187844	E166389	LR105317	5938
180K~680K			Approved			Approved
820K~181K		Approved	Approved	Approved		Approved
201K~471K	Approved	Approved	Approved	Approved	Approved	Approved
511K		Approved	Approved	Approved		Approved
561K~821K	Approved	Approved	Approved	Approved		Approved
911K~182K						Approved

2. STRUCTURE

NO.	ITEM	DESCRIPTION		
2.1	Main Material	Zinc Oxide		
2.2	Coating Material	Epoxy Resin		
2.3	Marking	GNR, Part number, UL, CSA(or CUL) and VDE recognized component mark, Date code		
2.4	Appearance	Without dirt and crack, marking should be clear		
2.5	Dimensions		D(max.)	12.5
			H(max.)	16.5
			T(max.)	*(1)
			F	7.5±1.0
			φd	0.8±0.1
			L(min.)	25.0
			k(max.)	3.0
			Unit: mm	

*(1) See Page2, Dimensions Table

Part No.	T _{max}
10D180K	3.8
10D220K	4.0
10D270K	4.3
10D330K	3.6
10D390K	3.8
10D470K	4.0
10D560K	4.2
10D680K	4.0
10D820K	3.6
10D101K	3.8
10D121K	4.0
10D151K	4.3
10D181K	3.7
10D201K	3.8
10D221K	3.9
10D241K	4.0
10D271K	4.1
10D301K	4.3
10D331K	4.4
10D361K	4.6
10D391K	4.7
10D431K	4.9
10D471K	5.1
10D511K	5.2
10D561K	5.3
10D621K	5.6
10D681K	5.9
10D751K	6.2
10D781K	6.3
10D821K	6.5
10D911K	6.6
10D102K	6.8
10D112K	7.2
10D182K	11.2

Unit:mm

CERAMATE	TYPE	GNR10D□□□K	MODEL		PAGE	3/4
CITATION				DATE	Jul. 21, 2004	
SUBJECT	ELECTRICAL CHARACTERISTICS			REV.	C01	

3. ELECTRICAL CHARACTERISTICS

NO.	ITEM	PERFORMANCE	TEST METHODS
3.0	Standard Conditions		Unless otherwise specified, all tests are made under environmental conditions as given below: Temperature: 5~35°C Relative humidity: 45~85 % RH
3.1	Maximum Allowable Voltage	AC : *(2) V _{rms} DC : *(2) V	Maximum continuous sine wave(RMS) or DC voltage which may be applied.
3.2	Varistor Voltage	V _{0.1mA} : *(2) V	Voltage across the varistor measured at C _{mA} DC.
3.3	Varistor Voltage Temperature Coefficient	0 ~ -0.05 %/°C	$\frac{V_{CmA@85^{\circ}C} - V_{CmA@25^{\circ}C}}{V_{CmA@25^{\circ}C}} \times \frac{1}{60} \times 100$
3.4	Max. Clamping Voltage	*(2) V at *(2) A	Peak voltage across the varistor with a specified peak impulse current of 8x20μs waveform.
3.5	Rated Power	*(2) W	Maximum 50~60Hz power which may be loaded for 1,000 hrs at 85±2°C with $\Delta V_{CmA} / V_{CmA} \leq \pm 10\%$.
3.6	Withstanding Surge Current	*(2) A	The max. current within the varistor voltage change of less than ±10% when one impulse current (8x20μs) applied.
			The max. current with a varistor voltage change of less than ±10% when two times impulse current (8x20μs) are applied at intervals of 5 minutes.
3.7	Energy	*(2) Joule	The max. energy absorbed with a varistor voltage change of less than ±10% when one impulse (10x1000μs) is applied.
3.8	Surge Life	*(2) A	The max. current with a varistor voltage change of less than ±10% when 10,000 times impulse current (8x20μs) are applied at intervals of 20 seconds at room temperature.

***(2) See Page 4**

PART NUMBER	MAXIMUM ALLOWABLE VOLTAGE		VARISTOR VOLTAGE (V)	CLAMPING VOLTAGE (MAX.)		RATED WATTAGE (MAX.) (W)	SURGE CURRENT (8/20 μ s)		MAXIMUM ENERGY (10/1000 μ s) W_{tm} (joule)	SURGE LIFE (A)
	AC _{rms} (V)	DC(V)		(V)	Ip(A)		I_{tm} (A)			
			1 TIME			2 TIMES				
10D180K	11	14	16~20	36	5	0.05	1000	500	2.6	50
10D220K	14	18	20~24	43					3.2	
10D270K	17	22	24~30	53					3.9	
10D330K	20	26	30~36	65					4.8	
10D390K	25	31	35~43	77					5.6	
10D470K	30	38	42~52	93					6.8	
10D560K	35	45	50~62	110					8.1	
10D680K	40	56	61~75	135					9.8	
10D820K	50	65	74~90	135					14	
10D101K	60	85	90~110	165	17					
10D121K	75	100	108~132	200	20					
10D151K	95	125	135~165	250	25					
10D181K	115	150	162~198	300	32					
10D201K	130	170	185~225	340	35					
10D221K	140	180	198~242	360	39					
10D241K	150	200	216~264	395	42					
10D271K	175	225	247~303	455	49					
10D301K	190	250	270~330	505	54					
10D331K	210	275	297~363	545	58					
10D361K	230	300	324~396	595	65					
10D391K	250	320	351~429	650	70					
10D431K	275	350	387~473	710	80					
10D471K	300	385	423~517	775	85					
10D511K	320	410	459~561	845	92					
10D561K	350	460	504~616	920	92					
10D621K	385	505	558~682	1025	92					
10D681K	420	560	612~748	1120	92					
10D751K	460	615	675~825	1240	100					
10D781K	485	640	702~858	1290	105					
10D821K	510	670	738~902	1355	110					
10D911K	550	745	819~1001	1500	130					
10D102K	625	825	900~1100	1650	140					
10D112K	680	895	990~1210	1815	155					
10D182K	1000	1465	1700~1980	2970	247	120				