

10KP series



TRANSIENT VOLTAGE SUPPRESSOR DIODES

Voltage: 15~300 Volts

Current: 10000 W

Package: DO-27

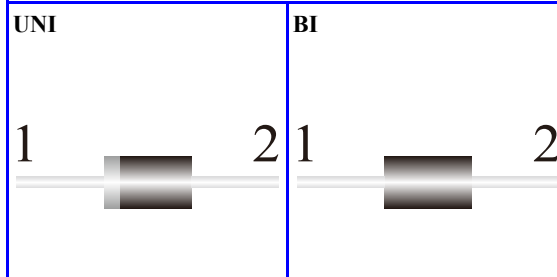
Features

- NH'S Glass Passivated Chip Technology
- Wave And Reflow Solderable
- Low Reverse Leakage
- Very Fast Response Time
- Excellent Clamping Capability
- 10/1000 μ s Waveform, Repetition Rate (Duty Cycle): 0.01 %
- ESD Immunity Acc. IEC 61000-4-2

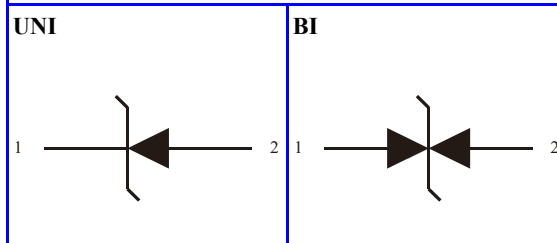
Typical Applications

- Power Port
- Communication And Data Port
- ESD Protection And Automotive Electronics
- Industrial Control and Automation

Diagram:



Polarity:



Single Phase, Half Wave, 60Hz, Resistive Or Inductive Load. For Capacitive Load, Derate Current By 20%

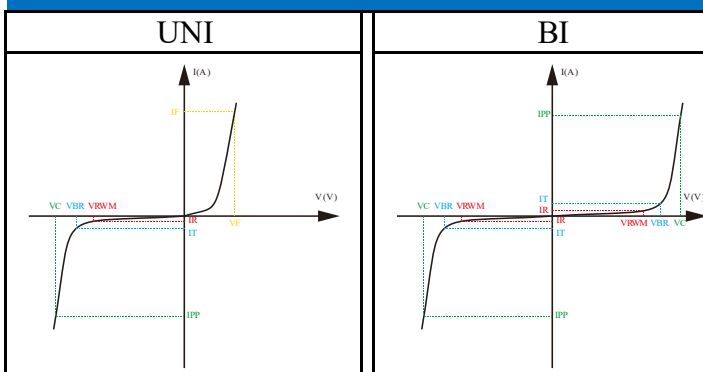
Maximum Ratings (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Value	Unit
Non-Repetitive Peak Pulse Power Dissipation	10/1000 μ s Waveform	P_{PP}	10000	W
Peak Pulse Current	10/1000 μ s Waveform	I_{PP}	See Table-1	A
Peak Forward Surge Current	8.3ms Single Half Sine-Wave Superimposed On Rate Load	I_{FSM}	400	A
Power Dissipation On Infinite Heatsink	$T_L = 75.0^\circ\text{C}$	P_D	8.0	W
Maximum Instantaneous Forward Voltage	$I_F = 50.0\text{ A}, V_{BR} < 200\text{V}$	V_F	3.5	V
	$I_F = 50.0\text{ A}, V_{BR} > 201\text{V}$		6.5	

Thermal Characteristics (Ta=25°C Unless Otherwise Specified)

Parameter	Test Conditions	Symbol	Value	Unit
Operating Junction Temperature Range		T_J	-55 ~ 150	$^\circ\text{C}$
Storage Temperature Range		T_{STG}	-55 ~ 150	
Thermal Resistance Junction To Ambient With Steady-State	At 0.375"(9.5mm) lead length Mounted On vertical P.C. Board	$R_{\theta JA}$	40	$^\circ\text{C/W}$

C-V Curve Chart



Symbol Instruction

Symbol	Instruction
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}
P_{PP}	Peak Power Dissipation
V_{RWM}	Working Peak Reverse Voltage
I_R	Maximum Reverse Leakage Current @ V_{RWM}
V_{BR}	Breakdown Reverse Voltage
I_T	Test Current @ V_{RWM}
I_F	Maximum Average Forward Rectified Current
V_F	Maximum Instantaneous Forward Voltage
C_J	Junction Capacitance @ $V_R = 0$ and $f = 1.0\text{ MHz}$

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Table-1.ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Part Number And Code		Reverse Stand-off Voltage	Breakdown Voltage VBR @ IT		Test Current	Max. Clamping Voltage @ IPP	Max. Peak Pulse Current	Max. Reverse Leakage @ VRWM
UNI-POLAR	BI-POLAR	VRWM(V)	Min.(V)	Max.(V)	IT(mA)	VC Max.(V)	IPP(A)	IR(uA)
10KP15A	10KP15CA	15.0	16.50	18.50	5	24.4	409.84	50
10KP16A	10KP16CA	16.0	17.80	19.70	1	26.0	384.62	20
10KP17A	10KP17CA	17.0	18.90	20.90	1	27.6	362.32	10
10KP18A	10KP18CA	18.0	20.00	22.10	1	29.2	342.47	5
10KP20A	10KP20CA	20.0	22.20	24.50	1	32.4	308.64	5
10KP22A	10KP22CA	22.0	24.40	26.90	1	35.5	281.69	5
10KP24A	10KP24CA	24.0	26.70	29.50	1	38.9	257.07	5
10KP26A	10KP26CA	26.0	28.90	31.90	1	42.1	237.53	5
10KP28A	10KP28CA	28.0	31.10	34.40	1	45.4	220.26	5
10KP30A	10KP30CA	30.0	33.50	36.80	1	48.4	206.61	5
10KP33A	10KP33CA	33.0	36.70	40.60	1	53.3	187.62	5
10KP36A	10KP36CA	36.0	40.00	44.20	1	58.1	172.12	5
10KP40A	10KP40CA	40.0	44.40	49.10	1	64.5	155.04	5
10KP43A	10KP43CA	43.0	47.80	52.80	1	69.4	144.09	5
10KP45A	10KP45CA	45.0	50.00	55.30	1	72.7	137.55	5
10KP48A	10KP48CA	48.0	53.30	58.90	1	77.4	129.20	5
10KP51A	10KP51CA	51.0	56.70	62.70	1	82.4	121.36	5
10KP54A	10KP54CA	54.0	60.00	66.30	1	87.1	114.81	5
10KP58A	10KP58CA	58.0	64.40	71.20	1	93.6	106.84	5
10KP60A	10KP60CA	60.0	66.70	73.70	1	96.8	103.31	5
10KP64A	10KP64CA	64.0	71.10	78.60	1	103.0	97.09	5
10KP70A	10KP70CA	70.0	77.80	86.00	1	113.0	88.50	5
10KP75A	10KP75CA	75.0	83.30	92.10	1	121.0	82.64	5
10KP78A	10KP78CA	78.0	86.70	95.80	1	126.0	79.37	5
10KP85A	10KP85CA	85.0	94.40	104.00	1	137.0	72.99	5
10KP90A	10KP90CA	90.0	100.00	111.00	1	146.0	68.49	5
10KP100A	10KP100CA	100.0	111.00	123.00	1	162.0	61.73	5
10KP110A	10KP110CA	110.0	122.00	135.00	1	177.0	56.50	5
10KP120A	10KP120CA	120.0	133.00	147.00	1	193.0	51.81	5
10KP130A	10KP130CA	130.0	144.00	159.00	1	209.0	47.85	5
10KP150A	10KP150CA	150.0	167.00	185.00	1	243.0	41.15	5
10KP160A	10KP160CA	160.0	178.00	197.00	1	259.0	38.61	5
10KP170A	10KP170CA	170.0	189.00	209.00	1	275.0	36.36	5
10KP180A	10KP180CA	180.0	201.00	222.00	1	292.0	34.25	5
10KP190A	10KP190CA	190.0	209.00	243.00	1	308.0	32.47	5
10KP200A	10KP200CA	200.0	224.00	247.00	1	324.0	30.86	5
10KP210A	10KP210CA	210.0	231.00	268.00	1	340.0	29.41	5
10KP220A	10KP220CA	220.0	246.00	272.00	1	356.0	28.09	5
10KP250A	10KP250CA	250.0	279.00	309.00	1	405.0	24.69	5
10KP300A	10KP300CA	300.0	335.00	371.00	1	486.0	20.58	5

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Typical Characteristics Curves

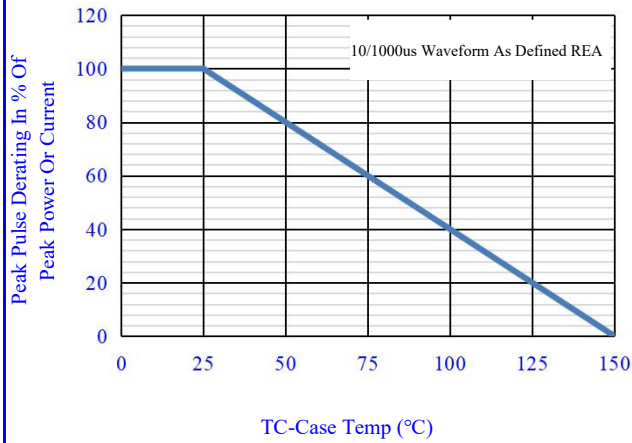


Fig.1-Peak Power Or Current vs.Tc

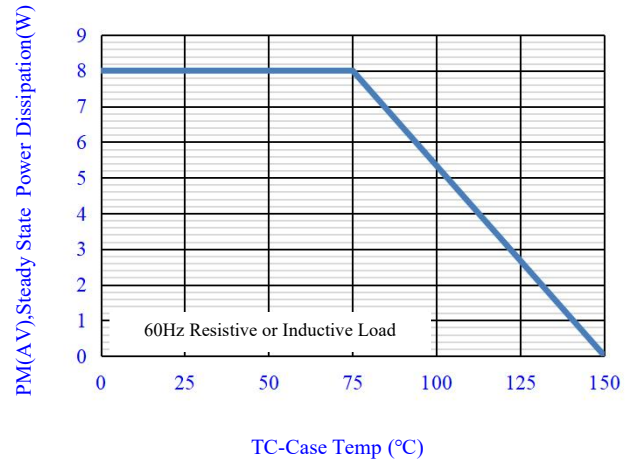


Fig.2-Steady State Power Derating Curve

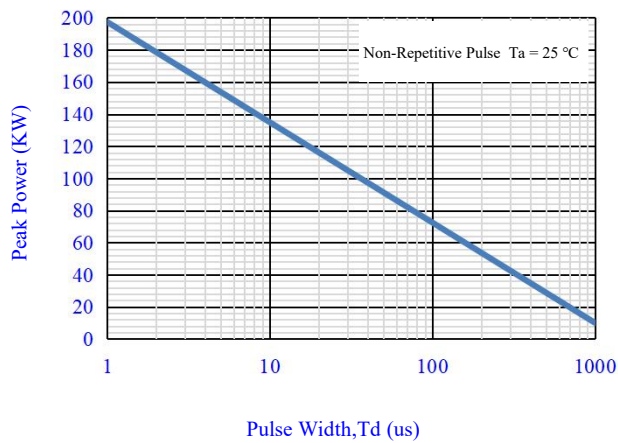


Fig.3-Peak Pulse Power Rating Curve

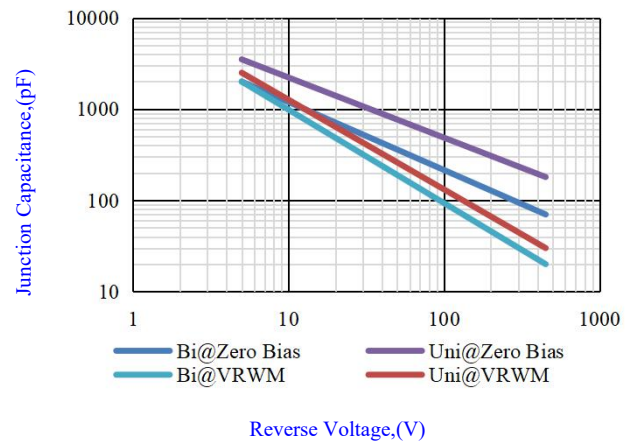


Fig.4-Typical Junction Capacitance

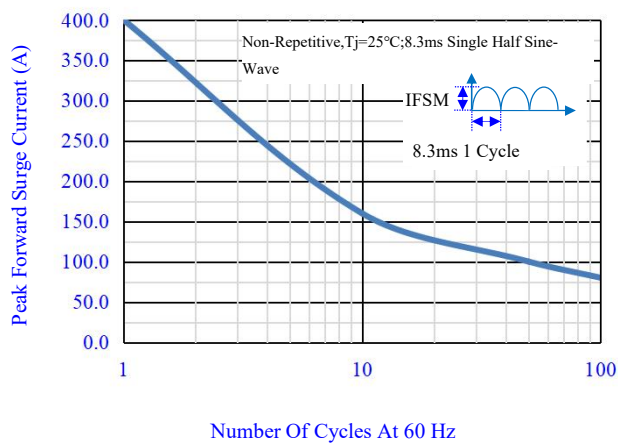


Fig.5-Max. Non-Repetitive Surge Current

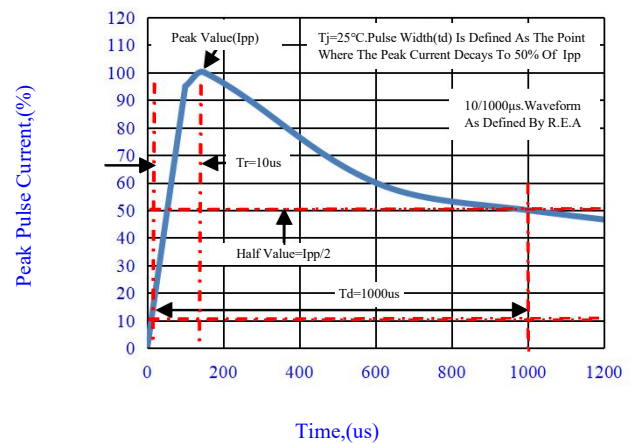


Fig.6-Pulse Waveform

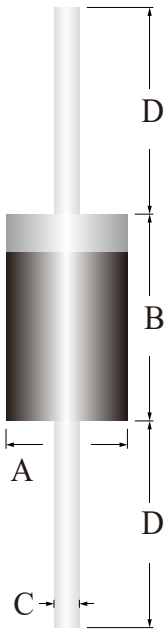
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OUTLINE DRAWINGS

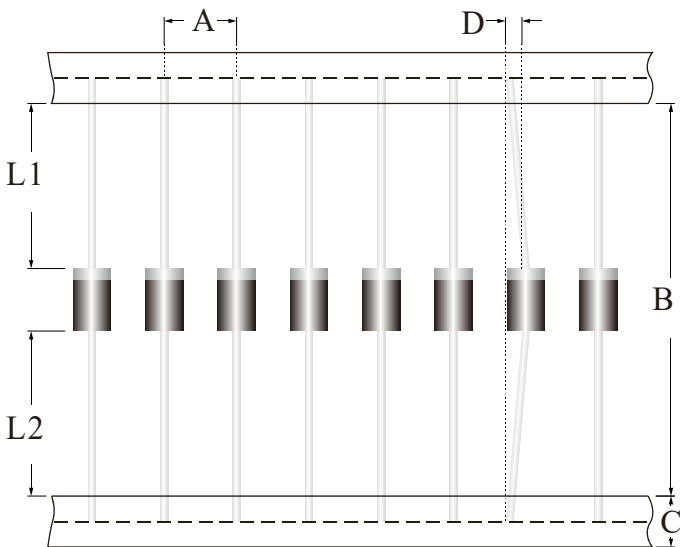
DO-27



OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.90	-	5.60	0.1929	-	0.2205
B	8.00	-	10.00	0.3150	-	0.3937
C	1.00	-	1.40	0.0394	-	0.0551
D	24.50	-	26.50	0.9646	-	1.0433

COMPONENT PITCH DIMENSION DIAGRAM

DO-27



OUTLINE DIMENSIONS						
Dim.	Milimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	9.50	-	10.50	0.3740	-	0.4134
B	51.00	-	53.00	2.0079	-	2.0866
C	5.50	-	6.50	0.2165	-	0.2559
D	-	-	1.20	-	-	0.0472
[L2-L1]	-	-	1.00	-	-	0.0394

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MARKING



MARKING INSTRUCTION

NH=Niuhan Trademark
FF=Product Line Code,According To Actual Changes
DDK=Date Code,According To Actual Changes
10KPxxxxx=Make,XX=See Table-1
 White band denotes cathode

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NH=Niuhan Trademark
FF=Product Line Code,According To Actual Changes
DDK=Date Code,According To Actual Changes
10KPxxxxx=Make,XX=See Table-1

PACKING INFORMATION

Package Type	Package Code	Product Weight Approx(g/Pcs)	Package Method	Quantity (Pcs/Min. Pack.)	Quantity (Pcs/Inner Box)	Quantity (Pcs/Carton)
DO-27	P1	1	Tape	1000	1000	10000
DO-27	P2	1	Tape	1250	1250	12500

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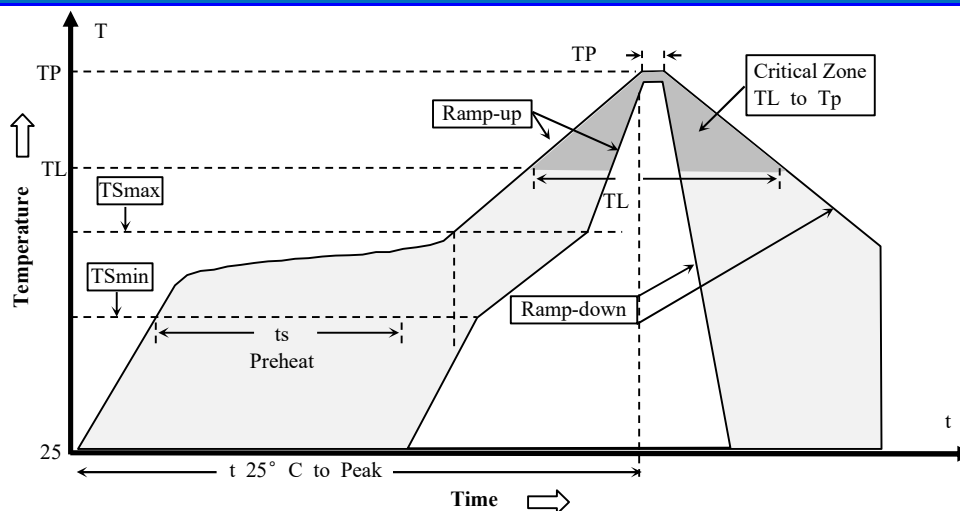


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Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T _{smax} to T _p)	3°C/second max.	3°C/second max.
Preheat -Temperature Min(TS min) -Temperature Max(TS max) -Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: -Temperature (TL) - Time (tL)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(TP)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note : All temperatures refer to topside of the package, measured on the package body surface.

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