12KPA Series

RoHS COMPLIANT

Reverse Voltage:20-36V
Peak Pulse Power:12000W

Axial Lead
Transient Voltage Suppressors

Features

- Glass passivated chip
- 12000W peak pulse power capability with a 10/1000 μ s waveform,repetitive rate (duty Cycle):0.01%
- Low leakage
- Uni and Bidirectional unit
- Excellent clamping capability
- Very fast respone time
- Rohs compliant

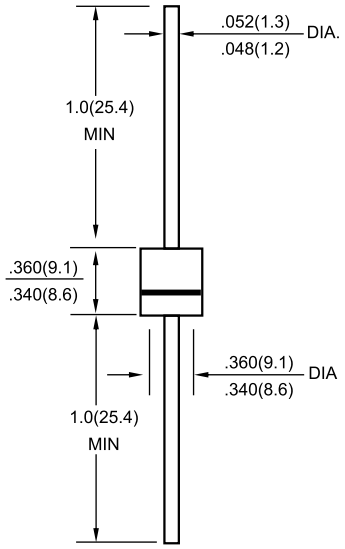
Applications

●Use in sensitive electronics protection against Voltage transients induced by inductive load Switching and lighting,especially for automotive load dump application

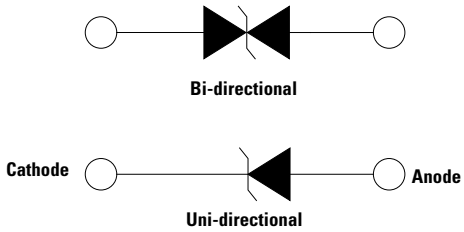
Mechanical Data

- ◇ Moisture Sensitivity: MSL Level 1,per J-STD-020
- ◇ Terminals: Tin lead-free plated . Solderable per MIL-STD-202 Method 208
- ◇ Case Material：Molded Plastic; Molding compound meet UL Flammability ClassificationRating 94V-0
- ◇ Polarity:Color band denotes cathode end Except Bipolar.
- ◇ Case: R-6 Molded plastic.

R-6



Dimensions in inches and (millimeters)



Maximum Rating(TA=25℃,unless otherwise noted)

Ratings at 25℃ ambient tepmerature unless otherwise specified.

Parameter	Symbol	Value	Units
Peak power dissipation with a 10/1000 μ s waveform(1)	P_{PPM}	12000	W
Peak Pluse current with a 10/1000 μ s waveform(1)	I_{PP}	See Next Table	A
Power dissipation on infinite heatsink at TL=75℃	P_D	8.0	W
Maximum average forward rectified current	$I_{F(AV)}$	20	A
Peak forward surge current, 8.3ms half-sine-wave unidirectional only(2)	I_{FSM}	500	A
Storage temperature range	T_J,T_{STG}	-55~150	℃

Note:
(1) Non-repetitive current pluse, per fig.3 and derated above TA=25℃ per fig.2;
(2) Measured on 8.3ms single half sine-wave ,or equivalent square wave,duty cycle=4 pluse per minute maximum.
(3)Mounted on 5.0mm×5.0mm(0.3mm thick)Copper Pads to each terminal.
(4)V_F<3.5V for V_{BR}<200V and V_F<6.5V for V_{BR}>201V.

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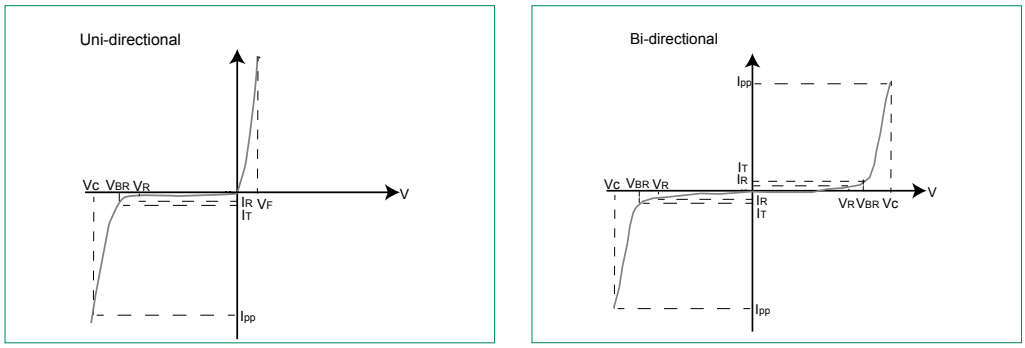
Electrical Characteristics(TA=25℃ unless otherwise noted)

Part Number （Uni）	Part Number （Bi）	Breakdown Voltage V_{BR}@I_T			Maximum Reverse Leakage I_R @V_{RWM}(μA)	Working Peak Rever voltage V_{RWM}(V)	Maximun Reverse Surge Current I_{PP}(A)	Maximum Clamping Voltage V_C@IPP(V)
		Min(v)	Max(V)	IT(mA)				
12KP20A	12KP20CA	22.20	24.50	5.0	15	20.0	349.9	34.3
12KP22A	12KP22CA	24.40	26.90	5.0	10	22.0	323.5	37.1
12KP24A	12KP24CA	26.70	29.50	5.0	5	24.0	294.9	40.7
12KP26A	12KP26CA	28.90	31.90	5.0	5	26.0	272.8	44.0
12KP28A	12KP28CA	31.10	34.40	5.0	5	28.0	252.7	47.5
12KP30A	12KP30CA	33.30	36,80	5.0	5	30.0	236.7	50.7
12KP33A	12KP33CA	36.70	40.60	5.0	5	33.0	319.4	54.7
12KP36A	12KP36CA	40.00	44.20	5.0	5	36.	200.7	59.8

Note:

1.For Bi-directional devices having V_R of 30 volts and under,the I_R limit is double.

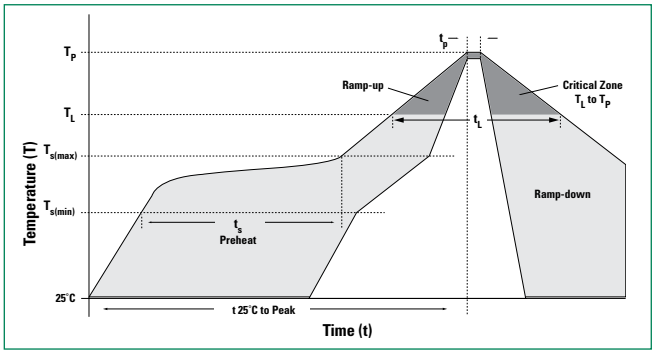
I-V Curve Characteristics



P_{PPM} Peak Pulse Power Dissipation – Max power dissipation
V_R Stand-off Voltage – Maximum voltage that can be applied to the TVS without operation
V_{BR} Breakdown Voltage – Maximum voltage that flows though the TVS at a specified test current (I_T)
V_C Clamping Voltage – Peak voltage measured across the TVS at a specified Ippm (peak impulse current)
I_R Reverse Leakage Current – Current measured at V_R
V_F Forward Voltage Drop for Uni-directional

Soldering Parameters

Reflow Condition		Lead free assembly
Pre Heat	Temperature MinTs (min)	150℃
	Temperature MaxTs (max)	200℃
	Time(min to max)(ts)	60-80 secs
Average ramp up rate(Liquidus Temp(TA) to peak		
Ts(max) to T_A-ramp-up Rate		3℃/second max
Reflow	Temperature(TA)(Liquidus)	217℃
	Time(min to max)(ts)	60-150 seconds
Peak Temperature(Tp)		$260^{+0/-5}$℃
Time within 5℃ of actual peak Temperature(tp)		20-40 seconds
Ramp-down Rate		6℃/seconds max
Time 25℃ to peak Temperature(Tp)		8 minutes Max.
Do not exceed		260℃



Flow/Wave Soldering (Solder Dipping)

Peak Temperature :	265°C
Dipping Time :	10 seconds
Soldering :	1 time

Part Number	Component package	quanty	Packaging Option
12KPXXXA	R-6	200PCS	Box

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Rating and Characteristics Curves(TA=25℃ unless otherwise noted)

Ratings and Characteristics Curves (T_A=25℃ unless otherwise noted)

Figure 1 - Pulse Waveform

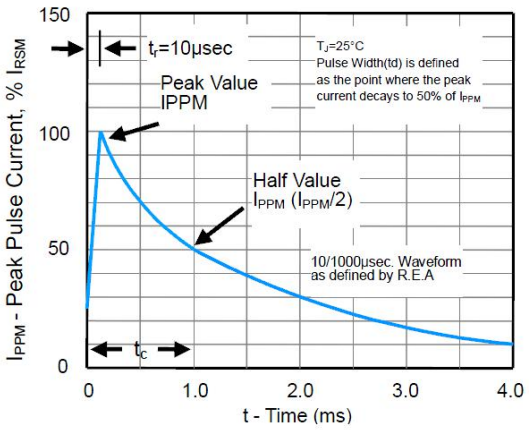


Figure 2 - Pulse Derating Curve

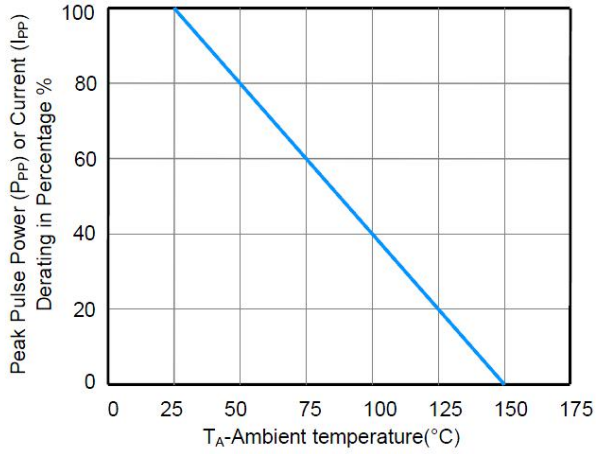


Figure 3 - I-V Curve Characteristics

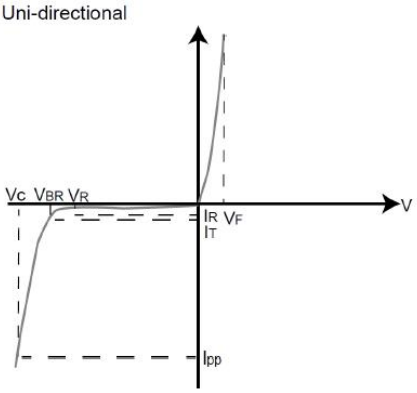
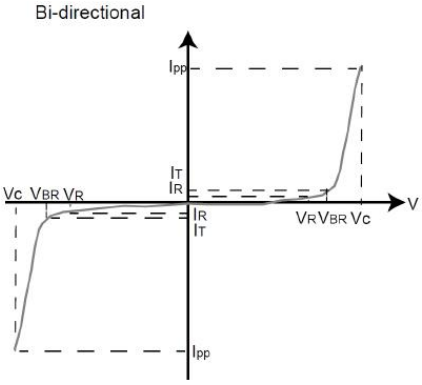
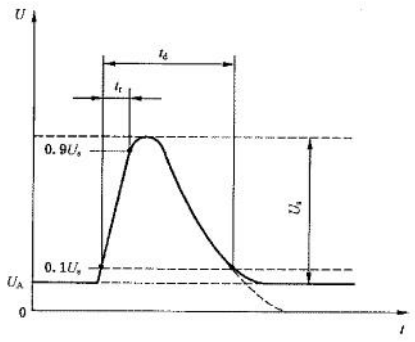


Figure 4 – I-V Curve Characteristics



Load dump ratings are tested on PRIMA ISO7637-P5a



试验脉冲 5a

SYSTEM	TEST LEVEL	Us(V)	Td（ms）	Ri（Ω）	NUMBER OF PULSE
12V	Ⅳ	87	400	0.5	10 pulse
24V	Ⅳ	174	350	2	10 pulse