

Surface Mount Transient Voltage Suppressors

U3K Series

Description

U3K series TVS is designed for DC power supply equipment in outdoor exposure environment. It is used to replace the traditional PTC, GDT and TVS combination solution, which is widely used to DC12V to 76V

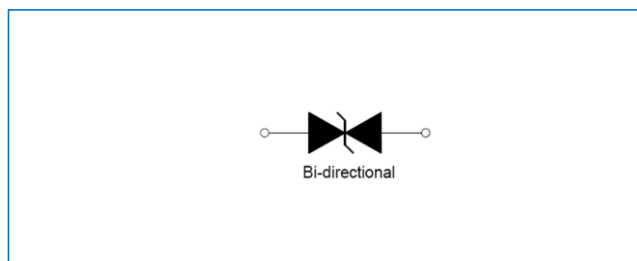
Working Voltage: 12 to 76 V

Features

- ◆ Glass passivated junction
- ◆ Bi-directional
- ◆ Excellent clamping capability
- ◆ Low slope resistance
- ◆ 3000A Peak Pulse power capability at 8/20us waveform
- ◆ Fast response time: typically less than 1.0ps from 0V to V_{BR} min
- ◆ High temperature soldering: 260°C/10s at terminals.
- ◆ ROHS Compliant



Functional Diagram



Applications

TVS devices are ideal for the protection of I/O interfaces, V_{CC} bus and other vulnerable circuits used in Telecom, Computer, Industrial and Consumer electronic applications.

Maximum Ratings and Thermal Characteristics ($T_A=25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Value	Units
Operating junction temperature range	T_J	- 55 to +125	$^\circ\text{C}$
Peak pulse current with a 8/20us waveform	I_{PP}	3000	A
Storage temperature range	T_{STG}	- 55 to +150	$^\circ\text{C}$

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Electrical Characteristics (@ 25°C Unless Otherwise Specified)

Part Number	Stand-Off Voltage V_{MW} (V)	Breakdown Voltage V_{BR} (V)		Test Current I_T (uA)	Maximum Reverse Leakage I_R @ V_{RWM} (uA)	Maximum Reverse Surge Current I_{PP} (A) ⁽¹⁾	Maximum Clamping Voltage V_C @ I_{PP} (V)
		MIN.	MAX.				
U3K-12C	12	13.00	15.00	10	20	3000	22.0
U3K-15C	15	16.00	19.00	10	20	3000	28.0
U3K-20C	20	22.00	26.00	10	20	3000	36.0
U3K-25C	25	27.00	30.00	10	20	3000	45.0
U3K-30C	30	32.00	37.00	10	20	3000	90.0
U3K-36C	36	39.00	45.00	10	20	3000	98.0
U3K-58C	58	64.00	70.00	10	20	3000	110.0
U3K-66C	66	72.00	80.00	10	20	3000	120.0
U3K-76C	76	85.00	95.00	10	20	3000	140.0

NOTE1: Surge waveform: 8/20 μ s

V_R : Stand-off Voltage -- Maximum voltage that can be applied

V_{BR} : Breakdown Voltage

V_C : Clamping Voltage -- Peak voltage measured across the suppressor at a specified I_{pp}

I_R : Reverse Leakage Current

Ratings and Characteristics Curves ($T_A=25^\circ\text{C}$ unless otherwise noted)

Figure 1 - Pulse Waveform

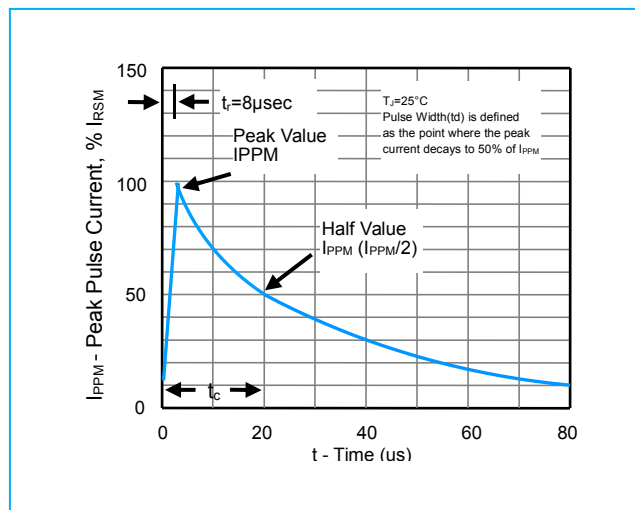
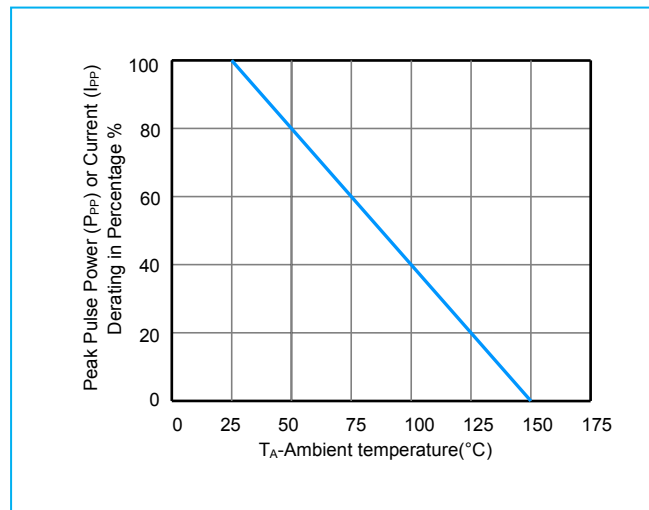


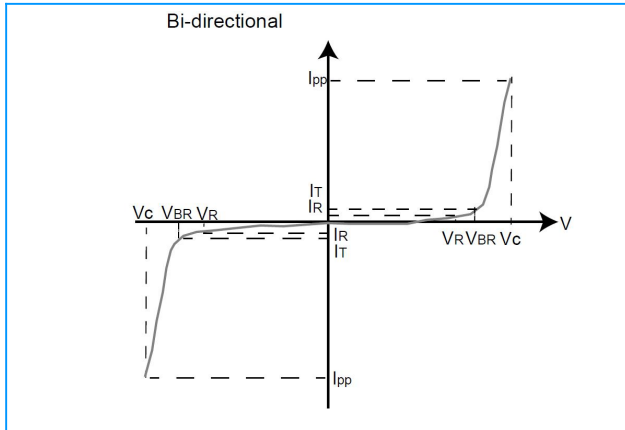
Figure 2 - Pulse Derating Curve



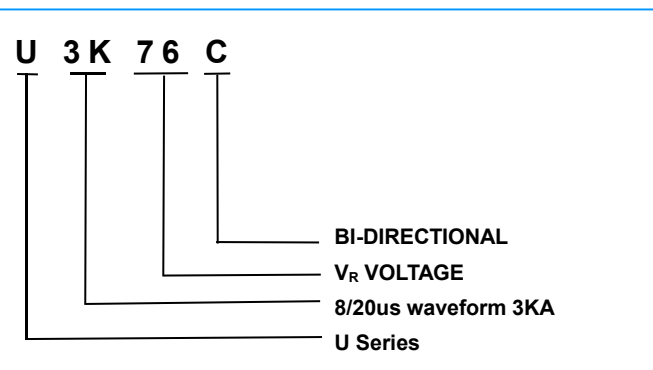
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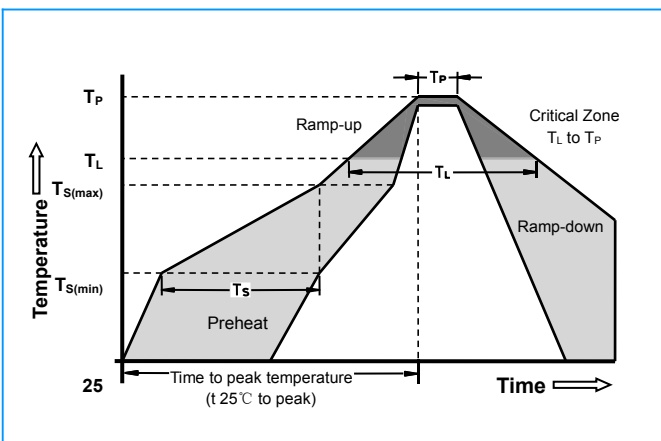
I-V Curve Characteristics



Part Numbering



Soldering Parameters

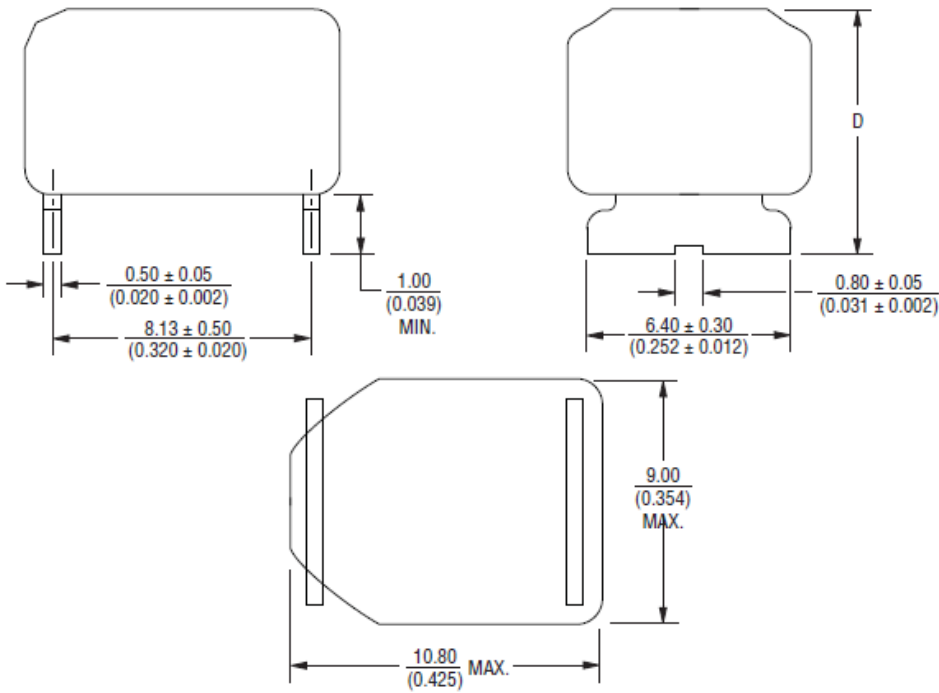


Reflow Condition		Lead-free assembly
Pre Heat	-Temperature Min ($T_{S(min)}$)	150°C
	-Temperature Max ($T_{S(max)}$)	200°C
	- Time (min to max) (t_s)	60 -180 Seconds
Average ramp up rate (Liquidus Temp T_L) to peak		3°C/second max
$T_{S(max)}$ to T_L - Ramp-up Rate		3°C/second max
Reflow	- Temperature (T_L) (Liquidus)	217°C
	- Time (min to max) (t_s)	60 -150 Seconds
Peak Temperature (T_P)		260 +0/-5°C
Time within 5°C of actual peak Temperature (t_p)		30 Seconds
Ramp-down Rate		6°C/second max
Time 25°C to peak Temperature (T_P)		8 minutes Max
Do not exceed		260°C

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Packaging



Part Number	Dimension D	Dimension:
U3K-12C	6.00 ± 0.50	MM INCHES
U3K-15C	0.311 ± 0.020	
U3K-20C		
U3K-25C	7.00 ± 0.50	
U3K-30C	0.311 ± 0.020	
U3K-36C		
U3K-58C	7.90 ± 0.50	
U3K-66C	0.311 ± 0.020	
U3K-76C		

Part Number	Case Type	Quantity	Packing Option
U3K-XXC Series	TPS	126	Box