KUUTVSxxxS1UR-4 Series

Transient Voltage Suppressor

Datasheet

Description

Transient voltage suppression diodes, also known as TVS diodes, are protective electronic parts that protect electrical equipment from voltage spikes introduced by wires.

Applications

- computer system
- domestic appliance
- video input

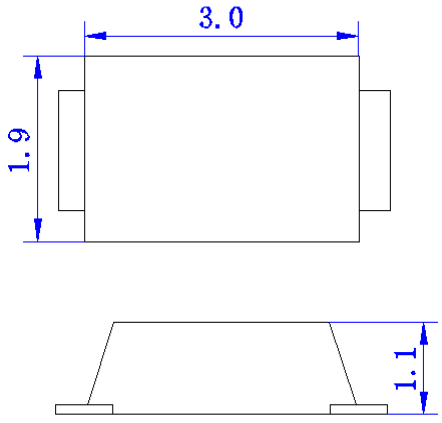
Features

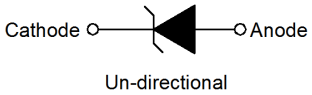
- For surface mounted applications
- Excellent clamping capability
- 400 W peak pulse power capability with a 10/1000μs Waveform.
- V_{RWM} 3.3-75V
- Low profile package and low inductance
- Typical IR less than 1uA above 12V
- Fast response time: typically less than 1.0ps from 0V to V_{BR} min.

Mechanical Characteristics

- Package: SMF/SOD-123FL
- Case Material:Molded Plastic. UL Flammability Classification Rating 94V-0 .RoHS compliant
- Moisture Sensitivity: Meet MSL 1
- Terminal：Solder plated, solderable per MIL-STD-750, Method 2026
- Polarity: Color band denotes cathode except bi-directional models
- Weight: 0.017g(approximate)

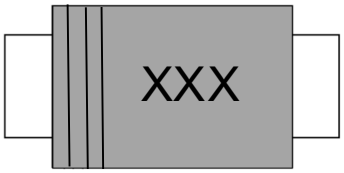
Dimensions & Symbol(Unit: mm Max)





Un-directional

Marking Information



Electrical Characteristics (T=25℃)

Part Number	Marking	V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Uni	V	μA	min(V)	max(V)	mA	max(V)	A
KUUTVS3V3S1UR-4	EHD	3.3	200	5.2	6	10	8.0	50.00
KUUTVS5V0S1UR-4	EHE	5.0	400	6.40	7.00	10	9.2	43.48
KUUTVS6V0S1UR-4	EHG	6.0	400	6.67	7.37	10	10.3	38.84
KUUTVS6V5S1UR-4	EHK	6.5	250	7.22	7.98	10	11.2	35.72
KUUTVS7V0S1UR-4	EHM	7.0	100	7.78	8.60	10	12.0	33.34
KUUTVS7V5S1UR-4	EHP	7.5	50	8.33	9.21	1	12.9	31.01
KUUTVS8V0S1UR-4	HER	8.0	25	8.89	9.83	1	13.6	29.42
KUUTVS8V5S1UR-4	EHT	8.5	10	9.44	10.40	1	14.4	27.78
KUUTVS9V0S1UR-4	EHV	9.0	5	10.00	11.10	1	15.4	25.98
KUUTVS10VS1UR-4	EHX	10.0	2.5	11.10	12.30	1	17.0	23.53
KUUTVS11VS1UR-4	EHZ	11.0	2.5	12.20	13.50	1	18.2	21.98
KUUTVS12VS1UR-4	EIE	12.0	2.5	13.30	14.70	1	19.9	20.11
KUUTVS13VS1UR-4	EIG	13.0	1	14.40	15.90	1	21.5	18.61
KUUTVS14VS1UR-4	EIK	14.0	1	15.60	17.20	1	23.2	17.25
KUUTVS15VS1UR-4	EIM	15.0	1	16.70	18.50	1	24.4	16.40
KUUTVS16VS1UR-4	EIP	16.0	1	17.80	19.70	1	26.0	15.39
KUUTVS17VS1UR-4	EIR	17.0	1	18.90	20.90	1	27.6	14.50
KUUTVS18VS1UR-4	EIT	18.0	1	20.00	22.10	1	29.2	13.70
KUUTVS20VS1UR-4	EIV	20.0	1	22.20	24.50	1	32.4	12.35
KUUTVS22VS1UR-4	EIX	22.0	1	24.40	26.90	1	35.5	11.27
KUUTVS24VS1UR-4	EIZ	24.0	1	26.70	29.50	1	38.9	10.29
KUUTVS26VS1UR-4	EJE	26.0	1	28.90	31.90	1	42.1	9.51
KUUTVS28VS1UR-4	EJG	28.0	1	31.10	34.40	1	45.4	8.82
KUUTVS30VS1UR-4	EJK	30.0	1	33.30	36.80	1	48.4	8.27
KUUTVS33VS1UR-4	EJM	33.0	1	36.70	40.60	1	53.3	7.51
KUUTVS36VS1UR-4	EJP	36.0	1	40.00	44.20	1	58.1	6.89
KUUTVS40VS1UR-4	EJR	40.0	1	44.40	49.10	1	64.5	6.21
KUUTVS43VS1UR-4	EJT	43.0	1	47.80	52.80	1	69.4	5.77
KUUTVS45VS1UR-4	EJV	45.0	1	50.00	55.30	1	72.7	5.51
KUUTVS48VS1UR-4	EJX	48.0	1	53.30	58.90	1	77.4	5.17
KUUTVS51VS1UR-4	EJZ	51.0	1	56.70	62.70	1	82.4	4.86

Electrical Characteristics (T=25℃)

Part Number	Marking	V_R	I_R@V_R	V_{BR}@I_T		I_T	V_C@I_{PP}	I_{PP}①
Uni-Polar	Uni	V	μA	min(V)	max(V)	mA	max(V)	A
KUUTVS54VS1UR-4	ERE	54.0	1	60.00	66.30	1	87.1	4.60
KUUTVS58VS1UR-4	ERG	58.0	1	64.4	71.20	1	93.6	4.28
KUUTVS60VS1UR-4	ERK	60.0	1	66.7	73.70	1	96.8	4.14
KUUTVS64VS1UR-4	ERM	64.0	1	71.10	78.60	1	103.0	3.89
KUUTVS70VS1UR-4	ERP	70.0	1	77.8	86.00	1	113.0	3.54
KUUTVS75VS1UR-4	ERR	75.0	1	83.3	92.10	1	121.0	3.31

Notes：

① Surge waveform: 10/1000μs

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 Ipp

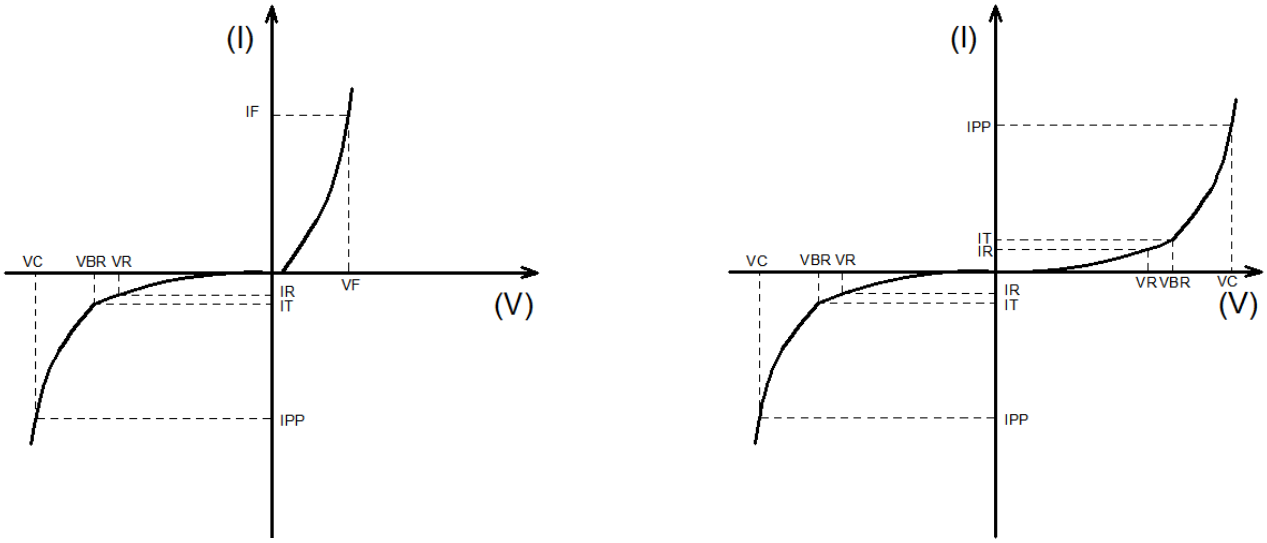
I_R： Reverse Leakage Current

Absolute Maximum Ratings(T=25ºC, RH=45%-75%, unless otherwise noted)

Parameter	Symbol	Value	Unit
Peak pulse power dissipation on 10/1000μs waveform	P_{PP}	400	W
Steady state power dissipation at T_L=75℃	$P_{M(AV)}$	1.0	W
Operating junction temperature range	T_j	-55 to +125	℃
Storage temperature range	T_{stg}	-55 to +150	℃

Ratings And V-I Characteristics Curves (T=25ºC, unless otherwise noted)

FIG1：V-I cure characteristics



Symbol	Parameter
I_F	Mean Forward Current
V_F	Maximum Forward Voltage @I_F
V_R	Peak Reverse Working Voltage
I_R	Reverse Leakage Current @ V_R
V_{BR}	Breakdown Voltage @ I_T
I_T	Test Current
I_{PP}	Maximum Reverse Peak Pulse Current
V_C	Clamping Voltage @ I_{PP}

Typical Characteristics

FIG2：Pulse Derating Curve

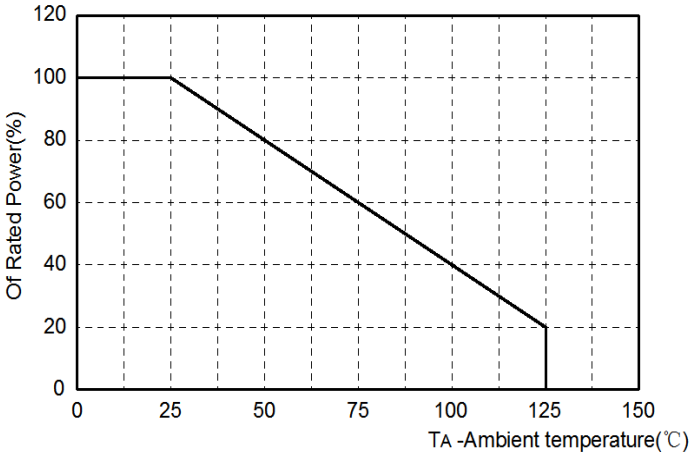


FIG3：Pulse Waveform

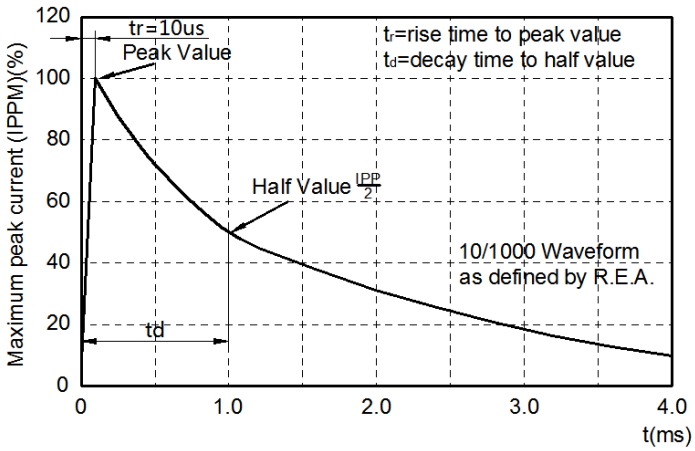


FIG4：Peak Pulse Power Rating Curve

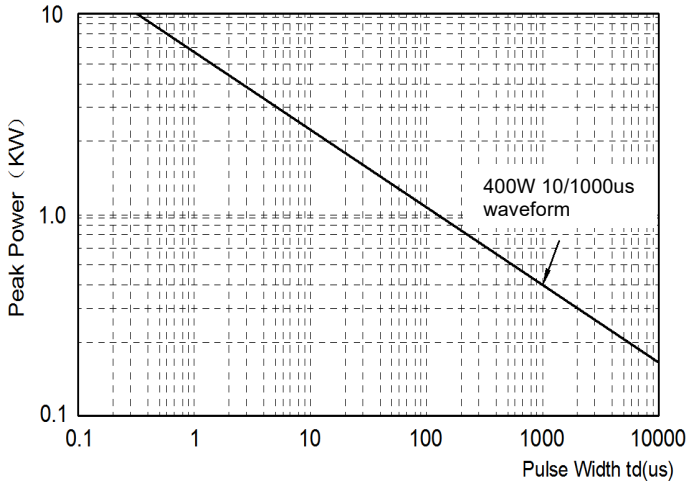
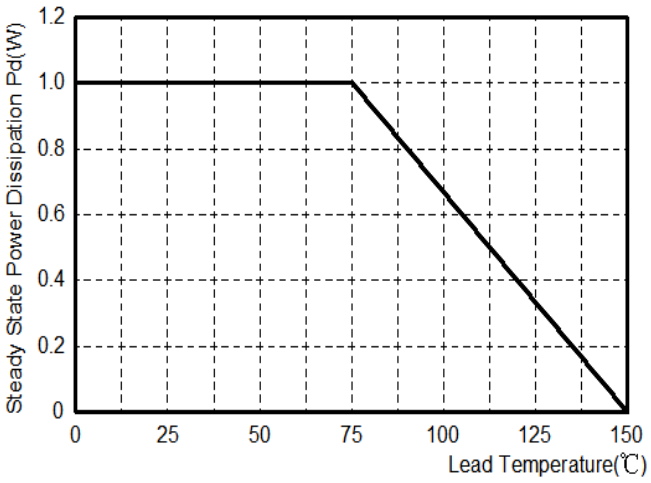


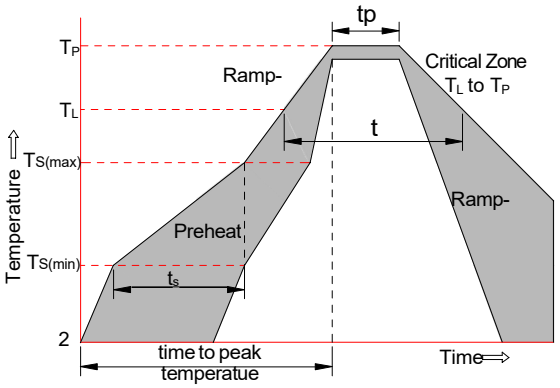
FIG5：Steady State Power Dissipation



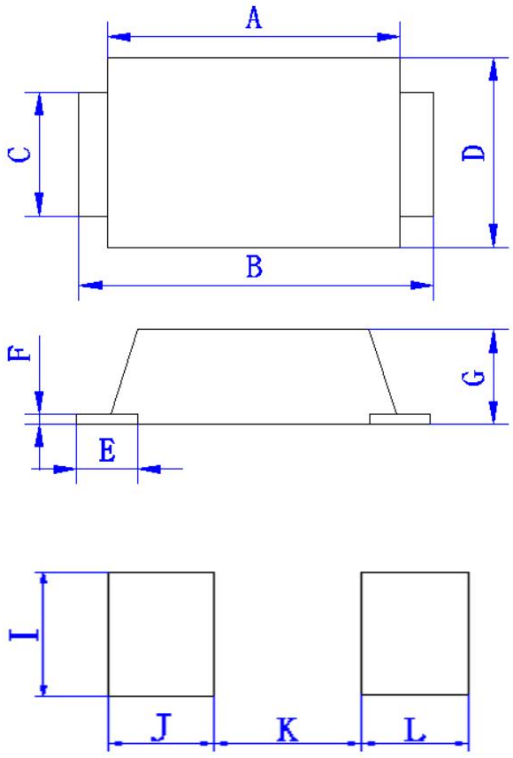
Soldering parameters

Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG6 : Reflow condition



Package mechanical data & Suggested Land Pattern



Ref.(mm)	Millimeters	
	Min.	Max.
A	2.5	3.0
B	3.4	4.0
C	0.7	1.1
D	1.5	1.9
E	0.45	0.95
F	0.05	0.26
G	0.9	1.1
I	1.2	
J	0.85	
K		2.3
L	0.85	