

TVM12VU1-DFN1610-2L**Specification**

Product Name	Transient Voltage Suppressor
Series	TVS Series
Part No	TVM12VU1
Package Size	DFN1610-2L



TVM12VU1-DFN1610-2L Engineering Specification

1. FEATURES

- Transient protection for single line
IEC 61000-4-2 (ESD)±30kV (Air)±30kV (Contact)
IEC 61000-4-5 (Surge) 45A (8/20µs)
- For 12V and below operating voltage
- Protects one data, control or power line
- Capacitance: 380pF (Typical)
- Low leakage current: 0.1µA @ VRWM (Max)
- Low clamping voltage
- Each pin can withstand over 1000 ESD strikes for ±8 kV contact discharge

2. APPLICATIONS

- USB VBUS protection
- Power Supply Protection
- Desktops, Servers and Notebooks
- Cellular Phones
- Portable Instrumentation
- Pagers Peripherals
- Digital cameras

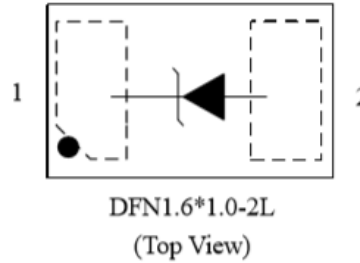
3. Explanation of Part Number

<u>TVM</u>	<u>12V</u>	<u>U1</u>	<u>DFN1610</u>	<u>2L</u>
-1	-2	-3	-4	-5

- (1) Product Type : TVS Diode
- (2) Reverse Stand Off Voltage:
- (3) Direction/Channel Code : U=Uni-directional, 1 Channel
- (4) Package Size Cod:
- (5) Pin Code: 2L: 2Pins



Diagram & Pin Configuration

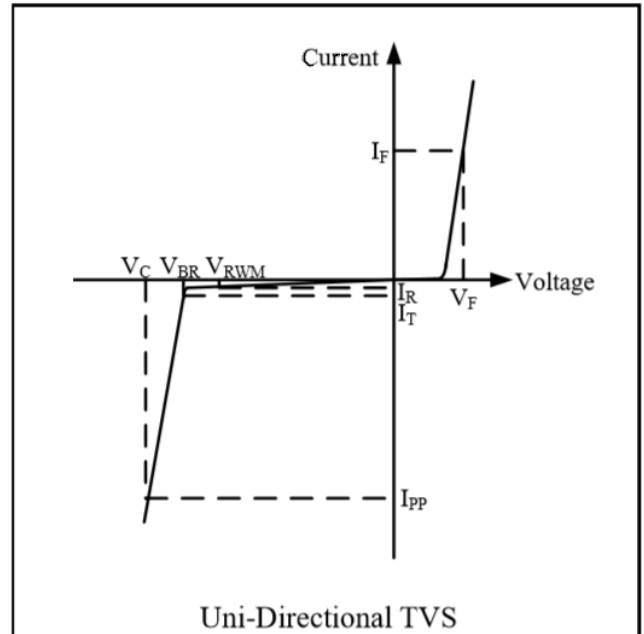


5. MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Symbol	Parameter	Value	Units
P _{PK}	Peak Pulse Power (t _p =8/20μs)	1000	Watts
I _{PP}	Peak Pulse Current (t _p =8/20μs)	45	A
V _{ESD}	ESD per IEC 61000-4-2 (Air) ESD per IEC 61000-4-2 (Contact)	±30 ±30	kV
T _{OPT}	Operating Temperature	-40/+125	°C
T _{STG}	Storage Temperature	-55/+150	°C

6. Electrical Characteristics (T = 25°C)

Symbol	Parameter
V_{RWM}	Nominal Reverse Working Voltage
I_R	Reverse Leakage Current @ V_{RWM}
V_{BR}	Reverse Breakdown Voltage @ I_T
I_T	Test Current for Reverse Breakdown
V_C	Clamping Voltage @ I_{PP}
I_{PP}	Maximum Peak Pulse Current
C_{ESD}	Parasitic Capacitance
V_R	Reverse Voltage
f	Small Signal Frequency
I_F	Forward Current
V_F	Forward Voltage @ I_F

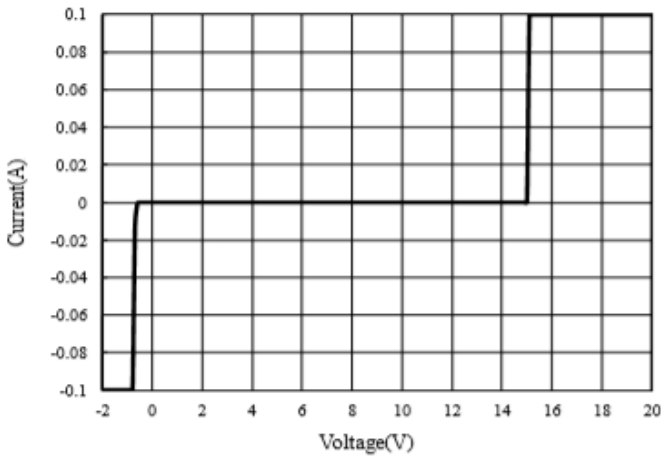


Symbol	Test Condition	Minimum	Typical	Maximum	Units
V_{RWM}				12	V
I_R	$V_{RWM} = 5V, T = 25^\circ C$ Pin1 to Pin2		0.01	0.1	μA
V_{BR}	$I_T = 1mA$ Pin1 to Pin2	13.3		18	V
V_F	$I_F = 1mA$ Pin2 to Pin1	0.4		1.2	V
V_{1C}	$I_{PP} = 5A, t_p = 8/20\mu s$ Pin1 to Pin2		15		V
V_{1C}	$I_{PP} = 80A, t_p = 8/20\mu s$ Pin1 to Pin2		20		V
C_{ESD1}	$V_R = 0V, f = 1MHz$ Pin1 to Pin2		380		pF

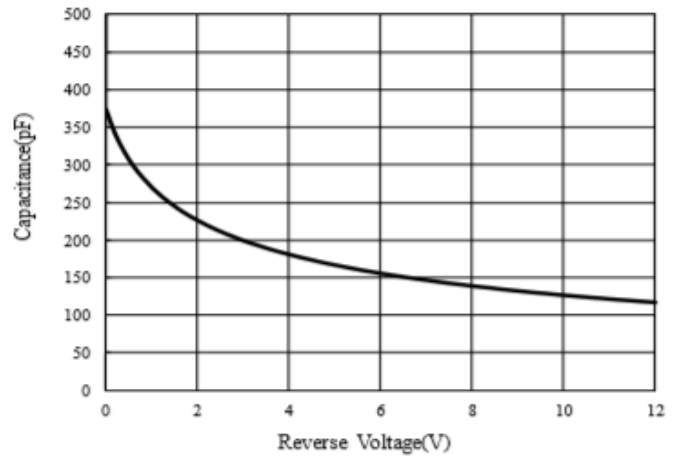
NOTES: Guaranteed by design and no subject to production test.

7. TYPICAL CHARACTERISTICS

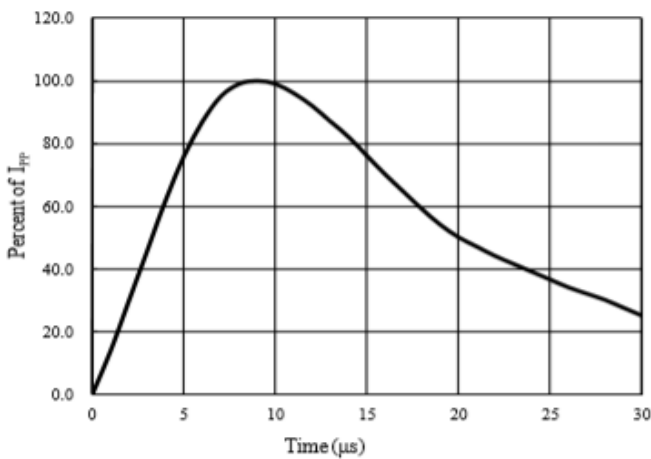
Voltage Sweeping



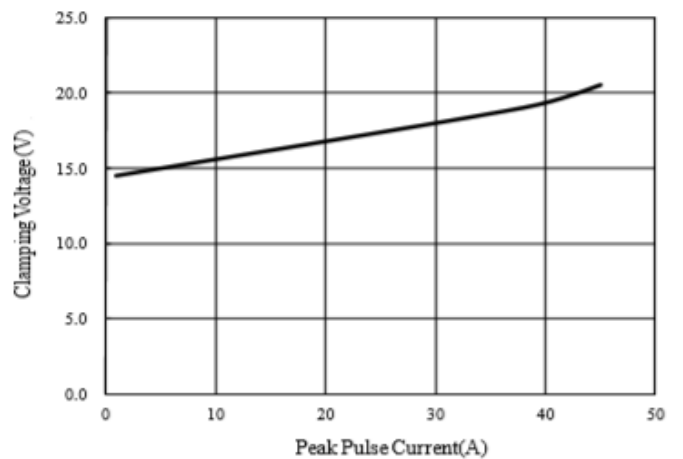
Capacitance vs. Voltage (f = 1MHz)



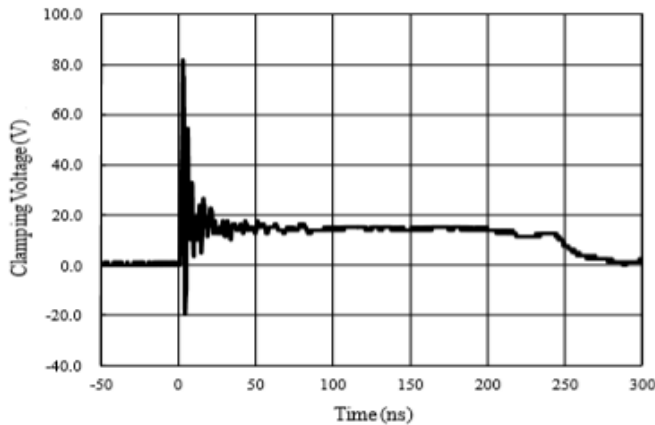
8/20μs Pulse Waveform



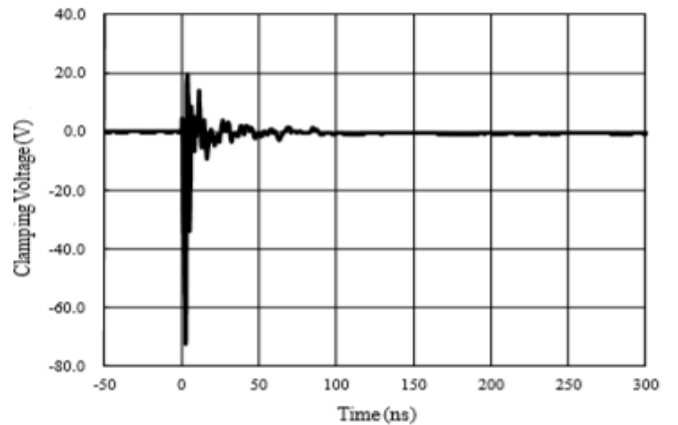
Clamping Voltage vs. Peak Pulse Current



**ESD Clamping
(+8kV Contact per IEC 61000-4-2)**

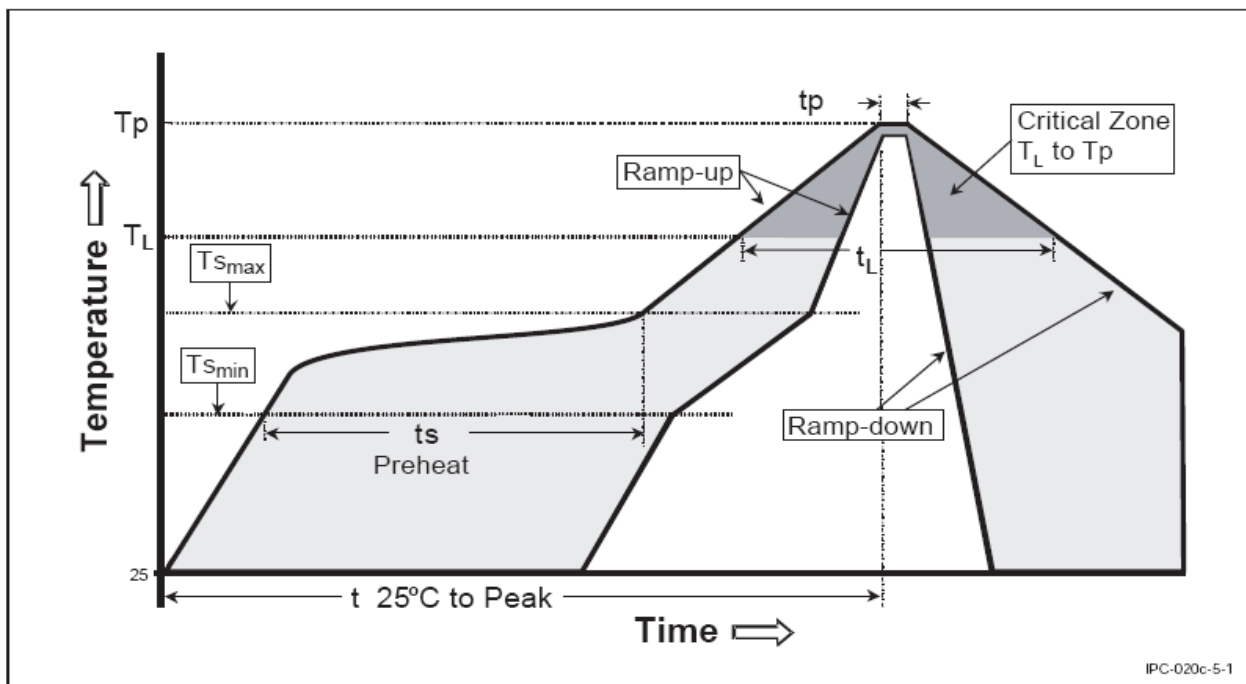


**ESD Clamping
(-8kV Contact per IEC 61000-4-2)**

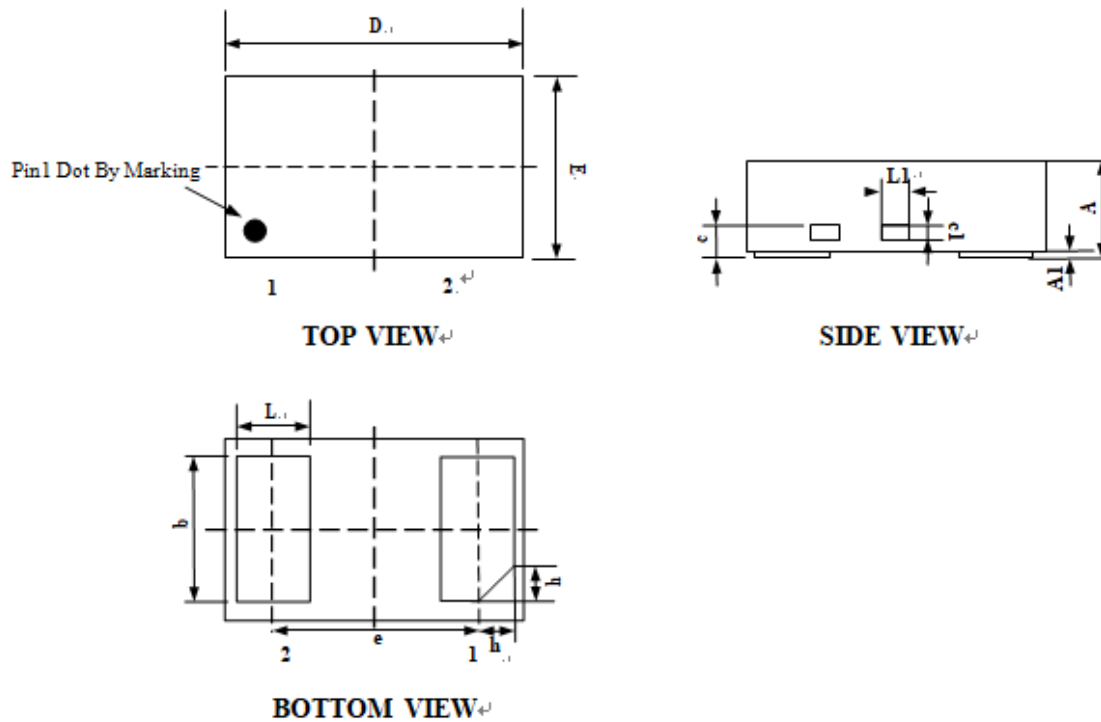


8. Soldering Parameters

Profile Feature	Pb-Free Assembly
Average Ramp-Up Rate (T _{smax} to T _p)	3° C/second max.
Preheat – Temperature Min (T _{smin}) – Temperature Max (T _{smax}) – Time (t _{smin} to t _{smax})	150 °C 200 °C 60-120 seconds
Time maintained above: – Temperature (T _L) – Time (t _L)	217 °C 60-150 seconds
Peak/Classification Temperature (T _p)	260 °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	8 minutes max.



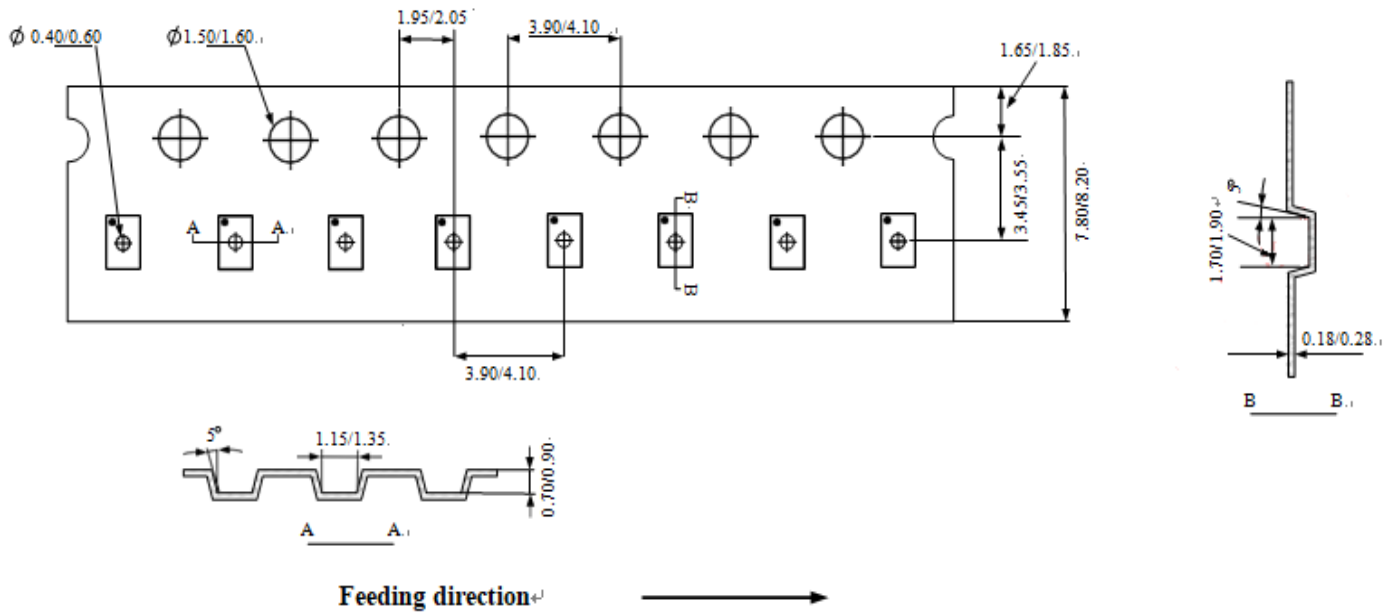
9. Outline Dimensions



Package Dimensions

Symbol	Dimensions (mm)		
	MIN	NOM	MAX
A	0.45	0.50	0.55
A1	-----	0.02	0.05
b	0.75	0.80	0.85
c	0.1	0.15	0.20
c1	0.075REF		
D	1.55	1.60	1.65
e	1.10BSC		
E	0.95	1.00	1.05
L	0.35	0.40	0.45
L1	0.10	0.15	0.20
h	0.15	0.20	0.25

10. TAPE AND REEL INFORMATION



Package types	Tape width (mm)	Pocket pitch(mm)	Reel size (Inch)	Trailer * length(mm)	Leader * length (mm)	Qty per reel (pcs)
DFN1.6*1.0-2L	8	4	7"	400	400	3000

11. Order information

Marking



Note: "N" is the device marking

"YWA" is date code.

Part Number	Quantity	Packaging Option
TVM12VU1-DFN1610-2L	3,000pcs/reel	Tape & reel- 8mm tape/7"reel

12. MSL LEVEL

LEVEL 1