TVS Diode – PH-D Series

Features

- Axial lead terminals
- High current transient suppressor
- Excellent voltage clamping capability
- Glass passivated junction
- Bi-directional
- Low slope resistance
- Repetition rate (Duty cycle): 0.01%
- RoHS compliant
- Epoxy encapsulated

Agency Approval

- UL file no.: E474915

Mechanical and Physical Data

- Case: Epoxy resin
- Axial leaded, solderable per MIL-STD-750, Method 2026
- Polarity: Bi-directional

Maximum Ratings and Thermal Characteristics

Parameter	Symbol	Value	Unit
Peak Pulse Current of 8/20μs waveform (Note 1, Fig.3).	I_{PP}	See Table	Amp
Operating Junction and Storage Temperature Range.	T_J, T_{STG}	-55~175	°C

Note:

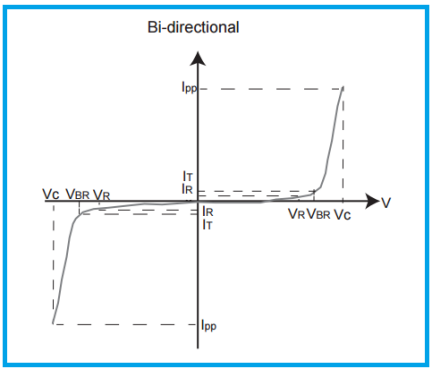
1. Non-repetitive current pulse, per Fig.3 and derated above T_A = 25°C per Fig.1.
2. 8.3ms single half sine wave, or equivalent square wave, Duty cycle = 4 pulses per minutes maximum.

Part Number Code

PH □□ - □□□ D

- D: DIP Type Series
- □□□: Reverse Stand-Off Voltage
- □□: I_{PP} Current Rating
- PH: PH Series

I-V Curve Characteristics



P_{PPM} **Peak Pulse Power Dissipation** – Maximum 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 through the TVS at a specified test current (I_T)

V_C **Clamping Voltage** – Peak voltage measured across the TVS at a specified I_{PPM} (Peak Impulse Current)

I_R **Reverse Leakage Current** – Current measured at V_R

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Electrical Characteristics

Part Number	Reverse Stand Off Voltage V_R		Breakdown Voltage V_{BR} (V) @ I_T	Test Current I_T	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (kA)	Maximum Reverse Leakage I_R (μA) @ V_R
Bi-directional	V_{AC}	V_{DC}	Min.	(mA)			
PH3-012D	8.5	12.0	14.0	1.0	28.0	3	20
PH3-015D	11.0	15.0	17.0	1.0	30.0	3	20
PH3-020D	14.0	20.0	22.0	1.0	40.0	3	20
PH3-025D	17.0	25.0	28.0	1.0	50.0	3	20
PH3-030D	21.0	30.0	33.0	1.0	60.0	3	20
PH3-042D	30.0	42.0	47.0	1.0	77.0	3	20
PH3-058D	40.0	58.0	64.0	1.0	110.0	3	20
PH3-066D	45.0	66.0	70.0	1.0	125.0	3	20
PH3-076D	54.0	76.0	85.0	1.0	140.0	3	20
PH3-100D	72.0	100.0	110.0	1.0	165.0	3	20
PH3-133D	100.0	133.0	147.0	1.0	220.0	3	20
PH3-170D	130.0	170.0	180.0	1.0	260.0	3	20
PH3-190D	145.0	190.0	200.0	1.0	290.0	3	20
PH3-200D	150.0	200.0	222.0	1.0	330.0	3	20
PH3-240D	180.0	240.0	250.0	1.0	340.0	3	20
PH3-275D	210.0	275.0	300.0	1.0	435.0	3	20
PH3-300D	230.0	300.0	330.0	1.0	470.0	3	20
PH3-380D	275.0	380.0	401.0	1.0	520.0	3	20
PH3-430D	310.0	430.0	440.0	1.0	625.0	3	20
PH3-460D	330.0	460.0	500.0	1.0	770.0	3	20
PH3-500D	385.0	500.0	558.0	1.0	868.0	3	20
PH6-012D	8.5	12.0	14.0	1.0	28.0	6	20
PH6-015D	11.0	15.0	17.0	1.0	30.0	6	20
PH6-020D	14.0	20.0	22.0	1.0	40.0	6	20
PH6-025D	17.0	25.0	28.0	1.0	50.0	6	20
PH6-030D	21.0	30.0	33.0	1.0	60.0	6	20
PH6-042D	30.0	42.0	47.0	1.0	77.0	6	20
PH6-058D	40.0	58.0	64.0	1.0	110.0	6	20
PH6-066D	45.0	66.0	70.0	1.0	125.0	6	20
PH6-076D	54.0	76.0	85.0	1.0	140.0	6	20
PH6-100D	72.0	100.0	110.0	1.0	165.0	6	20
PH6-133D	100.0	133.0	147.0	1.0	220.0	6	20
PH6-170D	130.0	170.0	180.0	1.0	260.0	6	20
PH6-190D	145.0	190.0	200.0	1.0	290.0	6	20
PH6-200D	150.0	200.0	222.0	1.0	330.0	6	20
PH6-240D	180.0	240.0	250.0	1.0	340.0	6	20
PH6-275D	210.0	275.0	300.0	1.0	435.0	6	20
PH6-300D	230.0	300.0	330.0	1.0	470.0	6	20
PH6-380D	275.0	380.0	401.0	1.0	520.0	6	20
PH6-430D	310.0	430.0	440.0	1.0	625.0	6	20

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Electrical Characteristics (Continue)

Part Number	Reverse Stand Off Voltage V_R		Breakdown Voltage V_{BR} (V) @ I_T	Test Current I_T (mA)	Maximum Clamping Voltage V_C (V) @ I_{PP}	Maximum Peak Pulse Current I_{PP} (kA)	Maximum Reverse Leakage I_R (μA) @ V_R
Bi-directional	V_{AC}	V_{DC}	Min.				
PH10-012D	8.5	12.0	14.0	1.0	28.0	10	20
PH10-015D	11.0	15.0	17.0	1.0	30.0	10	20
PH10-020D	14.0	20.0	22.0	1.0	40.0	10	20
PH10-025D	17.0	25.0	28.0	1.0	50.0	10	20
PH10-030D	21.0	30.0	33.0	1.0	60.0	10	20
PH10-042D	30.0	42.0	47.0	1.0	77.0	10	20
PH10-058D	40.0	58.0	64.0	1.0	110.0	10	20
PH10-066D	45.0	66.0	70.0	1.0	125.0	10	20
PH10-076D	54.0	76.0	85.0	1.0	140.0	10	20
PH10-100D	72.0	100.0	110.0	1.0	165.0	10	20
PH10-133D	100.0	133.0	147.0	1.0	220.0	10	20
PH10-170D	130.0	170.0	180.0	1.0	260.0	10	20
PH10-190D	145.0	190.0	200.0	1.0	290.0	10	20
PH10-200D	150.0	200.0	222.0	1.0	330.0	10	20
PH10-240D	180.0	240.0	250.0	1.0	340.0	10	20
PH10-380D	275.0	380.0	401.0	1.0	520.0	10	20
PH10-430D	310.0	430.0	440.0	1.0	625.0	10	20
PH15-012D	8.5	12.0	14.0	1.0	28.0	15	20
PH15-015D	11.0	15.0	17.0	1.0	30.0	15	20
PH15-020D	14.0	20.0	22.0	1.0	40.0	15	20
PH15-025D	17.0	25.0	28.0	1.0	50.0	15	20
PH15-030D	21.0	30.0	33.0	1.0	60.0	15	20
PH15-042D	30.0	42.0	47.0	1.0	77.0	15	20
PH15-058D	40.0	58.0	64.0	1.0	110.0	15	20
PH15-066D	45.0	66.0	70.0	1.0	125.0	15	20
PH15-076D	54.0	76.0	85.0	1.0	140.0	15	20
PH15-100D	72.0	100.0	110.0	1.0	165.0	15	20

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Ratings and Characteristic Curves

Fig 1 - Peak Pulse Power Rating Curve

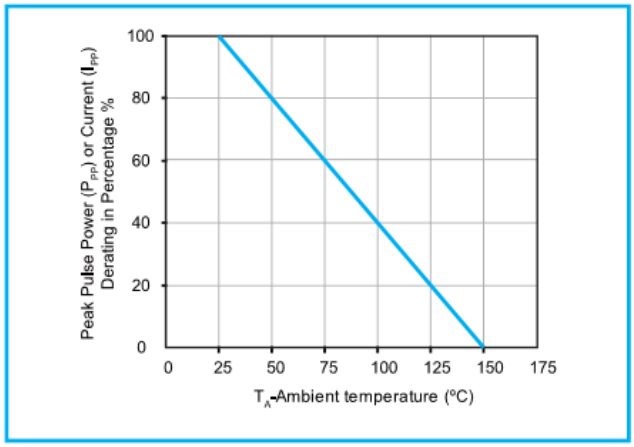


Fig 2 - Pulse Waveform (10/1000μS)

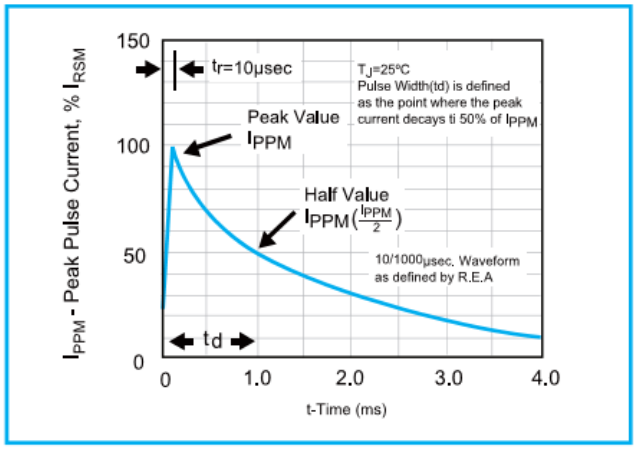
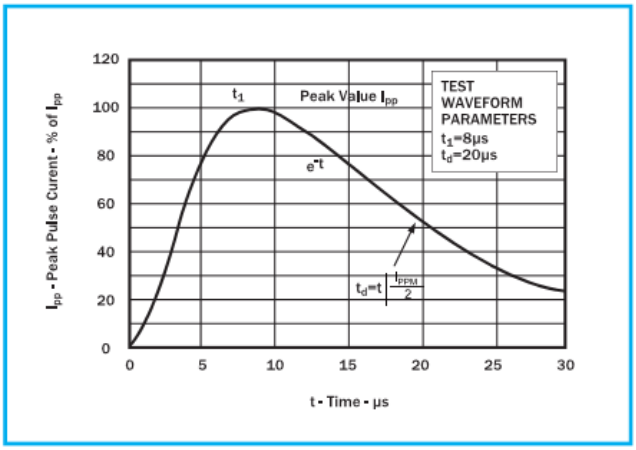


Fig 3 - Pulse Waveform (8/20μS)



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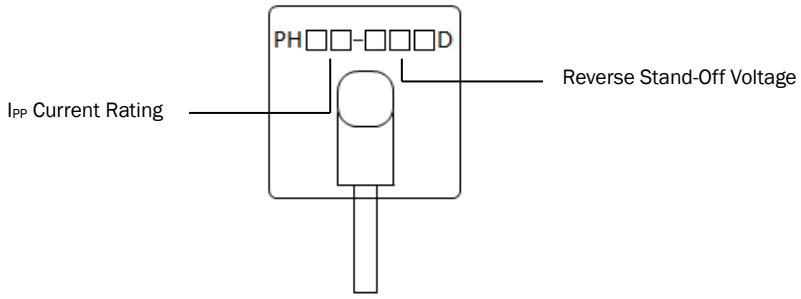
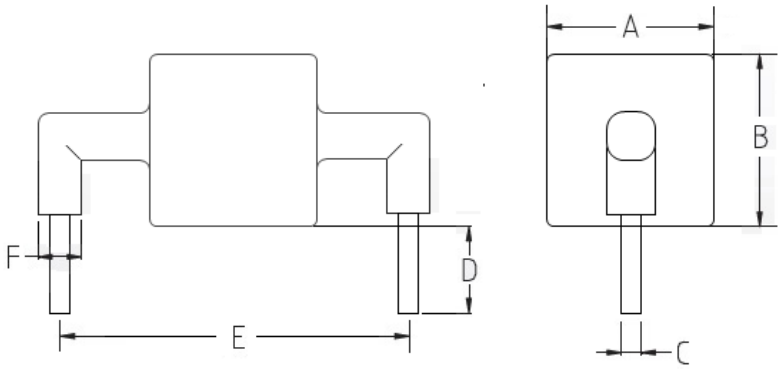
Marking Definitions



Physical Dimensions



Dimension	Millimeters
A	14.5 max.
B	12.7 max.
C	1.3±0.02
D	6.0±1.0
E	24.15±0.7
F	4.0 max.