MAXIMUM RATINGS

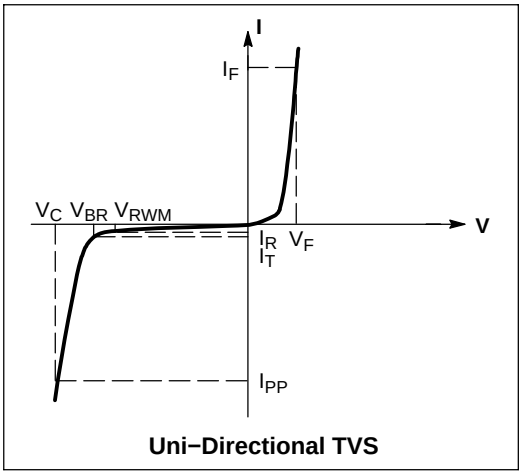
Rating	Symbol	Value	Unit
Maximum P_{pk} Dissipation, (PW−10/1000 μs) (Note 1) (1PMT5.0A − 1PMT36A)	P_{pk}	200	W
Maximum P_{pk} Dissipation, (PW−10/1000 μs) (Note 1) (1PMT40A − 1PMT58A)	P_{pk}	175	W
Maximum P_{pk} Dissipation, (PW−8/20 μs) (Note 1)	P_{pk}	1000	W
DC Power Dissipation @ T_A = 25°C (Note 2) Derate above 25°C Thermal Resistance, Junction−to−Ambient	P_D $R_{\theta JA}$	500 4.0 248	mW mW/°C °C/W
Thermal Resistance, Junction−to−Lead (Anode)	$R_{\theta Janode}$	35	°C/W
Maximum DC Power Dissipation (Note 3) Thermal Resistance, Junction−to−Tab (Cathode)	P_D $R_{\theta Jcathode}$	3.2 23	W °C/W
Operating and Storage Temperature Range	T_J, T_{stg}	−55 to +150	°C

Maximum ratings are those values beyond which device damage can occur. Maximum ratings applied to the device are individual stress limit values (not normal operating conditions) and are not valid simultaneously. If these limits are exceeded, device functional operation is not implied, damage may occur and reliability may be affected.

1. Nonrepetitive current pulse at T_A = 25°C.
2. Mounted with recommended minimum pad size, DC board FR−4.
3. At Tab (Cathode) temperature, T_{tab} = 75°C

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted, V_F = 3.5 V Max. @ I_F (Note 4) = 35 A)

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



Uni−Directional TVS

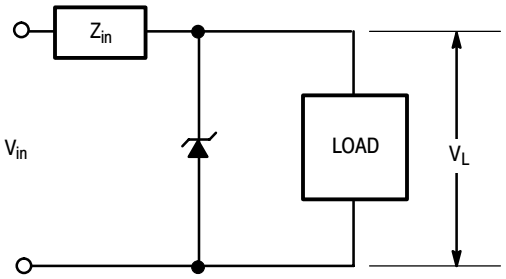
ELECTRICAL CHARACTERISTICS (T_L = 30°C unless otherwise noted, V_F = 1.25 Volts @ 200 mA)

Device*	Marking	V_{RWM} (Note 5)	V_{BR} @ I_T (V) (Note 6) Min	Nom	Max	I_T (mA)	I_R @ V_{RWM} (μA)	V_C @ I_{PP} (V)	I_{PP} (A) (Note 7)
1PMT5.0AT1, T3, G	MKE	5.0	6.4	6.7	7.0	10	50	9.2	21.7
1PMT7.0AT1, T3, G	MKM	7.0	7.78	8.2	8.6	10	30	12	16.7
1PMT12AT1, T3, G	MLE	12	13.3	14.0	14.7	1.0	1.0	19.9	10.1
1PMT16AT1, T3, G	MLP	16	17.8	18.75	19.7	1.0	1.0	26	7.7
1PMT18AT1, T3	MLT	18	20.0	21.0	22.1	1.0	1.0	29.2	6.8
1PMT22AT1, T3	MLX	22	24.4	25.6	26.9	1.0	1.0	35.5	5.6
1PMT24AT1, T3	MLZ	24	26.7	28.1	29.5	1.0	1.0	38.9	5.1
1PMT26AT1, T3	MME	26	28.9	30.4	31.9	1.0	1.0	42.1	4.8
1PMT28AT1, T3, G	MMG	28	31.1	32.8	34.4	1.0	1.0	45.4	4.4
1PMT30AT1, T3, G	MMK	30	33.3	35.1	36.8	1.0	1.0	48.4	4.1
1PMT33AT1, T3, G	MMM	33	36.7	38.7	40.6	1.0	1.0	53.3	3.8
1PMT36AT1, T3	MMP	36	40.0	42.1	44.2	1.0	1.0	58.1	3.4
1PMT40AT1, T3	MMR	40	44.4	46.8	49.1	1.0	1.0	64.5	2.7
1PMT48AT1, T3	MMX	48	53.3	56.1	58.9	1.0	1.0	77.4	2.3
1PMT51AT1, T3	MMZ	51	56.7	59.7	62.7	1.0	1.0	82.4	2.1
1PMT58AT1, T3	MNG	58	64.4	67.8	71.2	1.0	1.0	93.6	1.9

4. 1/2 sine wave (or equivalent square wave), PW = 8.3 ms, duty cycle = 4 pulses per minute maximum.
5. A transient suppressor is normally selected according to the Working Peak Reverse Voltage (V_{RWM}) which should be equal to or greater than the DC or continuous peak operating voltage level.
6. V_{BR} measured at pulse test current I_T at ambient temperature of 25°C.
7. Surge current waveform per Figure 2 and derate per Figure 4.

*The “G’’ suffix indicates Pb−Free package available.

TYPICAL PROTECTION CIRCUIT



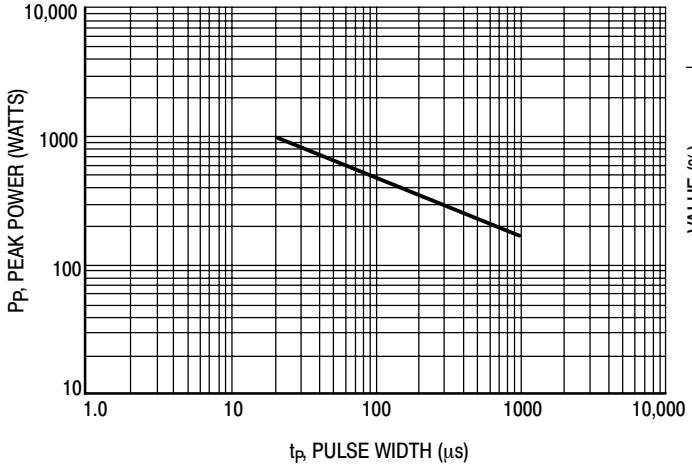


Figure 1. Pulse Rating Curve

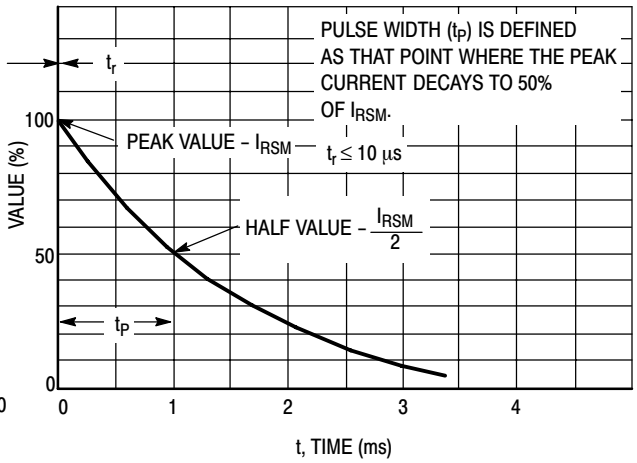


Figure 2. 10 X 1000 μs Pulse Waveform

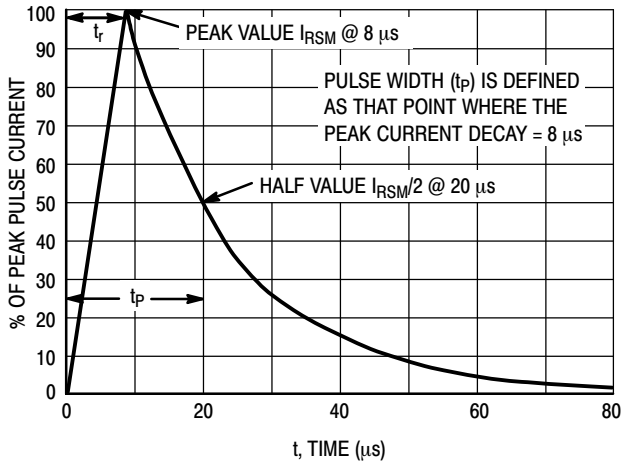


Figure 3. 8 X 20 μs Pulse Waveform

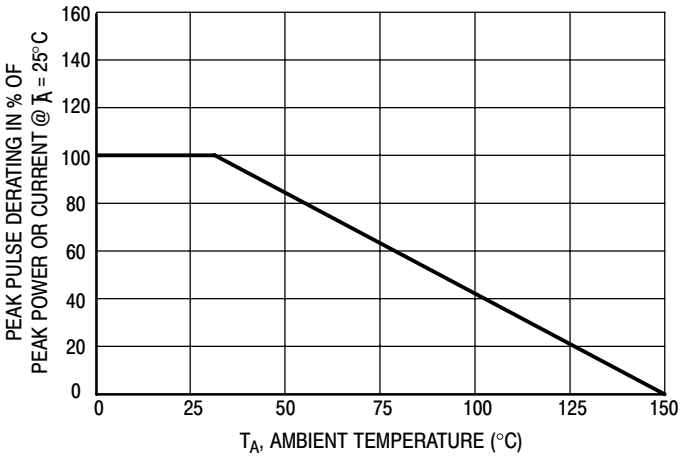


Figure 4. Pulse Derating Curve

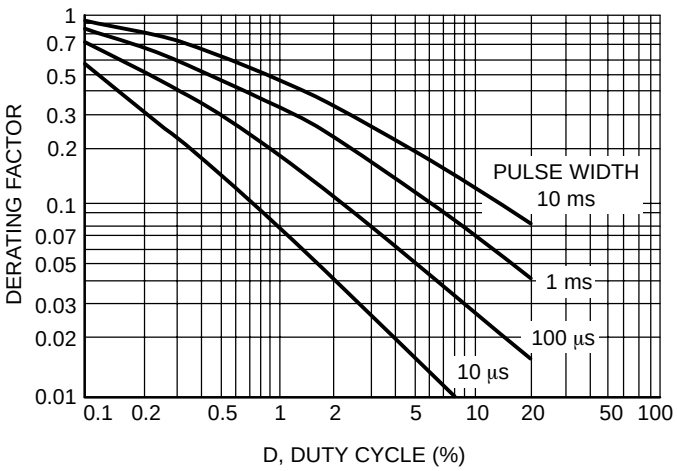


Figure 5. Typical Derating Factor for Duty Cycle

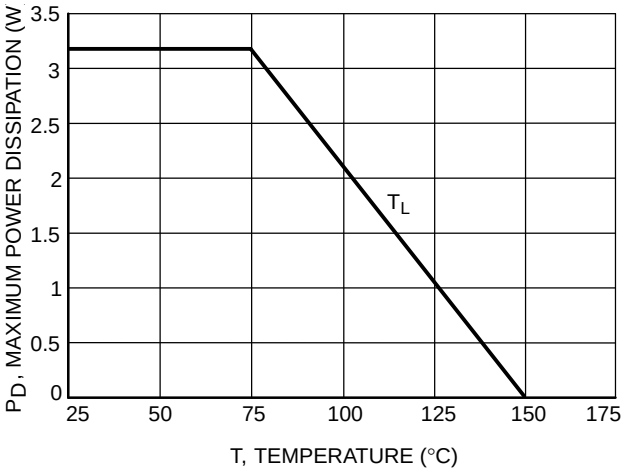


Figure 6. Steady State Power Derating

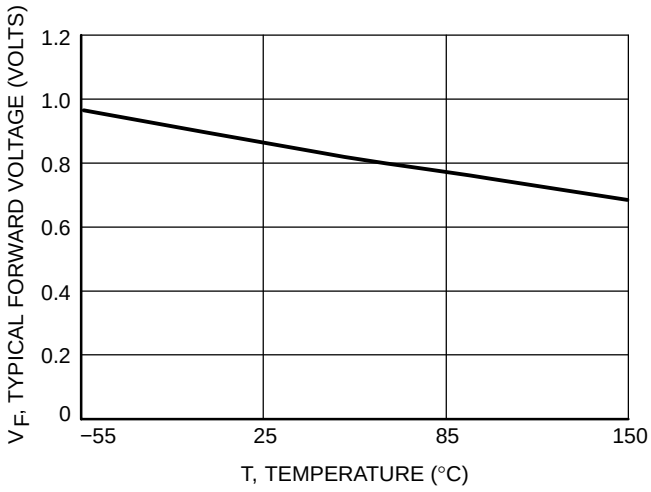


Figure 7. Forward Voltage

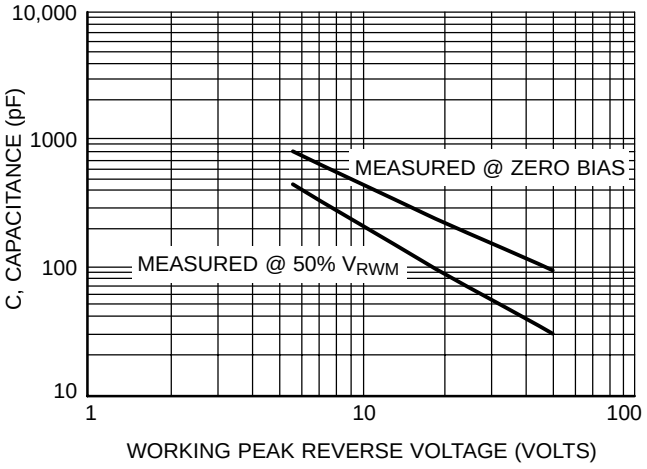
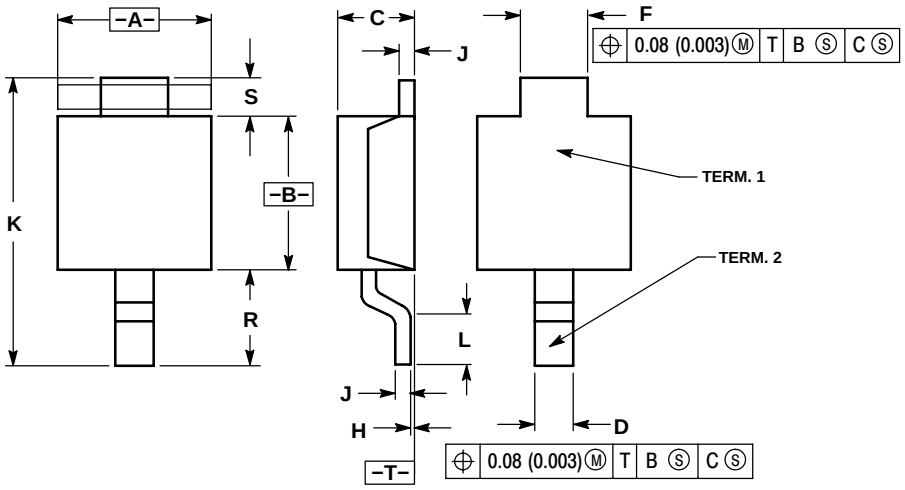


Figure 8. Capacitance versus Working Peak Reverse Voltage

1PMT5.0AT1/T3 Series

OUTLINE DIMENSIONS

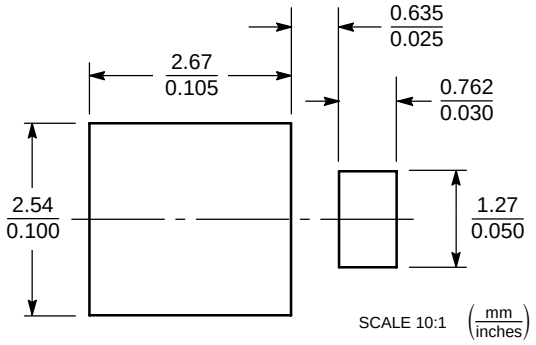
POWERMITE
CASE 457−04
ISSUE D



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETER.
3. DIMENSION A DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS. MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.15 (0.006) PER SIDE.

	MILLIMETERS		INCHES	
DIM	MIN	MAX	MIN	MAX
A	1.75	2.05	0.069	0.081
B	1.75	2.18	0.069	0.086
C	0.85	1.15	0.033	0.045
D	0.40	0.69	0.016	0.027
F	0.70	1.00	0.028	0.039
H	−0.05	+0.10	−0.002	+0.004
J	0.10	0.25	0.004	0.010
K	3.60	3.90	0.142	0.154
L	0.50	0.80	0.020	0.031
R	1.20	1.50	0.047	0.059
S	0.50 REF		0.019 REF	

SOLDERING FOOTPRINT*



*For additional information on our Pb−Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

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