

4600W, 10V – 43V Surface Mount Transient Voltage Suppressor

FEATURES

- AEC-Q101 qualified
- Junction passivation optimized design technology
- $T_J = 175\text{ }^\circ\text{C}$ capability suitable for high reliability and automotive requirement
- Moisture sensitivity level: level 1, per J-STD-020
- RoHS Compliant
- Halogen-free according to IEC 61249-2-21
- Meets ISO7637-2 and ISO16750-2 surge specifications (varied by test conditions)
- Meets IEC 61000-4-2 (Level: 4) / ISO 10605 (Level: L4)

APPLICATIONS

- Transient Surge Protection
- Automotive Load Dump Surge Protection

MECHANICAL DATA

- Case: DO-218AB
- Molding compound meets UL 94V-0 flammability rating
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: Uni-directional
- Weight: 2.682g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{WM}	10 – 43	V
V_{BR}	11.1 – 52.8	V
P_{PPM} (10x1,000 μ s)	4600	W
P_{PPM} (10x10,000 μ s)	3600	W
$T_{J\text{MAX}}$	175	$^\circ\text{C}$
Package	DO-218AB	
Configuration	Single die	



DO-218AB



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)			
PARAMETER	SYMBOL	VALUE	UNIT
Non-repetitive peak impulse power dissipation with 10/1000 μ s waveform	P_{PPM}	4600	W
Non-repetitive peak impulse power dissipation with 10/10000 μ s waveform ⁽¹⁾	P_{PPM}	3600	W
Steady state power dissipation ^(Fig.1)	P_D	6	W
Forward Voltage at $I_F = 100\text{ A}$ ⁽²⁾	$V_{F,MAX}$	1.9	V
Peak forward surge current, 8.3ms single half sine-wave	I_{FSM}	600	A
Junction temperature	T_J	-55 to +175	$^\circ\text{C}$
Storage temperature	T_{STG}	-55 to +175	$^\circ\text{C}$

Notes:

1. Non-repetitive current pulse per Fig.3
2. Pulse test with PW = 0.3ms

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP	UNIT
Junction-to-case thermal resistance	$R_{\theta JC}$	0.85	°C/W

Thermal Performance Note: With ideal heatsink

ELECTRICAL SPECIFICATIONS ($T_A = 25^\circ\text{C}$ unless otherwise noted)										
Part number	Marking code	Breakdown voltage V_{BR} at I_T (V) (Note 1)		Test current I_T (mA)	Working stand-off voltage V_{WM} (V)	Maximum blocking leakage current I_R at V_{WM} (μA) (Note 1)	Maximum blocking leakage current I_R at V_{WM} $T_J = 175^\circ\text{C}$ (μA) (Note 1)	Maximum peak impulse current $I_{PPM(A)}$ $t_p = 10/1000$ (μs)	Maximum clamping voltage V_C at I_{PPM} (V)	Typical temp. coefficient of V_{BR} α_T ($\%/^\circ\text{C}$) (Note 2)
		Min	Max							
TLD6S10AH	TLD6S10A	11.1	12.3	5.0	10.0	15	250	271	17.0	0.069
TLD6S11AH	TLD6S11A	12.2	13.5	5.0	11.0	10	150	253	18.2	0.072
TLD6S12AH	TLD6S12A	13.3	14.7	5.0	12.0	10	150	231	19.9	0.074
TLD6S13AH	TLD6S13A	14.4	15.9	5.0	13.0	10	150	214	21.5	0.076
TLD6S14AH	TLD6S14A	15.6	17.2	5.0	14.0	10	150	198	23.2	0.078
TLD6S15AH	TLD6S15A	16.7	18.5	5.0	15.0	10	150	189	24.4	0.080
TLD6S16AH	TLD6S16A	17.8	19.7	5.0	16.0	10	150	177	26.0	0.081
TLD6S17AH	TLD6S17A	18.9	20.9	5.0	17.0	10	150	167	27.6	0.082
TLD6S18AH	TLD6S18A	20.0	22.1	5.0	18.0	10	150	158	29.2	0.083
TLD6S20AH	TLD6S20A	22.2	24.5	5.0	20.0	10	150	142	32.4	0.085
TLD6S22AH	TLD6S22A	24.4	26.9	5.0	22.0	10	150	130	35.5	0.086
TLD6S24AH	TLD6S24A	26.7	29.5	5.0	24.0	10	150	118	38.9	0.087
TLD6S26AH	TLD6S26A	28.9	31.9	5.0	26.0	10	150	106	42.1	0.088
TLD6S28AH	TLD6S28A	31.1	34.4	5.0	28.0	10	150	101	45.4	0.089
TLD6S30AH	TLD6S30A	33.3	36.8	5.0	30.0	10	150	95	48.4	0.090
TLD6S33AH	TLD6S33A	36.7	40.6	5.0	33.0	10	150	86	53.3	0.091
TLD6S36AH	TLD6S36A	40.0	44.2	5.0	36.0	10	150	79	58.1	0.091
TLD6S40AH	TLD6S40A	44.4	49.1	5.0	40.0	10	150	71	64.5	0.092
TLD6S43AH	TLD6S43A	47.8	52.8	5.0	43.0	10	150	66	69.4	0.093

Note:

- Pulse test with $PW = 30\text{ms}$
- To calculate V_{BR} vs. junction temperature, use the following formula:

$$V_{BR} \text{ at } T_J = V_{BR} \text{ at } 25^\circ\text{C} \times (1 + \alpha_T \times (T_J - 25))$$

ORDERING INFORMATION		
ORDERING CODE⁽¹⁾	PACKAGE	PACKING
TLD6SxAH	DO-218AB	750 / Tape & Reel

Note: "x" defines voltage from 10V (TLD6S10AH) to 43V (TLD6S43AH)

CHARACTERISTICS CURVES

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

Fig.1 Power Derating Curve

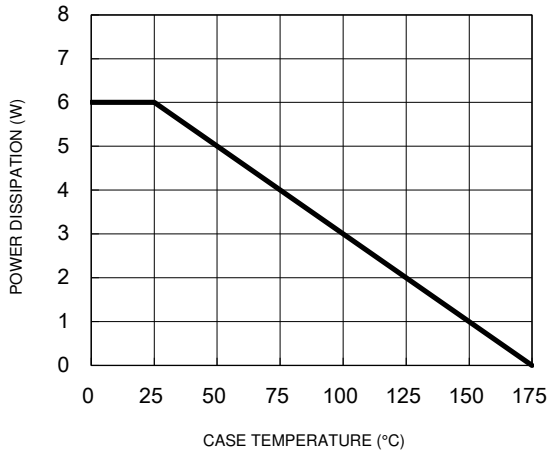


Fig.2 Load Dump Power Characteristics (10ms Exponential Waveform)

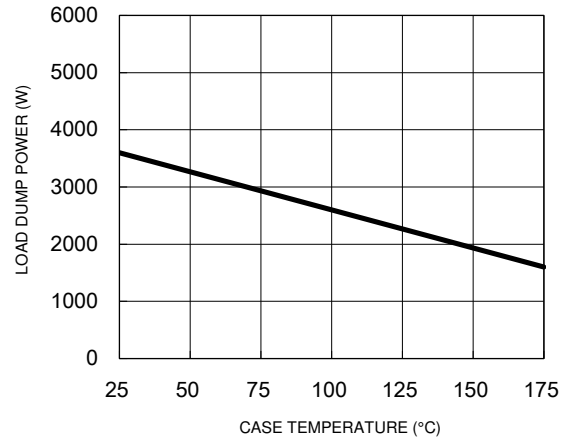


Fig.3 Clamping Power Pulse Waveform

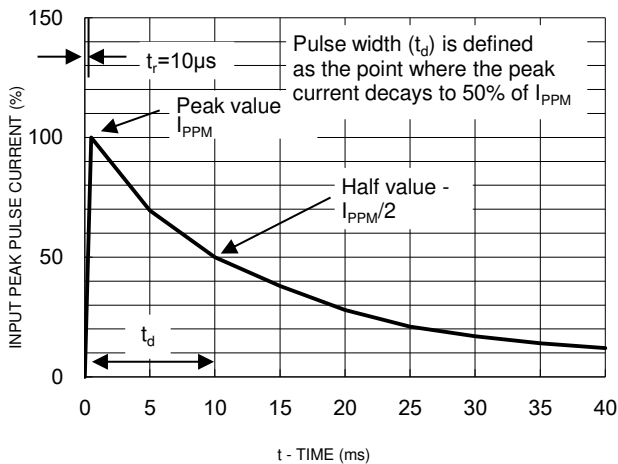


Fig.4 Reverse Power Capability

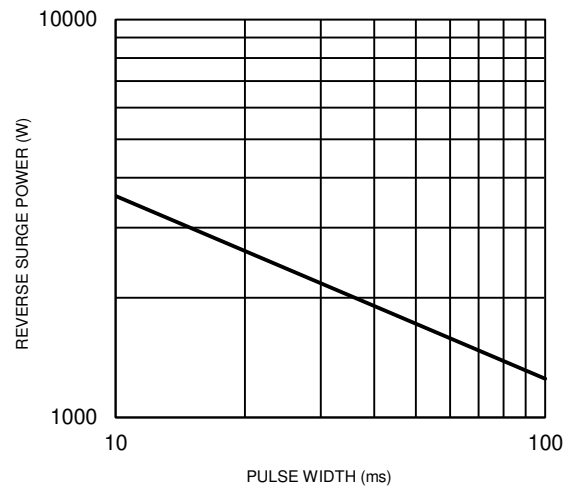


Fig.5 Typical Transient Thermal Impedance

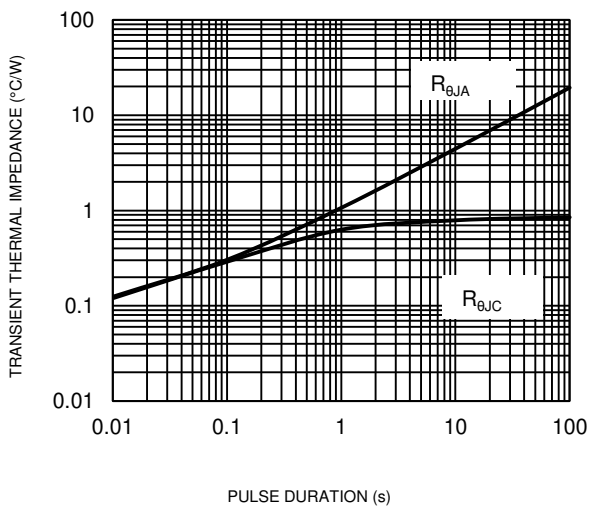
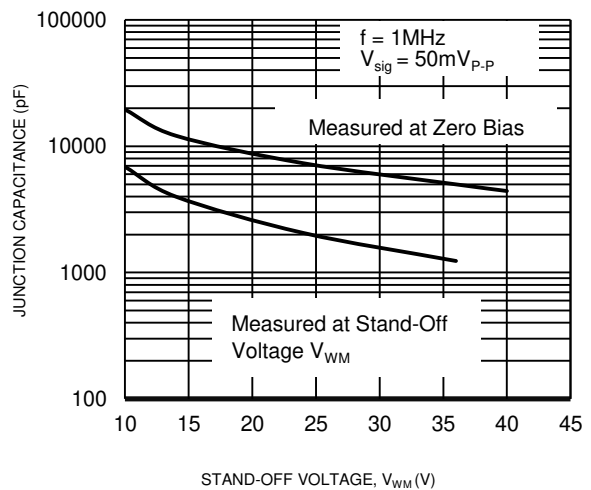
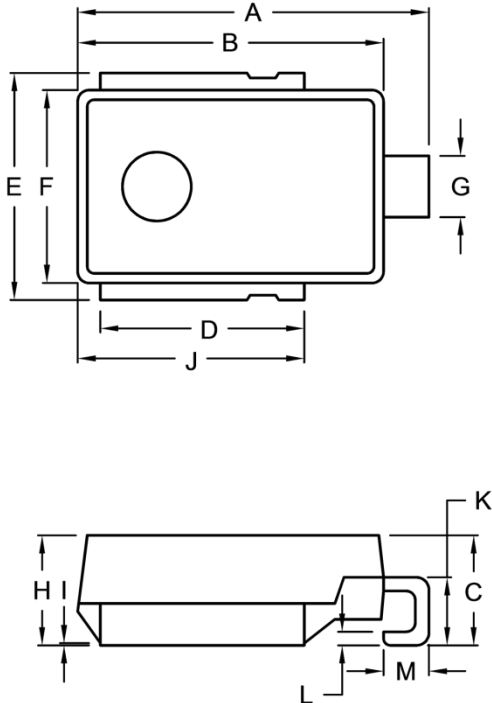


Fig.6 Typical Junction Capacitance



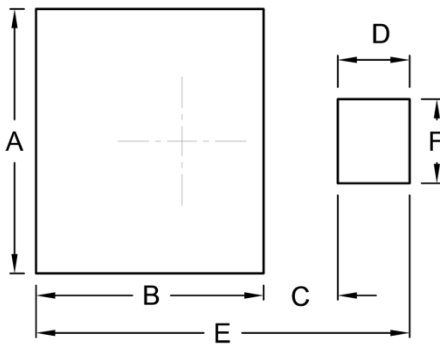
PACKAGE OUTLINE DIMENSIONS

DO-218AB



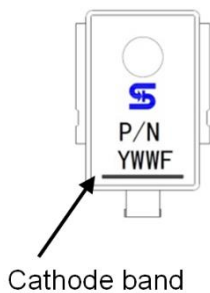
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	15.00	16.00	0.591	0.630
B	13.30	13.70	0.524	0.539
C	4.70	5.50	0.185	0.217
D	8.70	9.30	0.343	0.366
E	9.50	10.50	0.374	0.413
F	8.30	8.70	0.327	0.343
G	2.40	3.00	0.094	0.118
H	4.70	5.00	0.185	0.197
I	0.00	0.10	0.000	0.004
J	9.70	10.30	0.382	0.406
K	2.50	3.50	0.098	0.138
L	0.50	0.70	0.020	0.028
M	1.50	2.50	0.059	0.098

SUGGESTED PAD LAYOUT



Symbol	Unit (mm)	Unit (inch)
A	11.00	0.433
B	9.50	0.374
C	3.10	0.122
D	3.00	0.118
E	15.60	0.614
F	3.50	0.138

MARKING DIAGRAM



P/N = Marking Code
YWW = Date Code
F = Factory Code

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