

3600W, 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
- Compliant to RoHS directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21
- Meets ISO7637-2 and ISO16750-2 surge specifications (varied by test conditions)

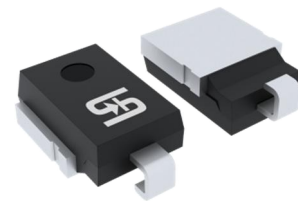
APPLICATIONS

- 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: 2.677g (approximately)

KEY PARAMETERS		
PARAMETER	VALUE	UNIT
V_{WM}	10 – 43	V
V_{BR}	11.1 – 52.8	V
P_{PPM} (10x1,000 μs)	3600	W
P_{PPM} (10x10,000 μs)	2800	W
$T_{J\text{ MAX}}$	175	$^\circ\text{C}$
Package	DO-218AB	



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 μs waveform	P_{PPM}	3600	W
Non-repetitive peak impulse power dissipation with 10/10000 μs waveform ⁽¹⁾	P_{PPM}	2800	W
Steady state power dissipation ⁽²⁾	P_D	5	W
Forward Voltage at $I_F = 100\text{ A}$ ⁽³⁾	$V_{F, MAX}$	2	V
Peak forward surge current, 8.3 ms single half sine-wave	I_{FSM}	500	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. Units mounted on PCB (16mm x 16mm Cu pad test board)
3. Pulse test with PW=0.3 ms

THERMAL PERFORMANCE			
PARAMETER	SYMBOL	TYP.	UNIT
Junction-to-case thermal resistance per diode	$R_{\theta JC}$	7.8	°C/W
Junction-to-lead thermal resistance per diode	$R_{\theta JL}$	10.0	°C/W
Junction-to-ambient thermal resistance per diode	$R_{\theta JA}$	49.5	°C/W

Thermal Performance Note: Units mounted on PCB (16mm x 16mm Cu pad test board)

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 peak impulse current I_{PPM} (A) $t_p = 10/1000 \mu\text{s}$	Maximum clamping voltage V_C at I_{PPM} (V)
		Min.	Max.					
TLD5S10AH	TLD5S10A	11.1	12.3	5.0	10.0	15	212	17.0
TLD5S11AH	TLD5S11A	12.2	13.5	5.0	11.0	10	198	18.2
TLD5S12AH	TLD5S12A	13.3	14.7	5.0	12.0	10	181	19.9
TLD5S13AH	TLD5S13A	14.4	15.9	5.0	13.0	10	167	21.5
TLD5S14AH	TLD5S14A	15.6	17.2	5.0	14.0	10	155	23.2
TLD5S15AH	TLD5S15A	16.7	18.5	5.0	15.0	10	148	24.4
TLD5S16AH	TLD5S16A	17.8	19.7	5.0	16.0	10	138	26.0
TLD5S17AH	TLD5S17A	18.9	20.9	5.0	17.0	10	130	27.6
TLD5S18AH	TLD5S18A	20.0	22.1	5.0	18.0	10	123	29.2
TLD5S20AH	TLD5S20A	22.2	24.5	5.0	20.0	10	111	32.4
TLD5S22AH	TLD5S22A	24.4	26.9	5.0	22.0	10	101	35.5
TLD5S24AH	TLD5S24A	26.7	29.5	5.0	24.0	10	93	38.9
TLD5S26AH	TLD5S26A	28.9	31.9	5.0	26.0	10	86	42.1
TLD5S28AH	TLD5S28A	31.1	34.4	5.0	28.0	10	79	45.4
TLD5S30AH	TLD5S30A	33.3	36.8	5.0	30.0	10	74	48.4
TLD5S33AH	TLD5S33A	36.7	40.6	5.0	33.0	10	68	53.3
TLD5S36AH	TLD5S36A	40.0	44.2	5.0	36.0	10	62	58.1
TLD5S40AH	TLD5S40A	44.4	49.1	5.0	40.0	10	56	64.5
TLD5S43AH	TLD5S43A	47.8	52.8	5.0	43.0	10	52	69.4

Note:

1. Pulse test with $PW=30 \text{ ms}$

ORDERING INFORMATION		
ORDERING CODE (Note)	PACKAGE	PACKING
TLD5SxxAH MAG	DO-218AB	750 / 13" Plastic reel

Note: "xx" defines voltage from 10V (TLD5S10AH) to 43V (TLD5S43AH)

CHARACTERISTICS CURVES

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

Fig.1 Power Derating Curve

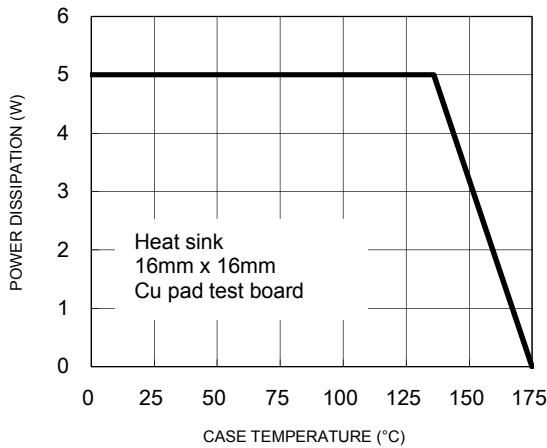


Fig.2 Load Dump Power Characteristics (10ms Exponential Waveform)

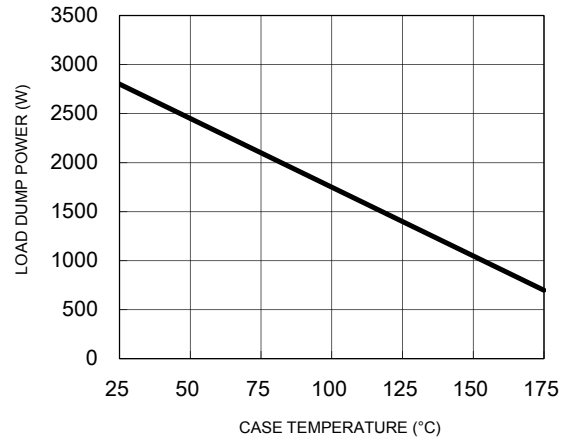


Fig.3 Clamping Power Pulse Waveform

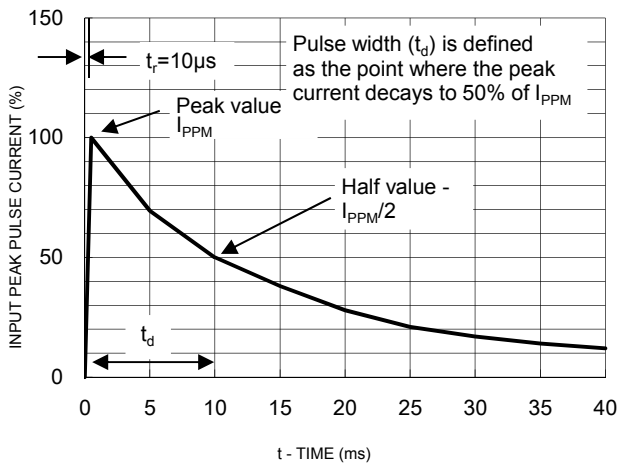


Fig.4 Reverse Power Capability

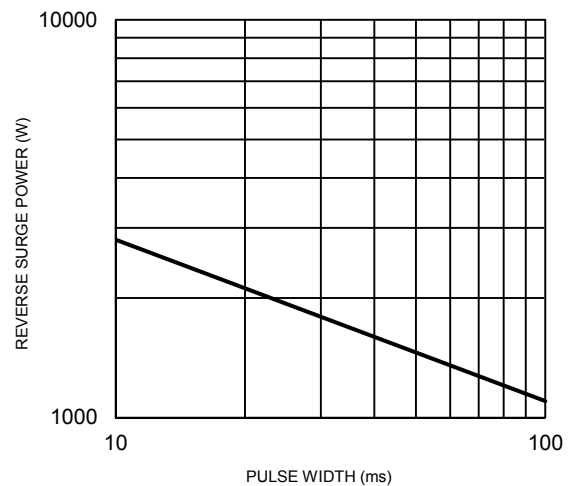


Fig.5 Typical Transient Thermal Impedance

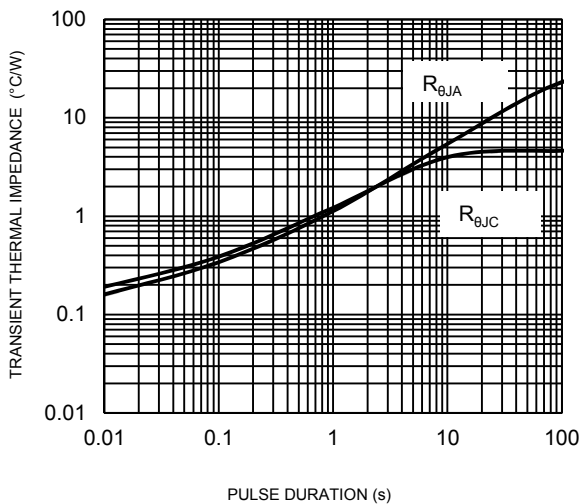
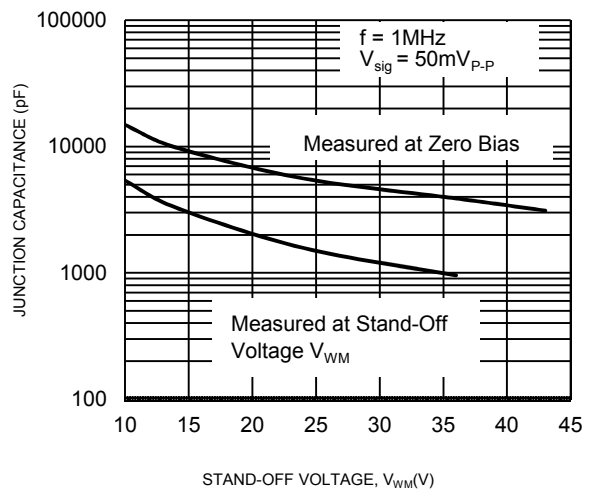
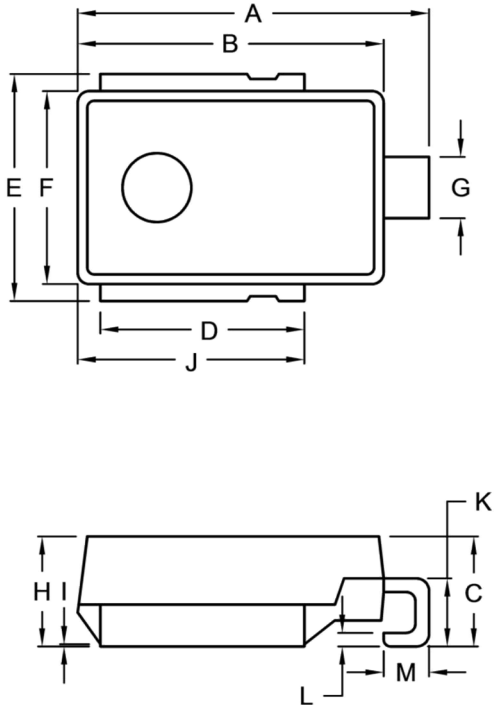


Fig.6 Typical Junction Capacitance



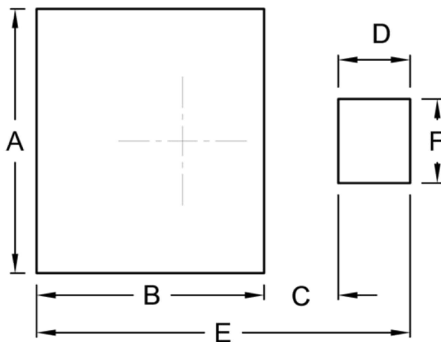
PACKAGE OUTLINE DIMENSIONS

DO-218AB



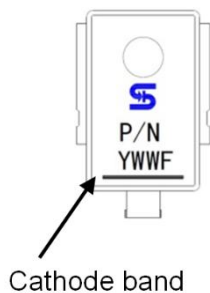
DIM.	Unit (mm)		Unit (inch)	
	Min.	Max.	Min.	Max.
A	15.00	16.00	0.591	0.630
B	13.30	13.70	0.524	0.539
C	4.70	5.50	0.185	0.217
D	8.70	9.30	0.343	0.366
E	9.50	10.50	0.374	0.413
F	8.30	8.70	0.327	0.343
G	2.40	3.00	0.094	0.118
H	4.70	5.00	0.185	0.197
I	0.00	0.10	0.000	0.004
J	9.70	10.30	0.382	0.406
K	2.50	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
 YWWF = Date Code
 F = Factory Code

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