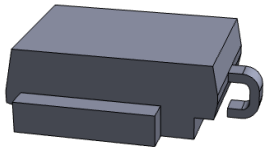
Transient Voltage Suppressors family

Transient Voltage Suppressor (TVS) will effectively limit the transient voltage to a safe level. The YSM4Wxxx series has been designed to protect sensitive automotive circuits against surges defined in ISO7637-2/ISO16750-2 and against electrostatic discharges according ISO10605. The YSM4Wxxx series device could compatible with high-end circuits where low leakage current and high junction temperature are required to provide reliability and stability over time.

Features

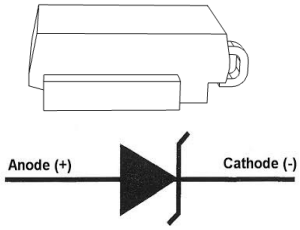
- High current capability
- Low Forward Voltage Drop
- Low reverse current
- Low thermal resistance
- Excellent high temperature stability
- Low power loss and high efficiency
- High forward surge capability
- Meets ISO7637-2 surge specification
- Meets ISO16750-2 surge specification
- Meets MSL level 1, per J-STD-020, LF maximum peak of 260 °C
- AEC-Q101 qualified

DO-218



Pin Information

Polarity: Heatsink is anode



Application

- High peak power
- High-temperature
- Clamping diode
- Load switching and lighting

Marking Information

Mechanical Data

- **Case:** DO-218 outline plastic package
- **Terminals:** Matte tin plated, solderable per MIL-STD-750, Method 2026, J-STD-002 and JESD 22-B102
- Molding Compound Flammability Rating:UL94-0
- High temperature soldering guaranteed: 260°C 10second
- HE3 suffix meets JESD 201 class 2 whisker test
- **Polarity**: Heatsink is anode
- Corresponds to taping packages. (500PCS/Reel)

Primary Characteristics	
V_{WM}	10 V to 36 V
V_{BR}	11.1 V to 44.2 V
P_{PPM} (10 x 1000 uS)	2800 W
P_{PPM} (10 x 10000 uS)	2200 W
P_D	4W
I_{FSM}	400 A
Polarity	Uni-directional
Diode variation	Single

Maximum Ratings (TA = 25 °C unless otherwise noted)

Parameter		Symbol	Value	Units
Peak pulse power dissipation	10/1000 μs waveform	P_{PPM}	2800	W
	10/10 000 μs waveform		2200	
Power dissipation on infinite heatsink at TC = 25 °C		P_D	4.0	W
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM}	400	A
Operating junction and storage temperature range		T_J, T_{STG}	-55 to +175	°C

Electrical Characteristics (TA = 25 °C unless otherwise noted)

Part Number	Breakdown Voltage V_{BR} (V)		Test Current I_T (mA)	Stand-OFF Voltage V_{WM} (V)	Maximum Reverse Leakage at V_{WM} I_D (uA)	Maximum Leakage at V_{WM} T_J = 175 ℃ I_D (uA)	Max. Peak Pulse Current at 10/1000 us Waveform (A)	Maximum Clamping Voltage at I_{PPM} V_C (V)
	Min.	Max.						
YSM4W10	11.1	13.6	5.0	10.0	15	250	149	18.8
YSM4W10A		12.3	5.0	10.0	15	250	165	17.0
YSM4W11	12.2	14.9	5.0	11.0	10	150	139	20.1
YSM4W11A		13.5	5.0	11.0	10	150	154	18.2
YSM4W12	13.3	16.3	5.0	12.0	10	150	127	22.0
YSM4W12A		14.7	5.0	12.0	10	150	141	19.9
YSM4W13	14.4	17.6	5.0	13.0	10	150	118	23.8
YSM4W13A		15.9	5.0	13.0	10	150	130	21.5
YSM4W14	15.6	19.1	5.0	14.0	10	150	109	25.8
YSM4W14A		17.2	5.0	14.0	10	150	121	23.2
YSM4W15	16.7	20.4	5.0	15.0	10	150	105	26.9
YSM4W15A		18.5	5.0	15.0	10	150	115	24.4
YSM4W16	17.8	21.8	5.0	16.0	10	150	98	28.8
YSM4W16A		19.7	5.0	16.0	10	150	108	26.0
YSM4W17	18.9	23.1	5.0	17.0	10	150	92	30.5
YSM4W17A		20.9	5.0	17.0	10	150	102	27.6
YSM4W18	20.0	24.4	5.0	18.0	10	150	87	32.2
YSM4W18A		22.1	5.0	18.0	10	150	96	29.2
YSM4W20	22.2	27.1	5.0	20.0	10	150	79	35.8
YSM4W20A		24.5	5.0	20.0	10	150	87	32.4
YSM4W22	24.4	29.8	5.0	22.0	10	150	72	39.4
YSM4W22A		26.9	5.0	22.0	10	150	79	35.5
YSM4W24	26.7	32.6	5.0	24.0	10	150	66	43.0
YSM4W24A		29.5	5.0	24.0	10	150	72	38.9
YSM4W26	28.9	35.3	5.0	26.0	10	150	61	46.6
YSM4W26A		31.9	5.0	26.0	10	150	67	42.1
YSM4W28	31.1	38.0	5.0	28.0	10	150	56	50.1
YSM4W28A		34.4	5.0	28.0	10	150	62	45.4
YSM4W30	33.3	40.7	5.0	30.0	10	150	53	53.5
YSM4W30A		36.8	5.0	30.0	10	150	58	48.4
YSM4W33	36.7	44.9	5.0	33.0	10	150	48	59.0
YSM4W33A		40.6	5.0	33.0	10	150	53	53.3
YSM4W36	40.0	48.9	5.0	36.0	10	150	44	64.3
YSM4W36A		44.2	5.0	36.0	10	150	49	58.1

Note: For all types maximum VF = 1.8 V at IF = 100 A measured on 8.3 ms single half sine-wave or equivalent square wave, duty cycle = 4 pulses per minute maximum

Thermal Characteristics (TA = 25 °C unless otherwise noted)			
Parameter	**Symbol**	**Value**	**Units**
Typical thermal resistance, junction to case	$R_{\theta JC}$	1.1	°C/W

Typical Performance Characteristics

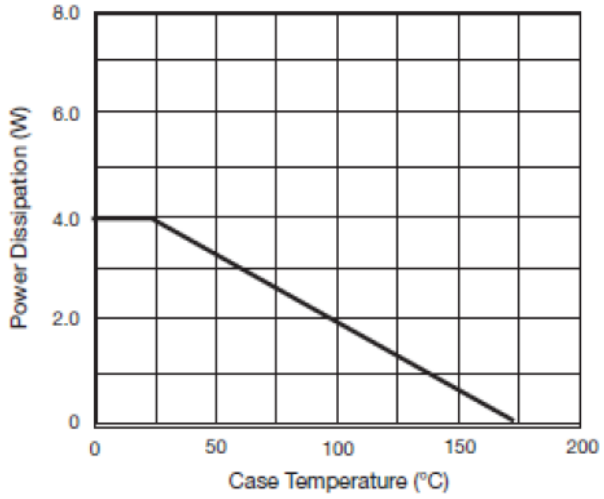


Fig. 1 - Power Derating Curve

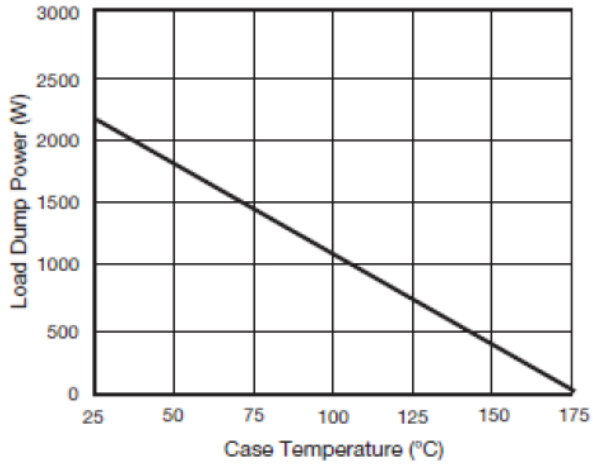


Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

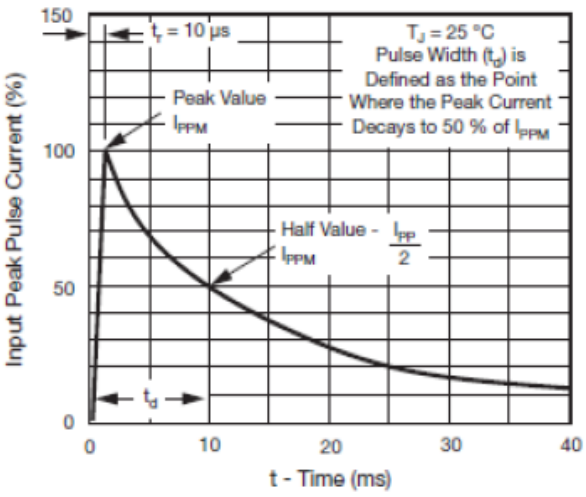


Fig. 3 - Pulse Waveform

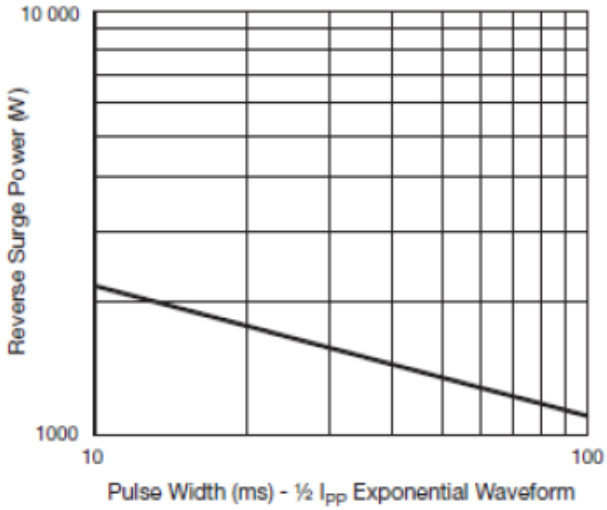


Fig. 4 - Reverse Power Capability

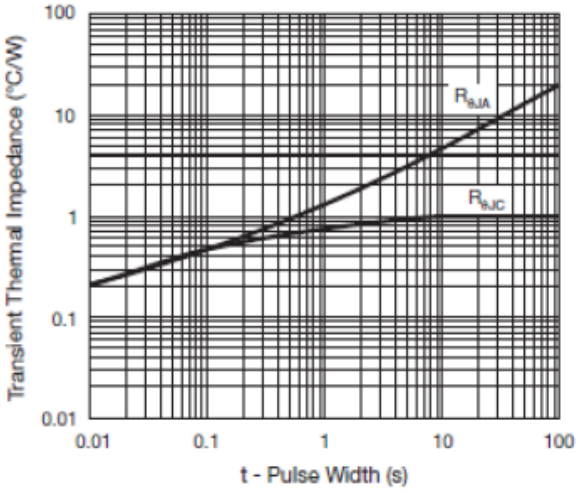


Fig. 5 - Typical Transient Thermal Impedance

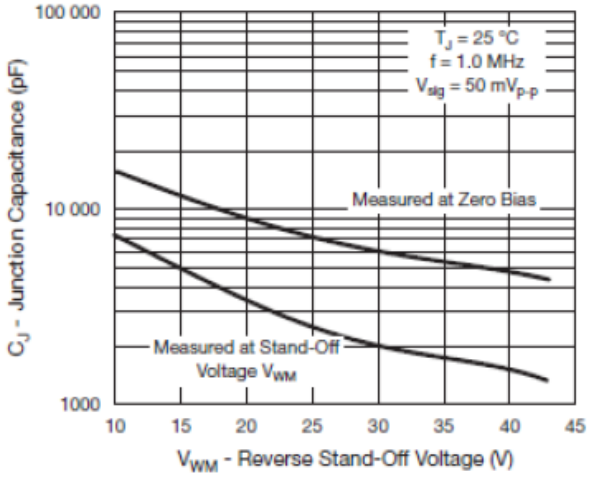
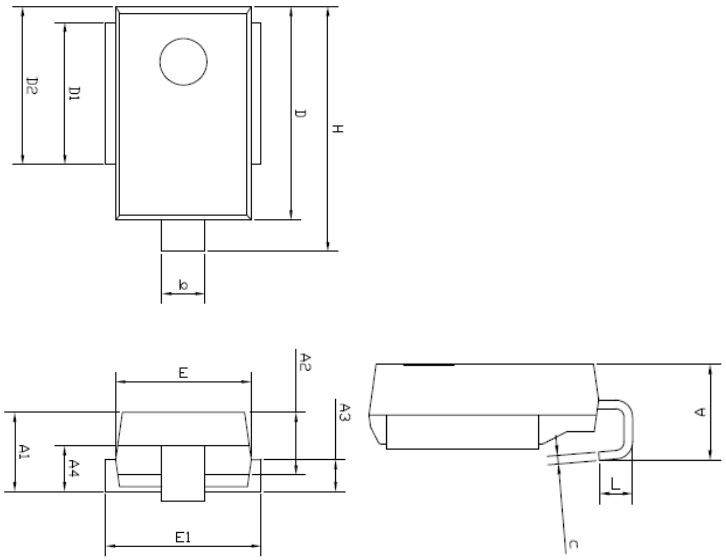


Fig. 6 - Typical Junction Capacitance

Phisical Dimensions

DO-218



NOTE :
1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH PROTRUSIONS OR GATE BURRS.
2. COPLANARITY : 0.1mm
3. DIMENSION L IS MEASURED IN GAUGE PLANE.

SYMBOLS	DIMENSIONS IN MILLIMETERS		
	MIN	NOM	MAX
A	4.70	-	5.70
A1	4.70	5.00	5.25
A2	3.45	3.95	4.25
A3	1.70	2.00	2.50
A4	2.65	3.10	3.55
b	2.30	-	3.00
c	0.45	-	0.90
D	13.20	13.50	13.80
D1	8.70	9.00	9.30
D2	9.70	10.00	10.30
E	8.20	8.50	8.80
E1	9.50	-	10.00
H	15.00	15.50	16.00
L	1.50	2.00	2.50

Foot Print Recommendation (mm)