YEA SHIN TECHNOLOGY CO., LTD

Transient Voltage Suppressors

YSM5W Series

5 Watters TVS/Power Zener Diode

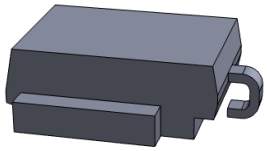
Transient Voltage Suppressors family

Transient Voltage Suppressor (TVS) will effectively limit the transient voltage to a safe level. The YSM5Wxxx series has been designed to protect sensitive automotive circuits against surges defined in ISO7637-2/ISO16750-2 and against electrostatic discharges according ISO10605. The YSM5Wxxx 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

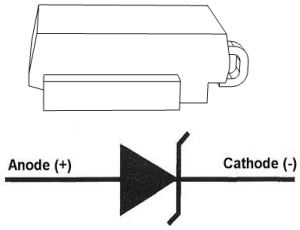
- High current capability
- Low Forward Voltage Drop
- Low reverse current
- Low thermal resistance
- Excellent high temperature stability
- Low power loss and high efficiency
- High forward surge capability
- Meets ISO7637-2 surge specification
- Meets ISO16750-2 surge specification
- Meets MSL level 1, per J-STD-020, LF maximum peak of 245 °C
- AEC-Q101 qualified

DO-218



Pin Information

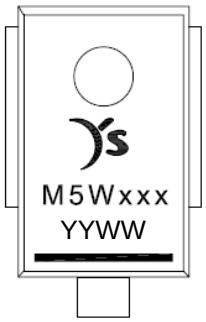
Polarity: Heatsink is anode



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
- HE3 suffix meets JESD 201 class 2 whisker test
- **Polarity**: Heatsink is anode

Primary Characteristics	
V_{WM}	10 V to 36 V
V_{BR}	11.1 V to 44.2 V
P_{PPM} (10 x 1000 uS)	3600 W
P_{PPM} (10 x 10000 uS)	2800 W
P_D	5 W
I_{FSM}	500 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}	3600	W
	10/10 000 μs waveform		2800	
Power dissipation on infinite heatsink at TC = 25 °C		P_D	5.0	W
Peak forward surge current 8.3 ms single half sine-wave		I_{FSM}	500	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.						
YSM5W10	11.1	13.6	5.0	10.0	15	250	191	18.8
YSM5W10A		12.3	5.0	10.0	15	250	211	17.0
YSM5W11	12.2	14.9	5.0	11.0	10	150	179	20.1
YSM5W11A		13.5	5.0	11.0	10	150	198	18.2
YSM5W12	13.3	16.3	5.0	12.0	10	150	164	22.0
YSM5W12A		14.7	5.0	12.0	10	150	181	19.9
YSM5W13	14.4	17.6	5.0	13.0	10	150	151	23.8
YSM5W13A		15.9	5.0	13.0	10	150	167	21.5
YSM5W14	15.6	19.1	5.0	14.0	10	150	140	25.8
YSM5W14A		17.2	5.0	14.0	10	150	155	23.2
YSM5W15	16.7	20.4	5.0	15.0	10	150	134	26.9
YSM5W15A		18.5	5.0	15.0	10	150	148	24.4
YSM5W16	17.8	21.8	5.0	16.0	10	150	125	28.8
YSM5W16A		19.7	5.0	16.0	10	150	138	26.0
YSM5W17	18.9	23.1	5.0	17.0	10	150	118	30.5
YSM5W17A		20.9	5.0	17.0	10	150	130	27.6
YSM5W18	20.0	24.4	5.0	18.0	10	150	112	32.2
YSM5W18A		22.1	5.0	18.0	10	150	123	29.2
YSM5W20	22.2	27.1	5.0	20.0	10	150	101	35.8
YSM5W20A		24.5	5.0	20.0	10	150	111	32.4
YSM5W22	24.4	29.8	5.0	22.0	10	150	91	39.4
YSM5W22A		26.9	5.0	22.0	10	150	101	35.5
YSM5W24	26.7	32.6	5.0	24.0	10	150	84	43.0
YSM5W24A		29.5	5.0	24.0	10	150	93	38.9
YSM5W26	28.9	35.3	5.0	26.0	10	150	77	46.6
YSM5W26A		31.9	5.0	26.0	10	150	86	42.1
YSM5W28	31.1	38.0	5.0	28.0	10	150	72	50.1
YSM5W28A		34.4	5.0	28.0	10	150	79	45.4
YSM5W30	33.3	40.7	5.0	30.0	10	150	67	53.5
YSM5W30A		36.8	5.0	30.0	10	150	74	48.4
YSM5W33	36.7	44.9	5.0	33.0	10	150	61	59.0
YSM5W33A		40.6	5.0	33.0	10	150	68	53.3
YSM5W36	40.0	48.9	5.0	36.0	10	150	56	64.3
YSM5W36A		44.2	5.0	36.0	10	150	62	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

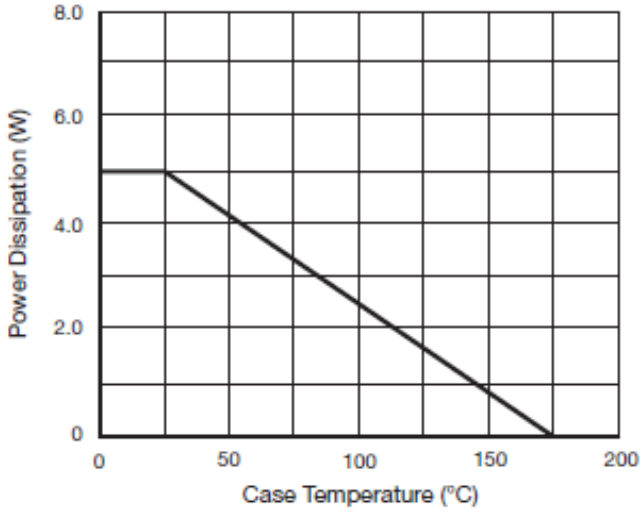


Fig. 1 - Power Derating Curve

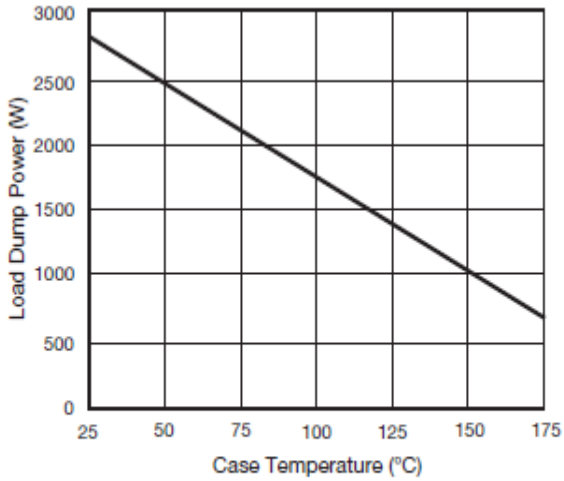


Fig. 2 - Load Dump Power Characteristics
(10 ms Exponential Waveform)

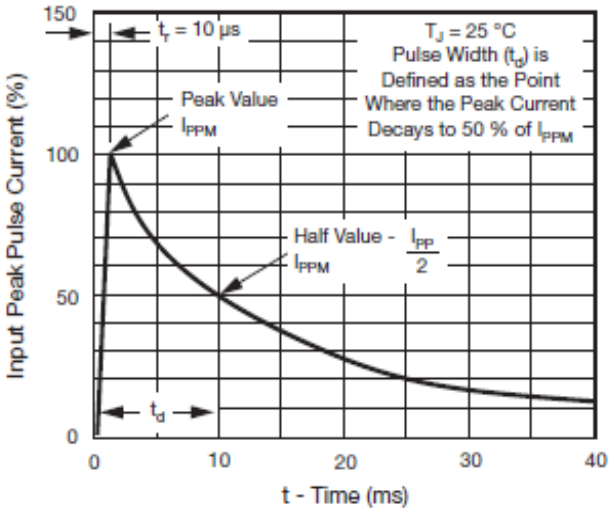


Fig. 3 - Pulse Waveform

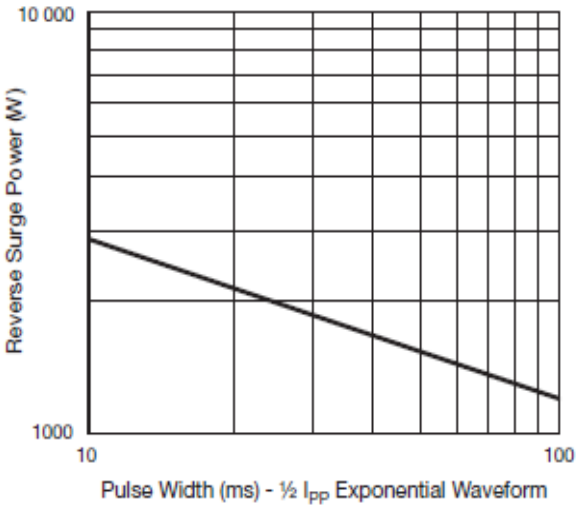


Fig. 4 - Reverse Power Capability

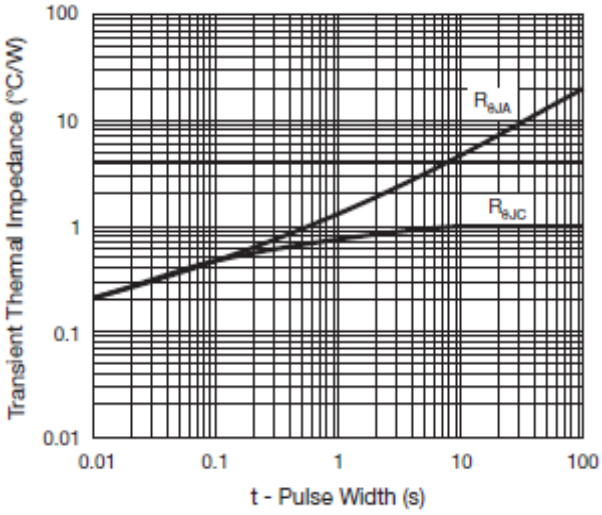


Fig. 5 - Typical Transient Thermal Impedance

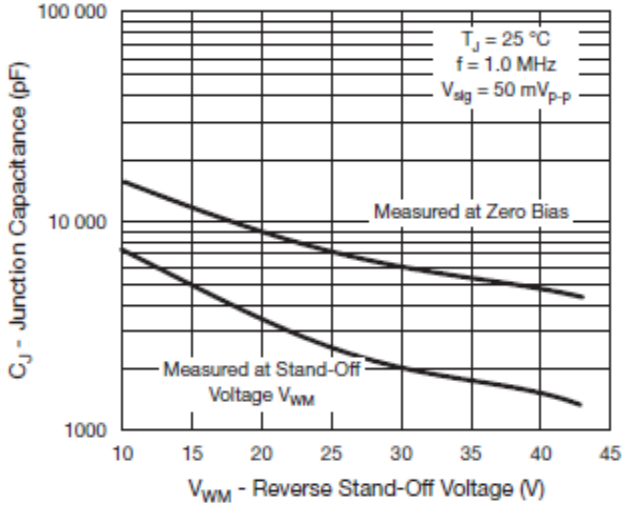
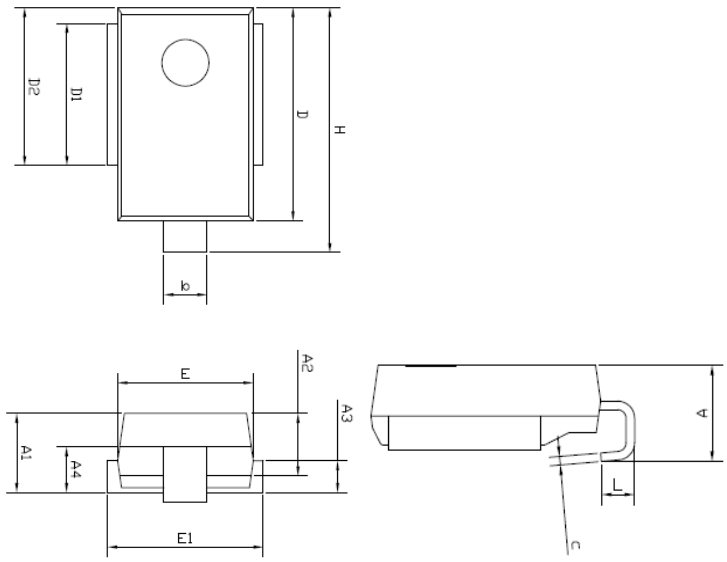


Fig. 6 - Typical Junction Capacitance

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)