

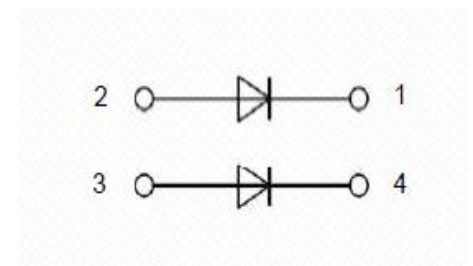
PRODUCT FEATURES

- Improved System Efficiency
- High System Reliability
- Optimal Price Performance
- Reduced Cooling Requirements
- Increased System Power Density
- Zero Reverse Recovery Current
- Easy to Parallel without Thermal Runaway
- Enables Extremely Fast Switching



APPLICATIONS

- EV Fast Chargers
- Solar Inverters
- Train Auxiliary Power Supplies
- High frequency Converters
- Motor Drives
- Induction Heating and Welding
- Uninterruptible Power Supply (UPS)
- Pulsed Power



ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions		Values	Unit
V_R	Maximum D.C. Reverse Voltage	$T_J=25^\circ\text{C}$	1200	V
V_{RRM}	Maximum Repetitive Reverse Voltage	$T_J=25^\circ\text{C}$		
I_F	Continuous Forward Current (Per Leg / Component)	$T_C=25^\circ\text{C}, T_{Jmax} = 175^\circ\text{C}$	150/300	A
		$T_C=140^\circ\text{C}, T_{Jmax} = 175^\circ\text{C}$	60/120	
		$T_C=150^\circ\text{C}, T_{Jmax} = 175^\circ\text{C}$	50/100	
I_{FSM}	Non Repetitive Surge Forward Current (Per Leg)	$T_J=25^\circ\text{C}, t=10\text{ms}, 50\text{Hz}, \text{Sine}$	380	
		$T_J=150^\circ\text{C}, t=10\text{ms}, 50\text{Hz}, \text{Sine}$	330	
P_D	Power Dissipation (Per Leg / Component)	$T_C=25^\circ\text{C}, T_{Jmax} = 175^\circ\text{C}$	680/1320	W
E_{AS}	Single Pulse Avalanche Energy (Per Leg)	$L=10\text{mH}, I_{AS}=20\text{A}$	2000	mJ

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MMS2X60J120D

ABSOLUTE MAXIMUM RATINGS ($T_C=25^\circ\text{C}$ unless otherwise specified)

T_J	Junction Temperature		-55 to +175	$^\circ\text{C}$
T_{STG}	Storage Temperature Range		-55 to +150	$^\circ\text{C}$
Torque	to heatsink	Recommended (M4)	0.7~1.1	Nm
	to terminal	Recommended (M4)	0.7~1.1	Nm
V_{isol}	Isolation test voltage	RMS, $f = 50\text{ Hz}$, $t = 1\text{ sec.}$	3000	V
		RMS, $f = 50\text{ Hz}$, $t = 1\text{ min.}$	2500	V
R_{thJC}	Junction to Case Thermal Resistance(Per Leg / Component)		0.22/0.11	$^\circ\text{C / W}$
Weight			33	g

ELECTRICAL CHARACTERISTICS ($T_C=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter/Test Conditions	Min.	Typ.	Max.	Unit	
I_{RM}	Maximum Reverse Leakage Current	$V_R = 1200\text{V}$		2	500	μA
		$V_R = 1200\text{V}$, $T_J = 175^\circ\text{C}$		12	1000	μA
V_F	Forward Voltage	$I_F = 60\text{A}$		1.4	1.7	V
		$I_F = 60\text{A}$, $T_J = 125^\circ\text{C}$		1.62		
		$I_F = 60\text{A}$, $T_J = 150^\circ\text{C}$		1.72		
		$I_F = 60\text{A}$, $T_J = 175^\circ\text{C}$		1.83		
Q_C	Total Capacitive Charge	$V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$		320	nC	
E_C	Capacitance Stored Energy	$V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$		95	μJ	
C	Total Capacitive Charge	$V_R = 1\text{V}$, $T_J = 25^\circ\text{C}$, Freq = 1MHz		3500	pF	
		$V_R = 400\text{V}$, $T_J = 25^\circ\text{C}$, Freq = 1MHz		300		
		$V_R = 800\text{V}$, $T_J = 25^\circ\text{C}$, Freq = 1MHz		220		

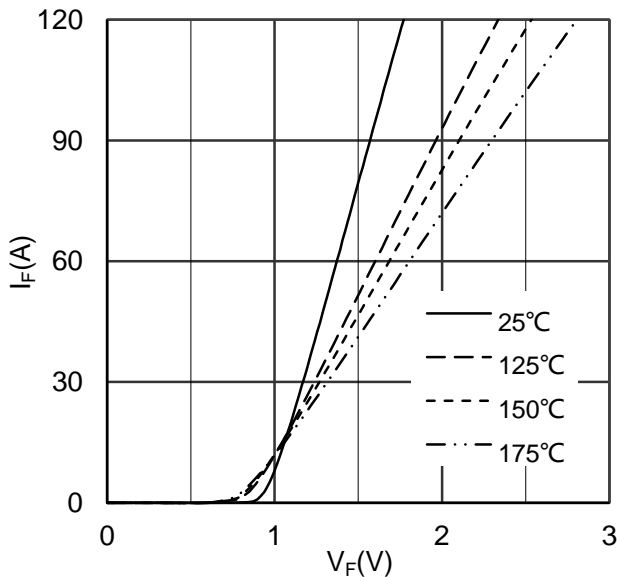


Figure 1. Forward Voltage Drop vs Forward Current

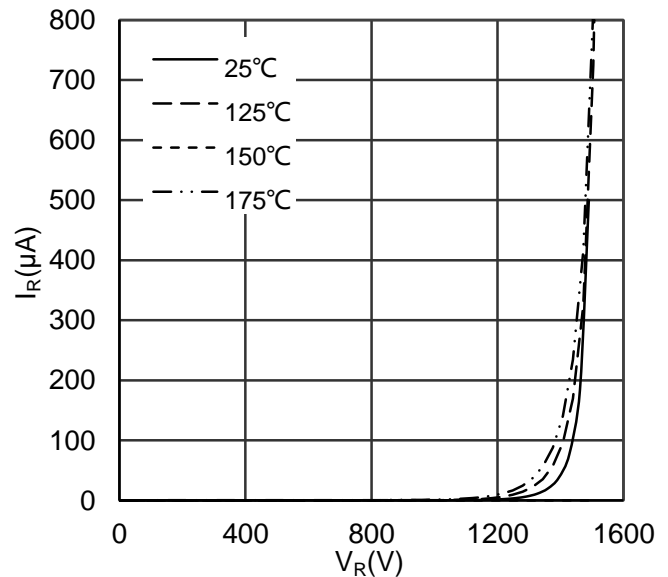


Figure 2. Reverse Characteristics

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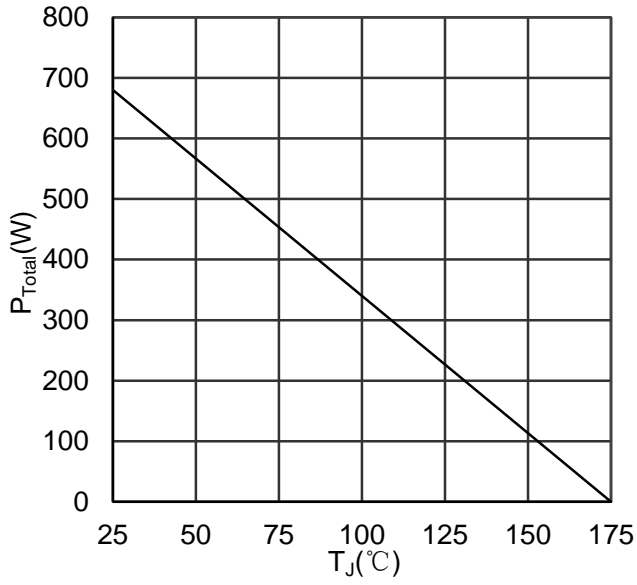


Figure 3. Power Derating

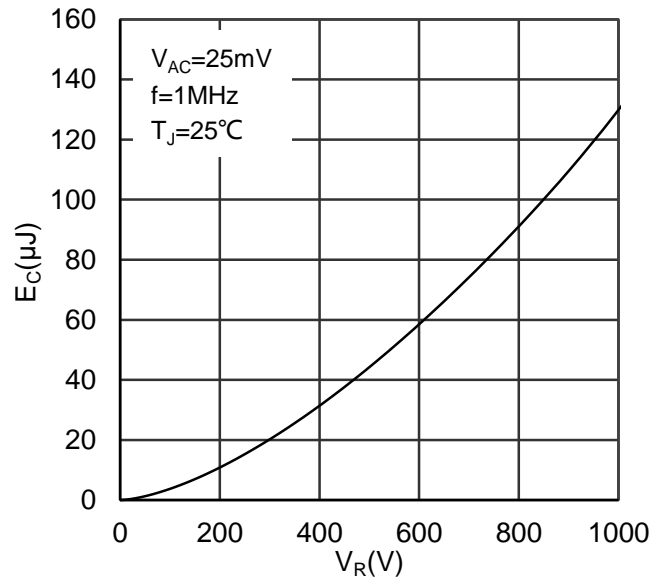


Figure 4. Capacitance Stored Energy

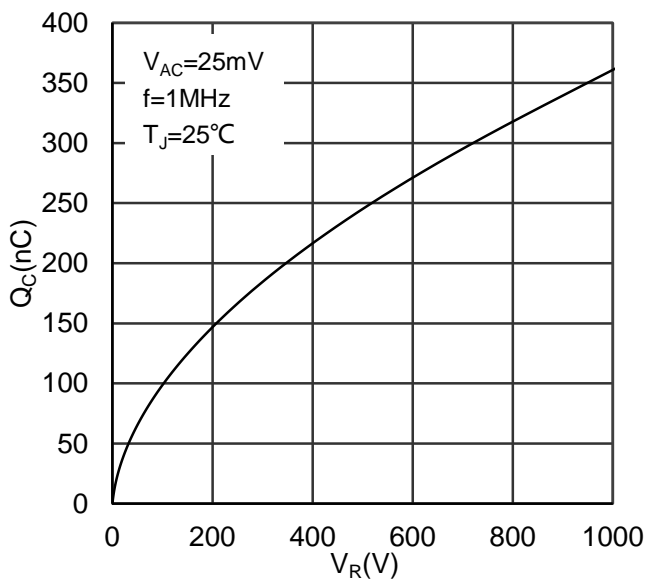


Figure 5. Total Capacitive Charge vs. Reverse Voltage

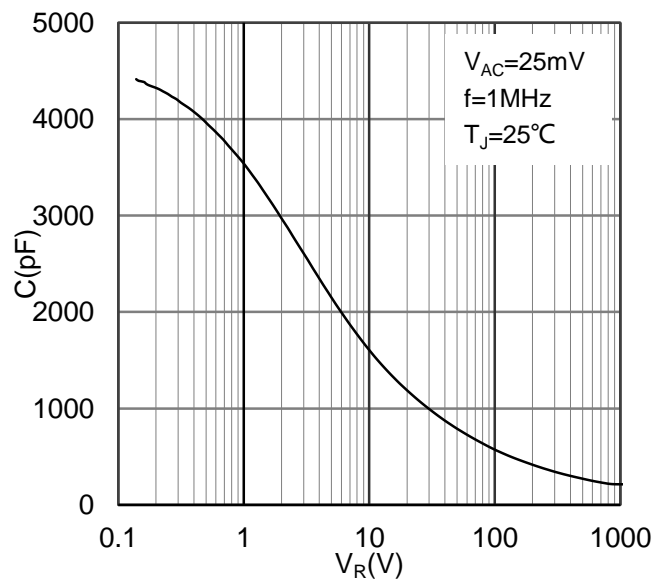


Figure 6. Capacitance vs. Reverse Voltage

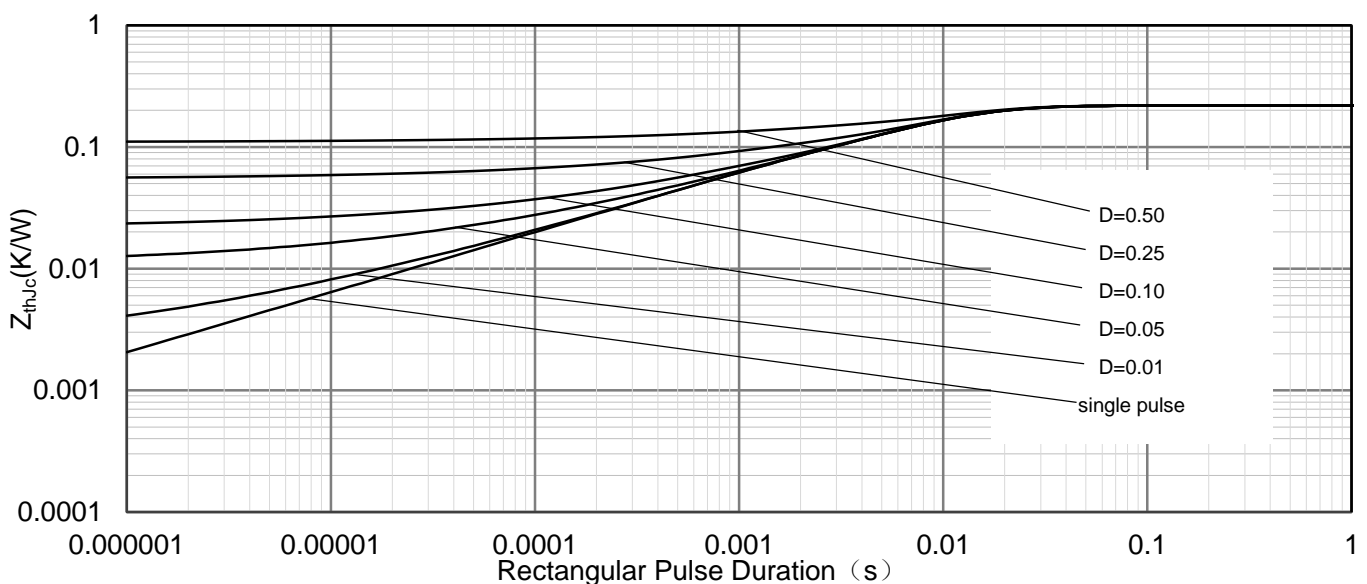
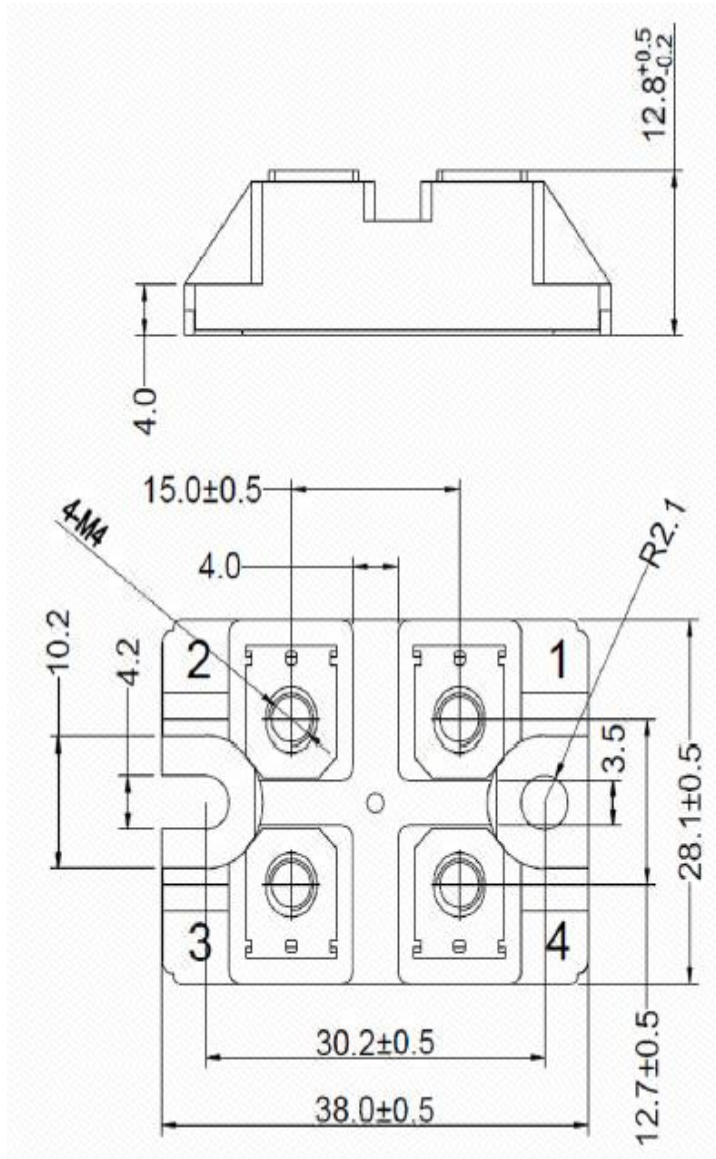


Figure 7. Transient Thermal Impedance

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Dimensions in (mm)
Figure 8. Package Outline