

Thyristor&Diode Module

V_{RRM} / V_{DRM} 800 to 1600V

I_{FAV} / I_{TAV} 110 Amp

I_{FRMS} / I_{TRMS} 170 Amp

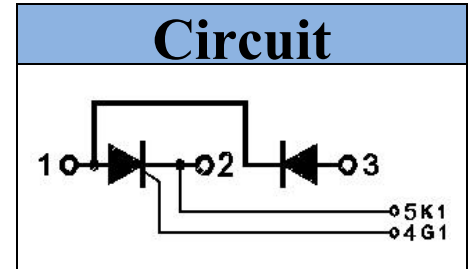


Features

- Aluminum oxide DBC
- Glass passivated chip
- High surge capability

Applications

- Power converters
- Lighting control
- DC motor control and drives
- Heat and temperature control



Module Type

Type	V_{RRM} / V_{DRM}	V_{RSM}
MFC110G-08	800V	900V
MFC110G-12	1200V	1300V
MFC110G-16	1600V	1700V

Maximum Ratings

Symbol	Item	Conditions	Values	Unit
I_{FAV}/I_{TAV}	Average On-state Current	180° Conduction Sin Half Wave, $T_c = 85^\circ\text{C}$	110	A
I_{FRMS}/I_{TRMS}	RMS On-state Current		170	A
I_{FSM}/I_{TSM}	Surge On-state Current	$T_j = 25^\circ\text{C}$, $t = 50\text{Hz}(10\text{ms})$, $V_R = 0\text{V}$	2850	A
I^2t	Circuit Fusing Consideration	$t = 10\text{ms}$ $T_j = 25^\circ\text{C}$	40600	A^2s
V_{ISO}	Isolation Breakdown Voltage	AC 50Hz/60Hz; R.M.S; 1min	3000	V
T_j	Operating Junction Temperature		-40 to + 125	$^\circ\text{C}$
T_{stg}	Storage Temperature		-40 to + 125	$^\circ\text{C}$
M_t	Mounting Torque	To Terminals(M5)	$3 \pm 15\%$	N·m
M_s		To Heatsink(M6)	$5 \pm 15\%$	
Weight	Module (Approximately)		105	g
di/dt	Critical Rate of Rise of On-state Current, Max	$T_j = 125^\circ\text{C}$, $V_D = 1/2V_{DRM}$, $I_G = 150\text{mA}$, $di_G/dt = 0.1\text{A}/\mu\text{s}$	150	$\text{A}/\mu\text{s}$

Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
$R_{th(j-c)}$	Thermal Impedance, Max	Junction to Case(Per Leg)	0.22	$^\circ\text{C}/\text{W}$
$R_{th(c-s)}$	Thermal Impedance, Max	Case to Heat Sink	0.1	$^\circ\text{C}/\text{W}$

■ Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
V_{FM}/V_{TM}	Peak On-State Voltage, Max	$T_j = 25^\circ\text{C}$, $I_F/I_T = 330\text{A}$	-	-	1.65	V
I_{DRM} $/I_{RRM}$	Repetitive Peak Reverse Current, Max /Repetitive Peak Off-state Current, Max	$T_j = 125^\circ\text{C}$, $V_R = V_{RRM}$, $V_D = V_{DRM}$	-	-	20	mA
V_{GT}	Gate Trigger Voltage, Max	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$	-	-	3.0	V
I_{GT}	Gate Trigger Current, Max	$T_j = 25^\circ\text{C}$, $V_D = 6\text{V}$	-	-	150	mA
V_{GD}	Gate Non-Trigger Voltage, Max	$T_j = 125^\circ\text{C}$, $V_D = 2/3V_{DRM}$	-	-	0.25	V
I_L	Latching Current	$T_j = 25^\circ\text{C}$	-	200	-	mA
I_H	Holding Current	$T_j = 25^\circ\text{C}$	-	150	-	mA
t_{gt}	Turn On Time	$T_j = 25^\circ\text{C}$	-	3	-	μs
dv/dt	Critical Rate of Rise of Off-state Voltage, Min	$T_j = 125^\circ\text{C}$, $V_D = 2/3V_{DRM}$ Linear Voltage Rise	1000			V/ μs
V_{T0}	Threshold Voltage, for power loss calculation only	$T_j = 125^\circ\text{C}$	0.85			V
r_T	Slope Resistance, for power loss calculation only	$T_j = 125^\circ\text{C}$	2.4			m Ω

Performance Curves

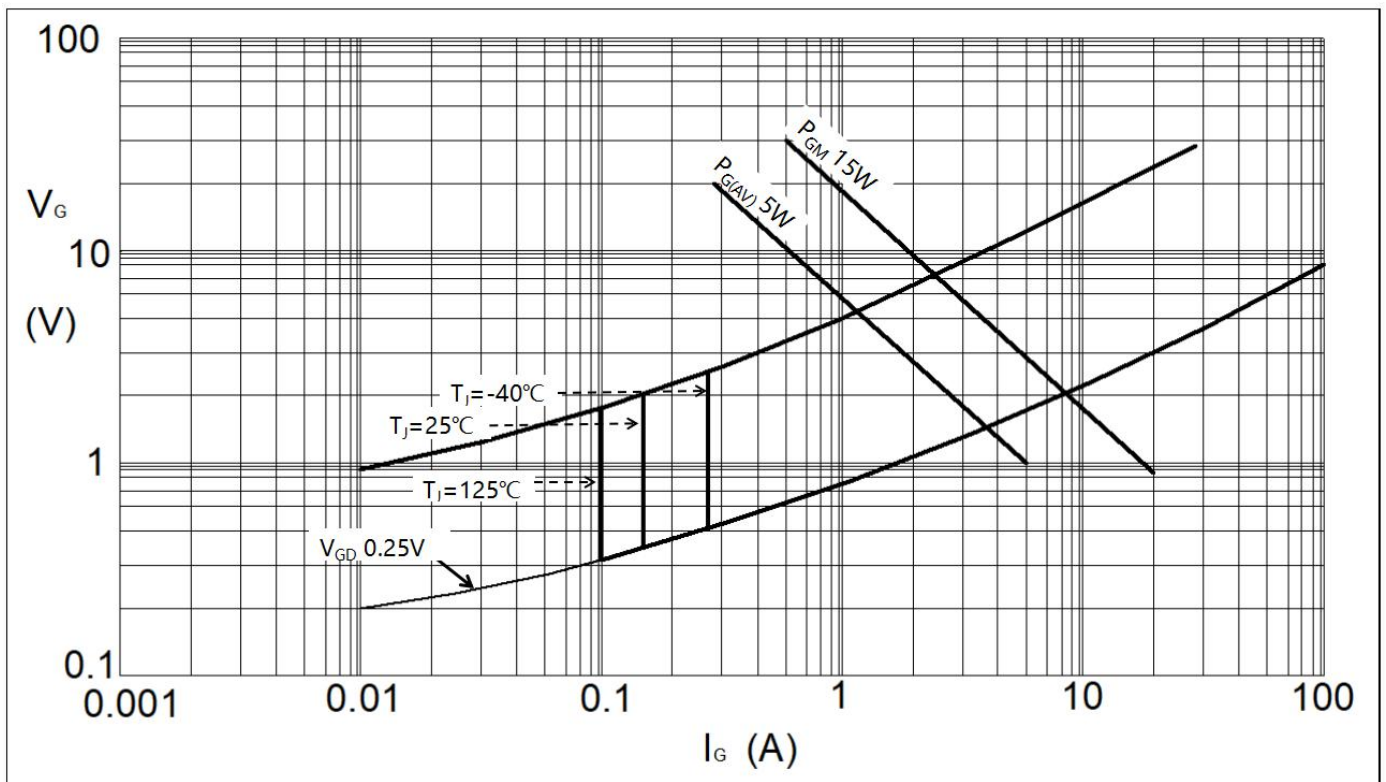


Fig1. Gate Trigger Characteristics

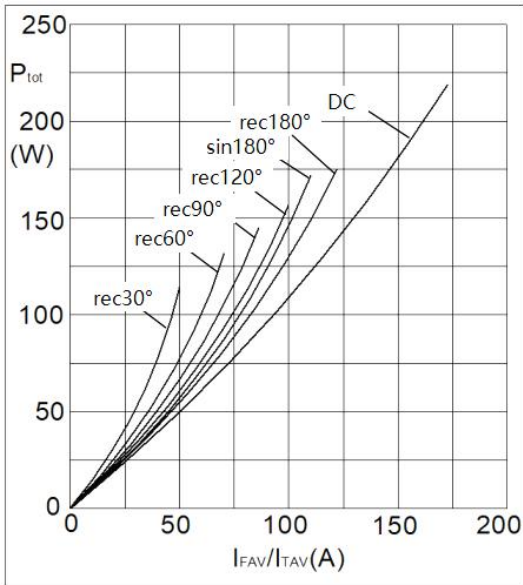


Fig2. Power Dissipation

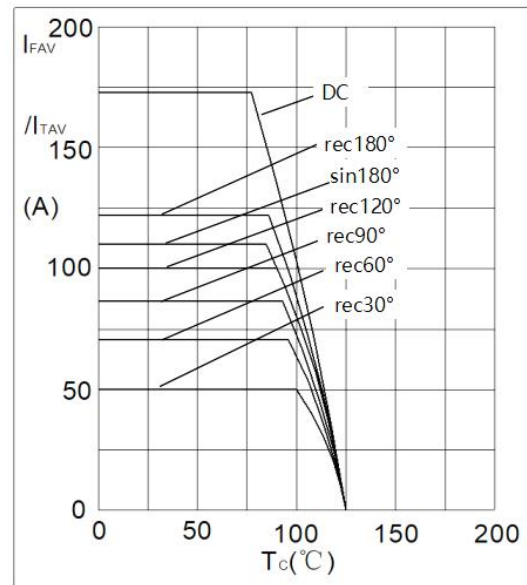


Fig3. Forward Current Derating Curve

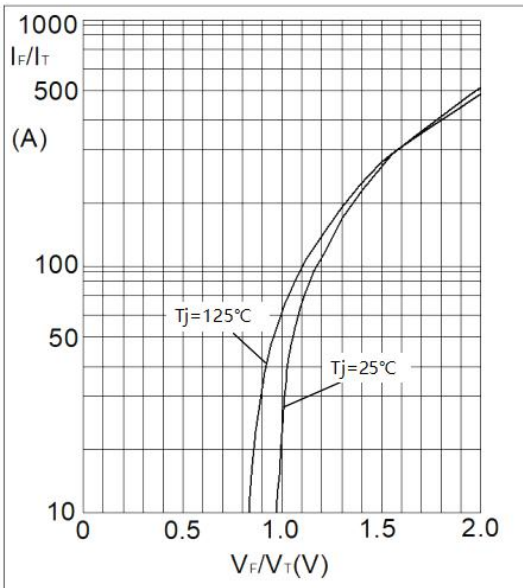


Fig4. Forward Characteristics

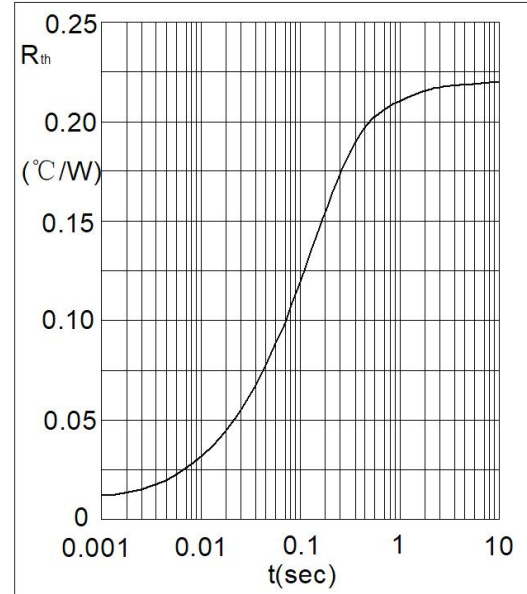


Fig5. Transient Thermal impedance

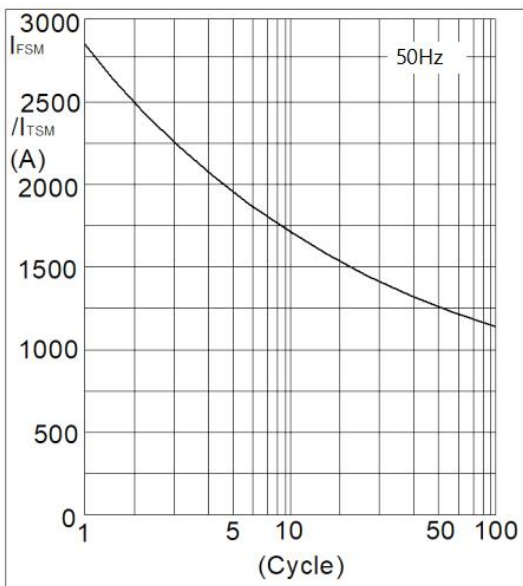
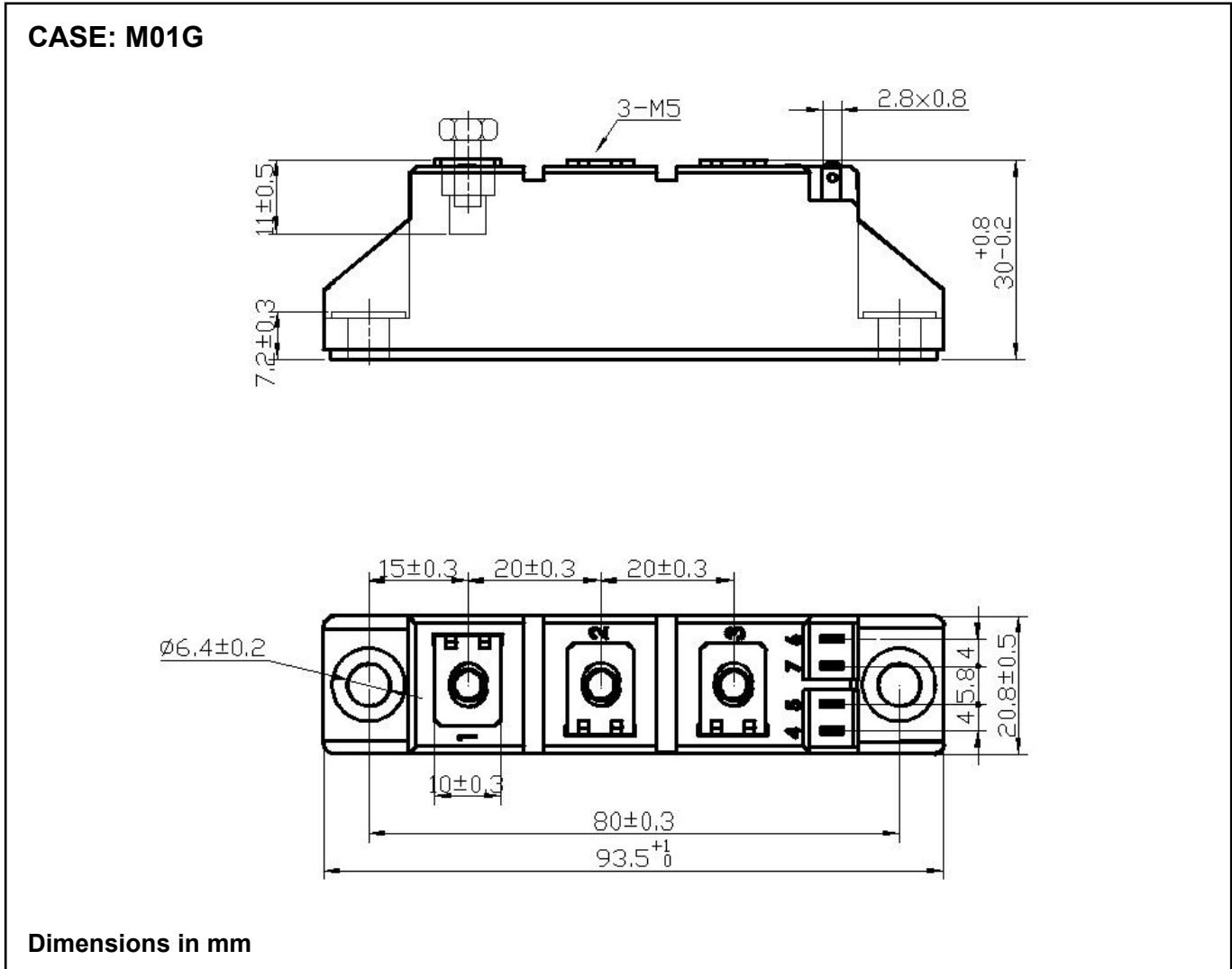


Fig6. Max Non-Repetitive Forward Surge Current

Package Outline Information



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