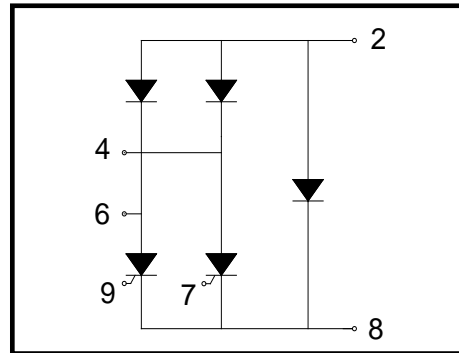


Features

- Isolated Module Package
- Isolation voltage 3500 V
- 1/4" fast-on terminals

Applications

- Supply for DC power Equipment
- DC Motor Control



■ **Diode**

ABSOLUTE MAXIMUM RATINGS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Max.	Unit
V_{RRM}	Repetitive Reverse Voltage		1600	V
$I_{D(AV)}$	Average Forward Current	$T_C=90^{\circ}\text{C}$, module	35	A
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	400	A
		$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	450	A
I^2t	I^2t (For Fusing)	$T_J=45^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	800	A^2s
		$T_J=45^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	840	A^2s
I_{FSM}	Non-Repetitive Surge Forward Current	$T_J=125^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	320	A
		$T_J=125^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	360	A
I^2t	I^2t (For Fusing)	$T_J=125^{\circ}\text{C}$, $t=10\text{ms}$, 50Hz, Sine	512	A^2s
		$T_J=125^{\circ}\text{C}$, $t=8.3\text{ms}$, 60Hz, Sine	538	A^2s

ELECTRICAL CHARACTERISTICS

$T_C=25^{\circ}\text{C}$ unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{RM}	Reverse Leakage Current	$V_R=1600\text{V}$	--	--	300	μA
		$V_R=1600\text{V}$, $T_J=125^{\circ}\text{C}$	--	--	5	mA
V_F	Forward Voltage	$I_F=35\text{A}$	--	1.05	--	V
		$I_F=35\text{A}$, $T_J=125^{\circ}\text{C}$	--	0.98	--	V

■ Thyristor

ABSOLUTE MAXIMUM RATINGS

$T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Test Condition	Value	Unit
V_{RRM}		1600	V
V_{DRM}	gate open circuit	1600	V
V_{RSM}		1700	V
$I_{T(AV)}$	$T_C=90^\circ\text{C}$, 180° conduction, half sine wave;	35	A
I_{TSM}	$T_J=45^\circ\text{C}$, $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$;	500	A
	$T_J=45^\circ\text{C}$, $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$;	550	
I_{TSM}	$T_J=125^\circ\text{C}$, $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$;	400	A
	$T_J=125^\circ\text{C}$, $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$;	450	
I^2t	$T_J=45^\circ\text{C}$, $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$;	1250	A^2s
	$T_J=45^\circ\text{C}$, $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$;	1255	
I^2t	$T_J=125^\circ\text{C}$, $t=10\text{ms}$ (50Hz), sine, $V_R=V_{RRM}$;	800	A^2s
	$T_J=125^\circ\text{C}$, $t=8.3\text{ms}$ (60Hz), sine, $V_R=V_{RRM}$;	840	
dv/dt	$T_J=125^\circ\text{C}$, Linear to $0.67V_{DRM}$	1000	V/us

ELECTRICAL CHARACTERISTICS

$T_C=25^\circ\text{C}$ unless otherwise specified

Symbol	Test Condition	Min.	Typ.	Max.	Unit
I_{DRM}/I_{RRM}	$V_D=V_R=1600\text{V}$;			0.3	mA
I_{DRM}/I_{RRM}	$T_J=125^\circ\text{C}$, $V_D=V_R=1600\text{V}$;			5	mA
$-V_{GM}$				10	V
V_{TM}	$I_{TM}=110\text{A}$, $t_d=10\text{ms}$, half sine;		1.7		V
V_{GT}	$V_A=6\text{V}$, $R_A=1\Omega$, $T_J=-40^\circ\text{C}$;			4	V
	$V_A=6\text{V}$, $R_A=1\Omega$;			2.5	
	$V_A=6\text{V}$, $R_A=1\Omega$, $T_J=125^\circ\text{C}$;			1.7	
I_{GT}	$V_A=6\text{V}$, $R_A=1\Omega$, $T_J=-40^\circ\text{C}$;			80	mA
	$V_A=6\text{V}$, $R_A=1\Omega$;			60	
	$V_A=6\text{V}$, $R_A=1\Omega$, $T_J=125^\circ\text{C}$;			45	
I_H	$V_A=6\text{V}$, $R_A=1\Omega$, gate open circuit;			200	mA
I_L	$V_A=6\text{V}$, $R_A=1\Omega$;			400	mA
V_{GD}	$T_J=125^\circ\text{C}$, $V_D=1600\text{V}$			0.25	V
I_{GD}	$T_J=125^\circ\text{C}$, $V_D=1600\text{V}$			6	mA
V_{TO}	$T_J=125^\circ\text{C}$, $16.7\% \times \pi \times I_{AV} < I < \pi \times I_{AV}$			0.88	V
V_{TO}	$T_J=125^\circ\text{C}$, $I > \pi \times I_{AV}$			0.91	V
r_T	$T_J=125^\circ\text{C}$, $16.7\% \times \pi \times I_{AV} < I < \pi \times I_{AV}$			5.90	$\text{m}\Omega$
r_T	$T_J=125^\circ\text{C}$, $I > \pi \times I_{AV}$			5.74	$\text{m}\Omega$
P_{GM}	$t_p \leq 5\text{ms}$, $T_J=125^\circ\text{C}$;			10	W
$P_{GM(AV)}$	$f=50\text{Hz}$, $T_J=125^\circ\text{C}$;			2.5	W

MODULE AND THERMAL CHARACTERISTICS

T_C=25°C unless otherwise specified

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
R _{θJC}	Thermal Resistance Junction-to-Case	per diode, thyristor	--	--	1.20	°C /W
		per module	--	--	0.24	°C /W
R _{θCS}	Thermal Resistance Case -to-Sink	per diode, thyristor	--	--	0.85	°C /W
		per module	--	--	0.17	°C /W
T _J	Junction Temperature		-40		150	°C
T _{STG}	Storage Temperature Range		-40		125	°C
V _{isol}	Insulation Test Voltage	AC, 50Hz, t=5s			3500	V
M _d	Mounting torque(M5)		3		5	N·m
Weight				95		g

Characteristic curves

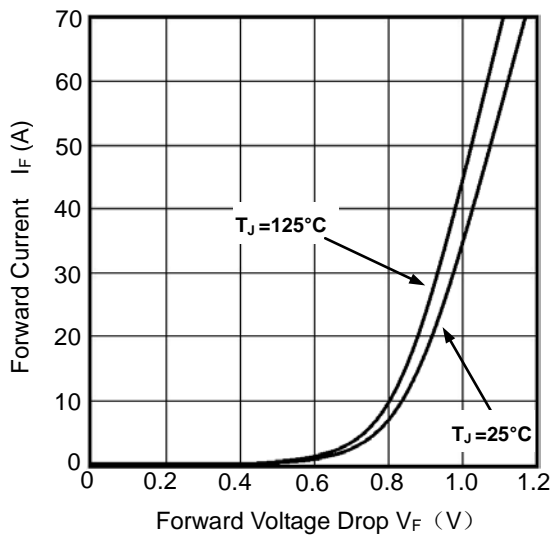


Figure1. Diode Forward Voltage Drop vs Forward Current

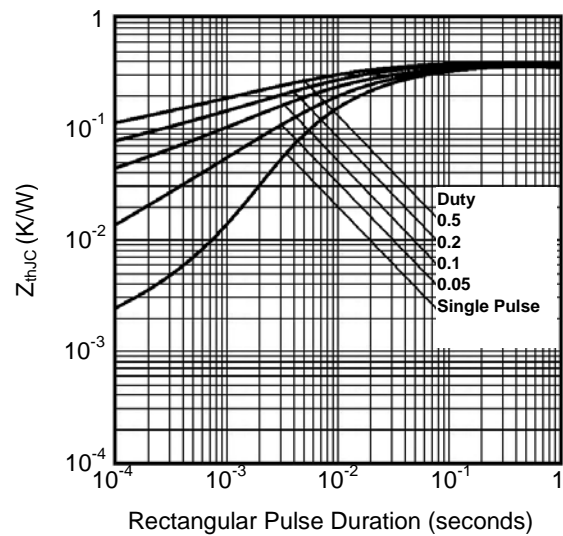


Figure 2. Diode Thermal Impedance Z_{thJC}

MMK35LB160HB

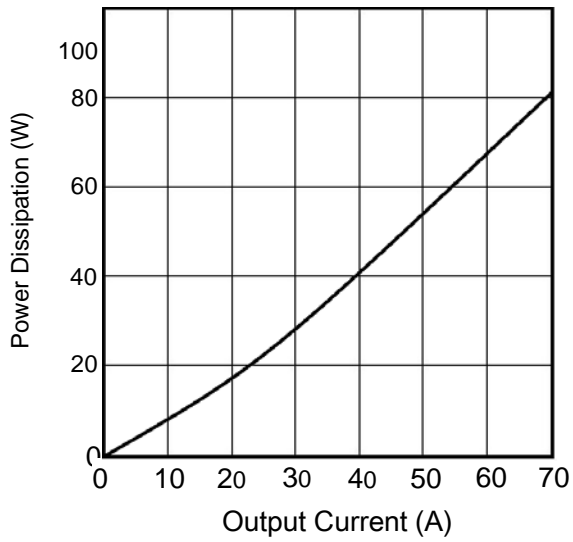


Figure 3. SCR Output Current vs Power Dissipation

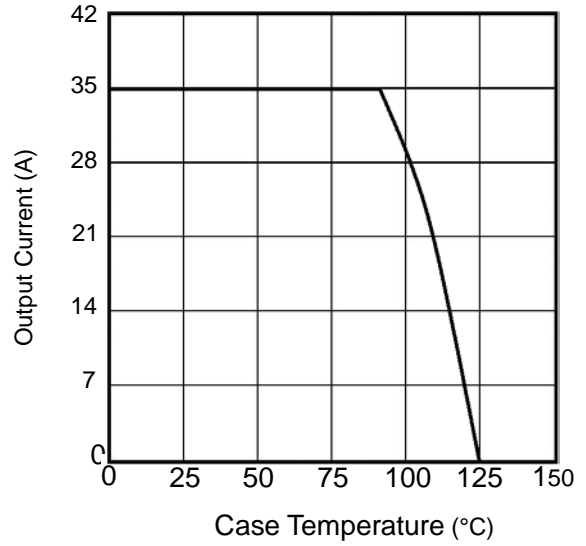


Figure 4. SCR Output Current vs Case Temperature

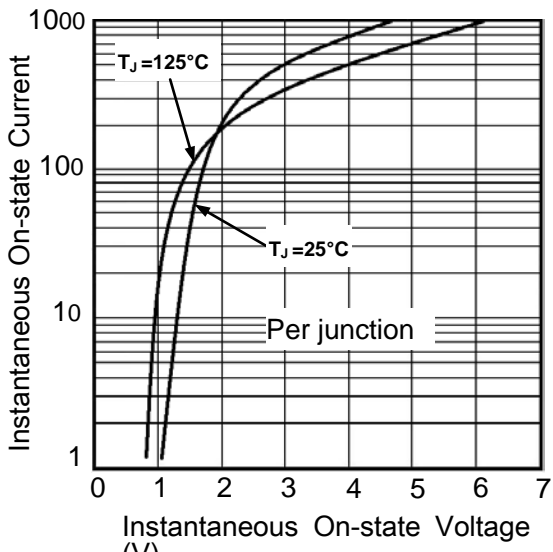


Figure 5. SCR On State Voltage Drop

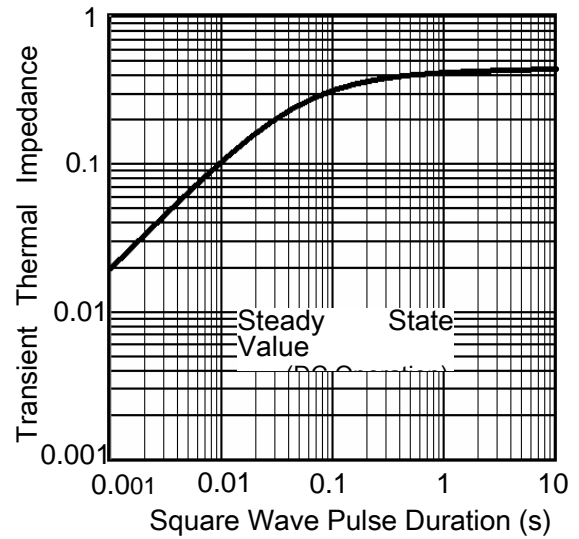


Figure 6. SCR Thermal Impedance Z_{thJC}

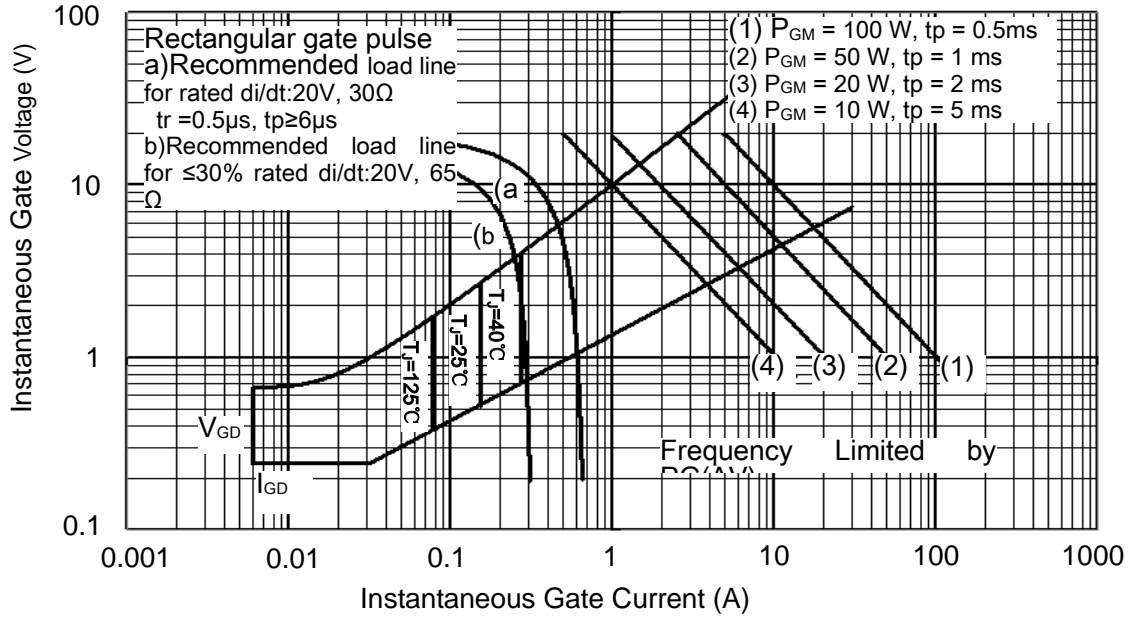


Figure 7. Gate Characteristics

Package Outline (Dimensions in mm)

