

Three Phase Diode Bridge & Thyristor Module

V_{DRM} / V_{RRM} 800 to 1600V
I_{FAV} / I_{TAV} 150 Amp

Features

- Aluminum oxide DBC
- Glass passivated chip

Applications

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply

Module Type

Type	V _{RRM} / V _{DRM}	V _{RSM}
MDST150-08	800V	900V
MDST150-12	1200V	1300V
MDST150-16	1600V	1700V

Diode

Maximum Ratings

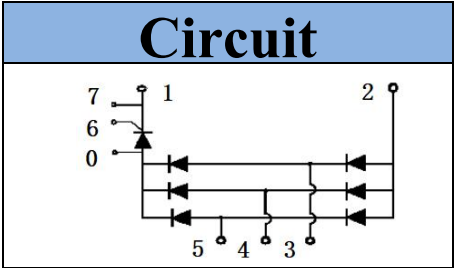
Symbol	Item	Conditions	Values	Unit
I _D	Output Current	Three Phase, Full Wave T _c = 96°C	150	A
I _{FSM}	Surge Forward Current	T _j = 25°C, t = 50Hz(10ms), V _R = 0V	1800	A
I ² t	Circuit Fusing Consideration	t = 10ms T _j = 25°C	16200	A ² s
V _{ISO}	Isolation Breakdown Voltage	AC 50Hz/60Hz; R.M.S; 1min	3000	V
T _j	Operating Junction Temperature		-40 to +150	°C
T _{stg}	Storage Temperature		-40 to +125	°C
M _t	Mounting Torque	To Terminals(M5)	3±15%	N·m
M _s		To Heatsink(M5)	3±15%	
Weight	Module (Approximately)		220	g

Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
R _{th(j-c)}	Thermal Impedance, Max	Junction to Case(Per Module)	0.15	°C/W
R _{th(c-s)}	Thermal Impedance, Max	Case to Heat Sink	0.10	°C/W

Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
V _{FM}	Forward Voltage Drop, Max	T _j = 25°C I _F = 150A	—	—	1.30	V
I _{RRM}	Repetitive Peak Reverse Current, Max	T _j = 25°C V _R = V _{RRM}	—	—	0.5	mA
		T _j = 150°C V _R = V _{RRM}	—	—	10	
V _{T0}	Threshold Voltage, for power loss calculation only	T _j = 125°C	0.80			V
r _T	Slope Resistance, for power loss calculation only	T _j = 125°C	2.6			mΩ



Thyristor

Maximum Ratings

Symbol	Item	Conditions	Values	Unit
I_{TAV}	Average On-state Current	$T_c = 92^{\circ}C$, Three Phase Full Wave Rectified	150	A
I_{TSM}	Surge On-state Current	$T_j = 25^{\circ}C$, $t = 50Hz(10ms)$, $V_R = 0V$	2000	A
I^2t	Circuit Fusing Consideration		20000	A^2s
V_{ISO}	Isolation Breakdown Voltage	AC 50Hz; R.M.S;1min	3000	V
T_j	Operating Junction Temperature		-40 to + 125	$^{\circ}C$
T_{stg}	Storage Temperature		-40 to + 125	$^{\circ}C$
di/dt	Critical Rate of Rise of On-state Current, Max	$T_j = 125^{\circ}C$, $V_D = 1/2V_{DRM}$, $I_G = 150mA$, $di_G/dt = 0.1A/\mu s$	150	$A/\mu s$

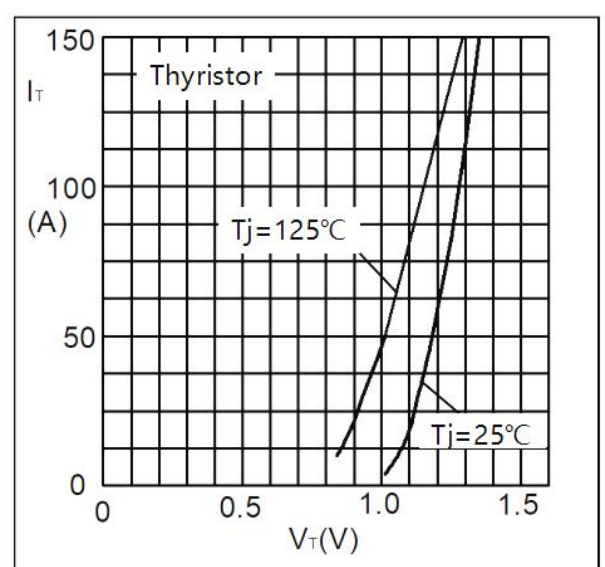
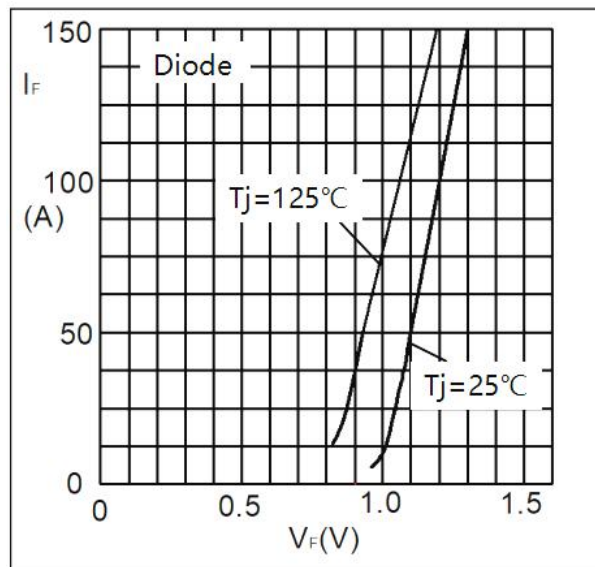
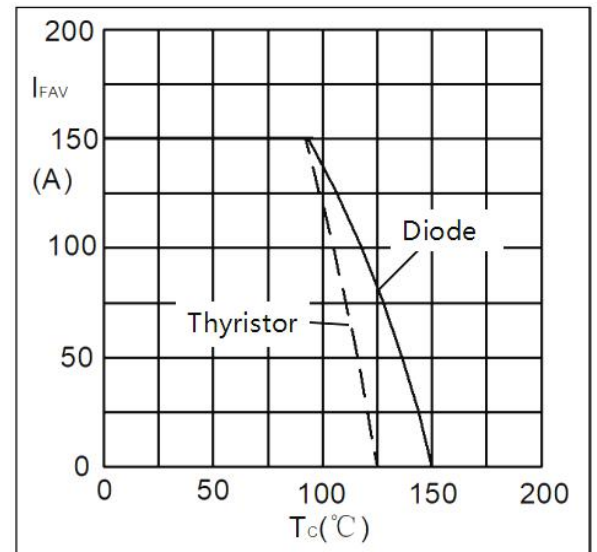
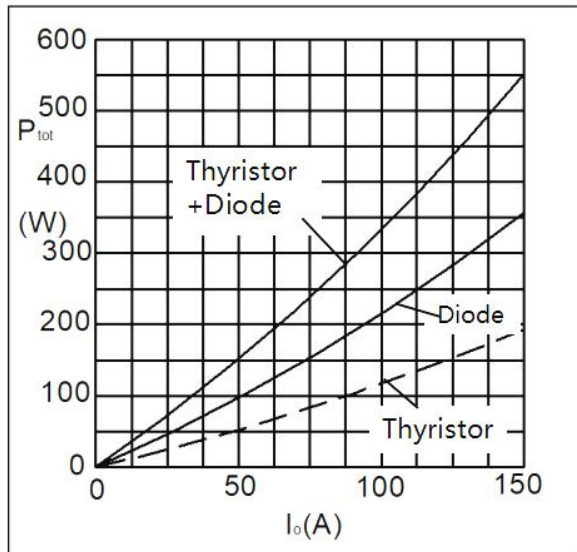
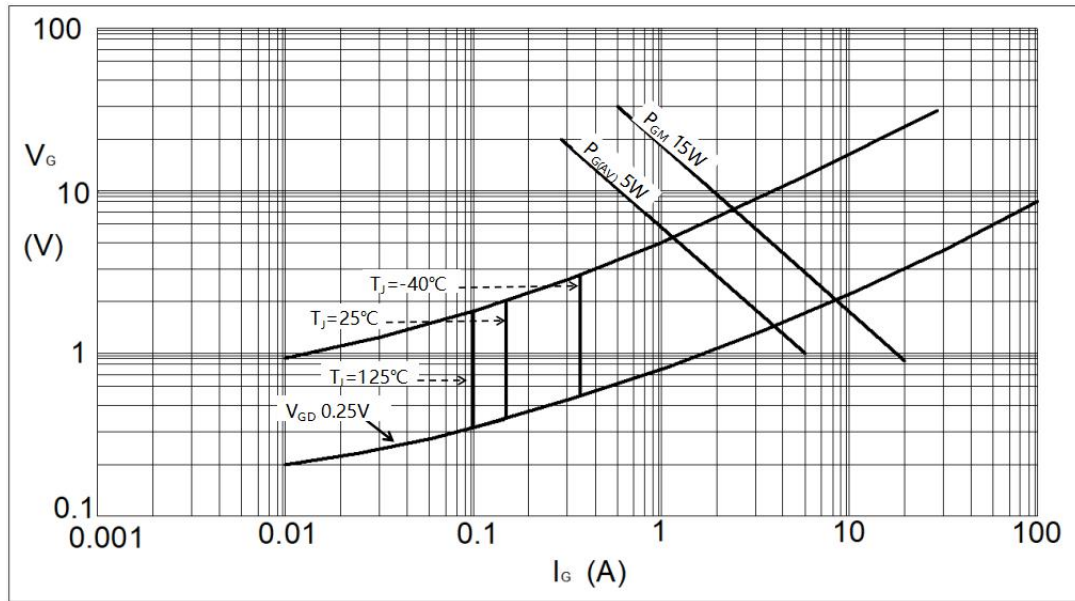
Thermal Characteristics

Symbol	Item	Conditions	Values	Unit
$R_{th(j-c)}$	Thermal Impedance, Max	Junction to Case	0.17	$^{\circ}C/W$
$R_{th(c-s)}$	Thermal Impedance, Max	Case to Heat Sink	0.10	$^{\circ}C/W$

Electrical Characteristics

Symbol	Item	Conditions	Values			Unit
			Min.	Typ.	Max.	
V_{TM}	Peak On-State Voltage, Max	$T_j = 25^{\circ}C$, $I_T = 150A$	-	-	1.35	V
I_{DRM} I_{RRM}	Repetitive Peak Reverse Current, Max /Repetitive Peak Off-state Current, Max	$T_j = 125^{\circ}C$, $V_R = V_{RRM}$, $V_D = V_{DRM}$	-	-	25	mA
V_{GT}	Gate Trigger Voltage, Max	$T_j = 25^{\circ}C$, $V_D = 6V$	-	-	3.0	V
I_{GT}	Gate Trigger Current, Max	$T_j = 25^{\circ}C$, $V_D = 6V$	-	-	150	mA
V_{GD}	Gate Non-Trigger Voltage, Max	$T_j = 125^{\circ}C$, $V_D = 2/3V_{DRM}$	-	-	0.25	V
I_L	Latching Current	$T_j = 25^{\circ}C$	-	200	-	mA
I_H	Holding Current	$T_j = 25^{\circ}C$	-	150	-	mA
t_{gt}	Turn On Time	$T_j = 25^{\circ}C$	-	3	-	μs
dv/dt	Critical Rate of Rise of Off-state Voltage, Min	$T_j = 125^{\circ}C$, $V_D = 2/3V_{DRM}$ Linear Voltage Rise	500			$V/\mu s$
V_{T0}	Threshold Voltage, for power loss calculation only	$T_j = 125^{\circ}C$	0.87			V
r_T	Slope Resistance, for power loss calculation only	$T_j = 125^{\circ}C$	2.8			m Ω

Performance Curves





Package Outline Information

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Dimensions in mm

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