



## Three Phase Bridge

Reverse Voltage - 1600 Volts  
Forward Current - 150 Amperes

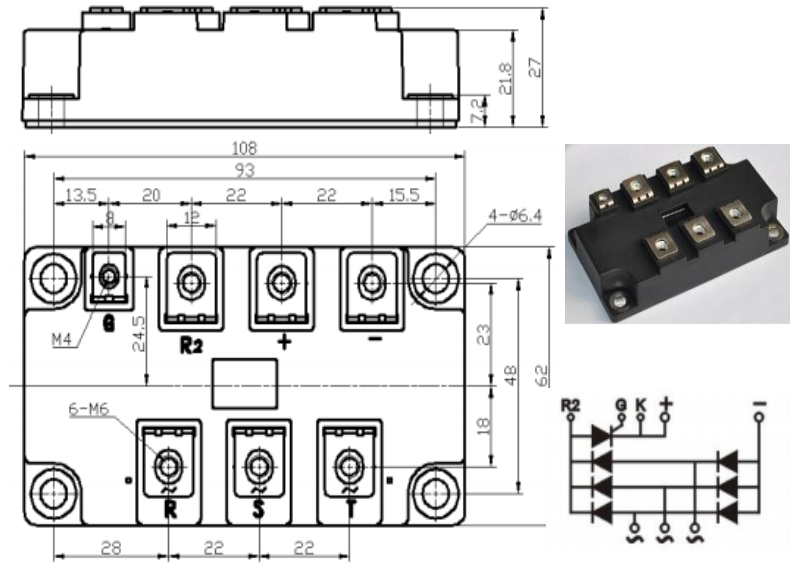
### Features

- Blocking voltage: 1600V
- Three Phase Bridge and a Thyristor
- Isolated Module package

### Applications

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

- Note: Products with logo  or  are made by HY Electronic (Cayman) Limited.



Package Outline Dimensions in Millimeters

### Maximum Ratings and Electrical Characteristics

Rating at 25°C ambient temperature unless otherwise specified.

Single phase, half wave, 60Hz, resistive or inductive load.

For capacitive load, derate current by 20%.

TYPE	VRRM		VRSM			
MDST150-16	1600V		1700V			
Characteristics	Symbol	Item	Values			Unit
Three phase, full wave Tc=100℃	ID	Output Current(D.C.)	150			A
t=10mS Tvj =45℃	IFSM	Surge forward current	1800			A
t=10mS Tvj =45℃	I <sup>2</sup> t	Circuit Fusing Consideration	16200			A <sup>2</sup> s
a.c.50HZ;r.m.s.;1min	Visol	Isolation Breakdown Voltage(R.M.S)	3000			V
	Tvj	Operating Junction Temperature	-40 to + 150			℃
	Tstg	Storage Temperature	-40 to + 125			
To terminals(M4) To terminals(M6)	Mt	Mounting Torque	2±15% 5±15%			Nm
To heatsink(M6)	Ms		5±15%			Nm
	Weight	Module (Approximately)	360			g
Junction to Case	Rth(j-c)	Thermal Impedance, max	0.14			℃/W
Case to Heatsink	Rth(c-s)	Thermal Impedance, max	0.10			℃/W
T=25℃ IF=150A	VFM	Forward Voltage Drop, max	Min	Typ	Max	
			/	/	1.4	V
Tvj =25℃,VRD=VRRM Tvj =150℃,VRD=VRRM	IRD	Repetitive Peak Reverse Current, max	/	/	0.1 9	mA



Characteristics	Symbol	Item	Values			Unit
$T_c=90^{\circ}\text{C}$ , Single Phase half wave $180^{\circ}$ conduction	$I_{TAV}$	Average On-State Current	150			A
$T_{vj}=45^{\circ}\text{C}$ $t=10\text{ms}(50\text{Hz})$ , sine $V_R=0$	$I_{TSM}$	Surge On-State Current	1500			A
	$I^2t$	Circuit Fusing Consideration	11250			$\text{A}^2\text{S}$
a.c.50HZ;r.m.s.;1min	$V_{isol}$	Isolation Breakdown Voltage(R.M.S)	3000			V
	$T_{vj}$	Operating Junction Temperature	-40 to + 125			$^{\circ}\text{C}$
	$T_{stg}$	Storage Temperature	-40 to + 125			$^{\circ}\text{C}$
$T_{vj}=T_{vjM}$ , $V_D=1/2V_{DRM}$ , $I_G=100\text{mA}$ $d_i/dt=0.1\text{A/us}$	$di/dt$	Critical Rate of Rise of On-State Current	150			$\text{A/us}$
$T_{vj}=T_{vjM}$ , $V_D=2/3V_{DRM}$ , linear voltage rise	$dv/dt$	Critical Rate of Rise of Off-State Voltage, min	500			$\text{V/us}$
Junction to Case	$R_{th(j-c)}$	Thermal Impedance, max	0.18			$^{\circ}\text{C/W}$
Case to Heatsink	$R_{th(c-s)}$	Thermal Impedance, max	0.10			$^{\circ}\text{C/W}$
$T=25^{\circ}\text{C}$ $I_T=150\text{A}$	$V_{TM}$	Peak On-State Voltage, max.	Min.	Typ	Max	
			/	/	1.6	V
$T_{vj}=T_{vjM}$ , $V_R=V_{RRM}$ , $V_D=V_{DRM}$	$I_{RRM}/I_{DRM}$	Repetitive Peak Reverse Current, max /Repetitive Peak Off-State Current,max	/	/	25	mA
$T_{vj}=T_{vjM}$	$V_{TO}$	Threshold voltage	/	/	0.9	V
	$R_t$	Slope resistance, max	/	/	2	$\text{m}\Omega$
$T_{vj}=25^{\circ}\text{C}$ , $V_D=6\text{V}$	$V_{GT}$	Gate Trigger Voltage, max	/	/	3	V
$T_{vj}=25^{\circ}\text{C}$ , $V_D=6\text{V}$	$I_{GT}$	Gate Trigger current, max	/	/	150	mA
$T_{vj}=125^{\circ}\text{C}$ , $V_D=2/3V_{DRM}$	$V_{GD}$	Required DC gate voltage , max	/	/	0.25	V
$T_{vj}=125^{\circ}\text{C}$ , $V_D=2/3V_{DRM}$	$I_{GD}$	Required DC gate current , max	/	/	6	mA
$T_{vj}=25^{\circ}\text{C}$ , $R_G=33\Omega$	$I_L$	Latching current, max	/	300	600	mA
$T_{vj}=25^{\circ}\text{C}$ , $V_D=6\text{V}$	$I_H$	Holding current, max	/	150	250	mA
$T_{vj}=25^{\circ}\text{C}$	$t_{gd}$	Gate controlled delay time	1			us
$T_{vj}=T_{vjM}$	$t_q$	Circuit commutated turn-off time	100			us

### Performance Curves

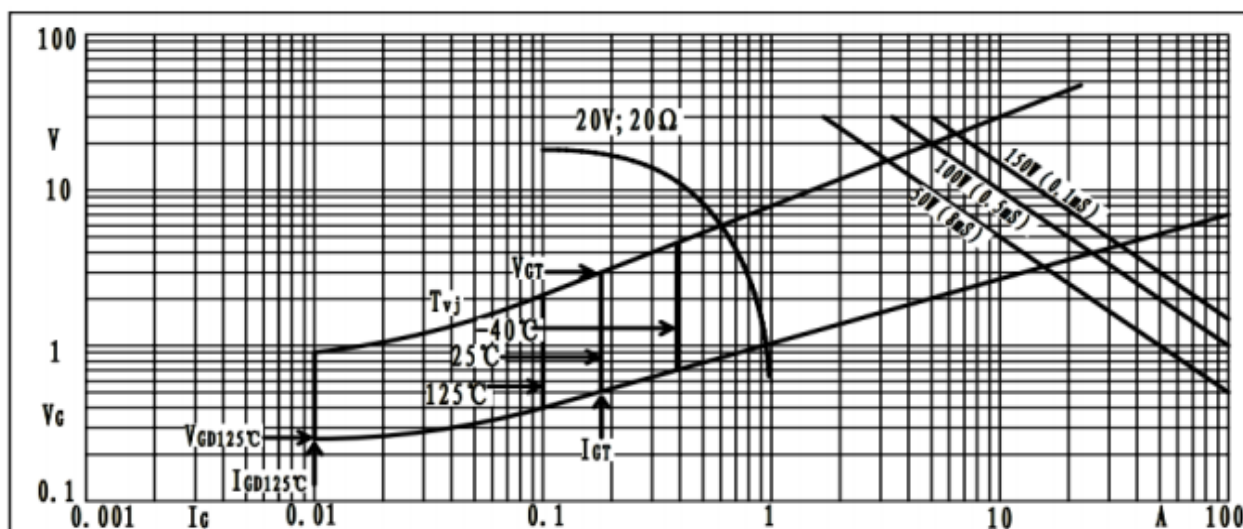


Fig1. Gate trigger characteristics

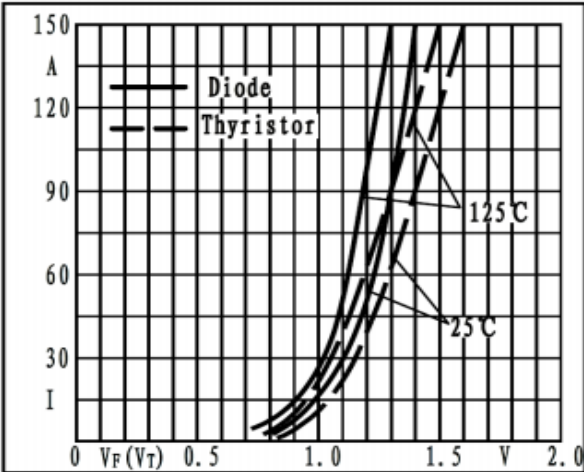


Fig2. Forward characteristics

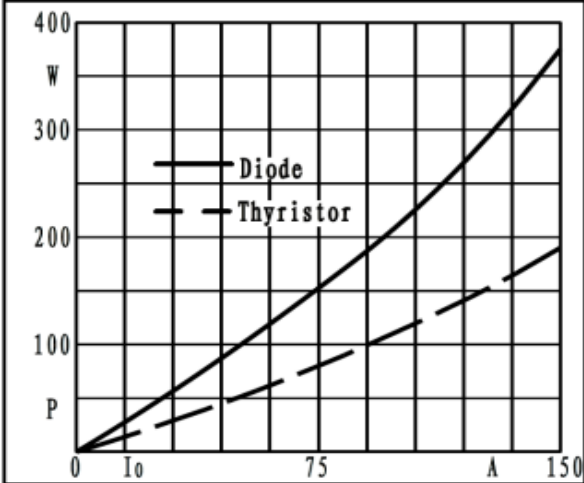


Fig3. Power dissipation

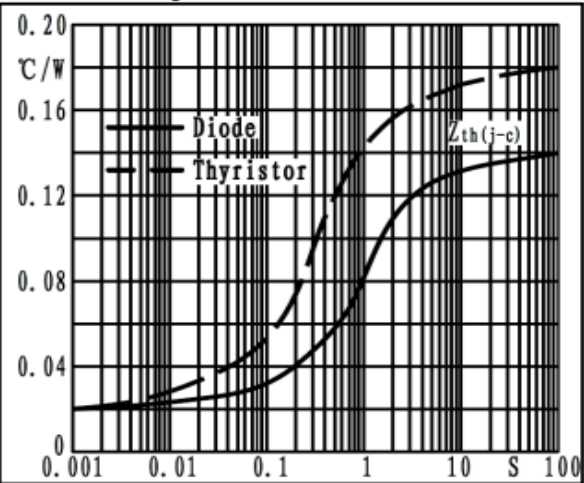


Fig4. Transient thermal impedance

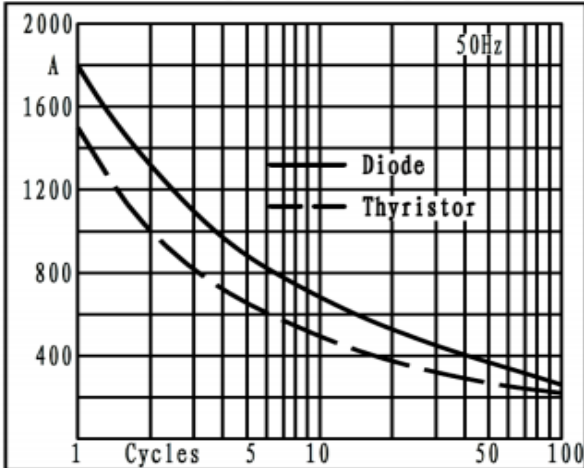


Fig5. Max non-repetitive forward surge current

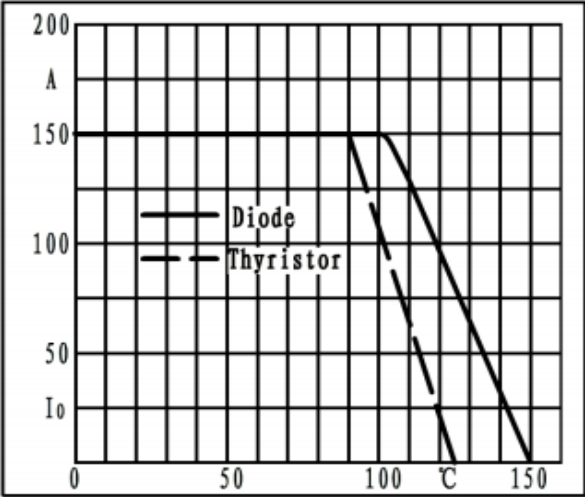


Fig6. Forward current derating curve

The curve above is for reference only.



### Disclaimer

ALL specifications and data are subject to be changed without notice to improve reliability function or design or other reasons.

HY makes no warranty, representation or guarantee regarding the suitability of the products for any particular purpose or the continuing production of any product. To the maximum extent permitted by applicable law, HY disclaims (i) any and all liability arising out of the application or use of any product, (ii) any and all liability, including without limitation special, consequential or incidental damages, and (iii) any and all implied warranties, including warranties of fitness for particular purpose, non-infringement and merchantability.

Statements regarding the suitability of products for certain types of applications are based on HY's knowledge of typical requirements that are often placed on HY products in generic applications. Such statements are not binding statements about the suitability of products for a particular application. It is the customer's responsibility to validate that a particular product with the properties described in the product specification is suitable for use in a particular application. Parameters provided in datasheets and specifications may vary in different applications and performance may vary over time. All operating parameters, including typical parameters, must be validated for each customer application by the customer's technical experts. Product specifications do not expand or otherwise modify HY's terms and conditions of purchase, including but not limited to the warranty expressed therein.

Except as expressly indicated in writing, HY products are not designed for use in medical, life-saving, or life-sustaining applications or for any other applications in which the failure of the HY product could result in personal injury or death. Customers using or selling HY products not expressly indicated for use in such applications do so at their own risk. Please contact authorized HY personnel to obtain written terms and conditions regarding products designed for such applications.

No license, express or implied, by estoppel or otherwise, to any intellectual property rights is granted by this document or by any conduct of HY. Product names and markings noted herein may be trademarks of their respective owners.