

## 产品规格书

### Specification of products

产品名称: 三相全控桥

产品型号: MDST200A-H4

浙江世菱半导体有限公司  
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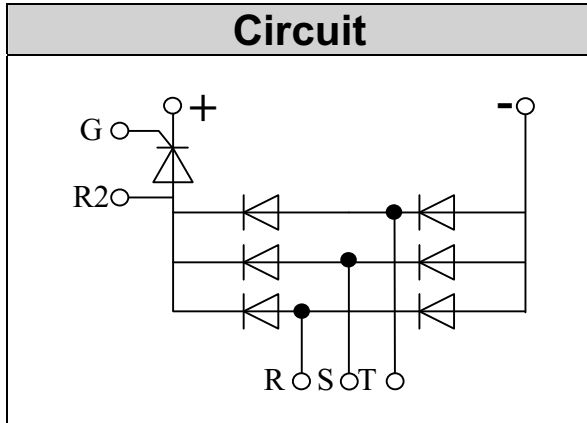
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### Three Phase Bridge + Thyristor



**VRRM / VDRM** 800 to 1800V

**IFAV / ITAV** 200A

#### Features

- Blocking voltage:800 to 1800V
- Three Phase Bridge and a Thyristor
- Low Forward Voltage

#### Applications

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

#### Module Type

TYPE	VRRM / VDRM	VRSM
MDST200A800V	800V	900V
MDST200A1200V	1200V	1300V
MDST200A1600V	1600V	1700V
MDST200A1800V	1800V	1900V

#### ◆Diode

#### Maximum Ratings

Symbol	Item	Conditions	Values	Units
ID	Output Current(D.C.)	Tc=96℃ Three phase full wave	200	A
IFSM	Surge forward current	t=10mS Tvj =45℃	1900	A
i <sup>2</sup> t	Circuit Fusing Consideration		18050	A <sup>2</sup> s
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1min	3000	V
Tvj	Operating Junction Temperature		-40 to +150	℃
Tstg	Storage Temperature		-40 to +125	℃
Mt	Mounting Torque	To terminals(M4)	2±5%	Nm
Mt		To terminals(M6)	5±15%	Nm
Ms		To heatsink(M6)	5±15%	Nm
Weight		Module (Approximately)	320	g

#### Thermal Characteristics

Symbol	Item	Conditions	Values	Units
Rth(j-c)	Thermal Impedance, max.	Junction to Case(TOTAL)	0.12	℃/W
Rth(c-s)	Thermal Impedance, max.	Case to Heat sink	0.06	℃/W

#### Electrical Characteristics

Symbol	Item	Conditions	Values	Units
VFM	Forward Voltage Drop, max.	T=25℃ IF =200A	1.30	V
I <sub>RRM</sub>	Repetitive Peak Reverse Current, max.	Tvj =25℃ VRD=VRRM Tvj =150℃ VRD=VRRM	≤2 ≤10	mA mA

### ◆Thyristor Maximum Ratings

Symbol	Item	Conditions	Values	Units
$I_{TAV}$	Average On-State Current	$T_c=93^\circ\text{C}$ , Single Phase half wave 180° conduction	200	A
$I_{TSM}$	Surge On-State Current	$T_{VJ}=45^\circ\text{C}$ $t=10\text{ms}$ (50Hz), sine $V_R=0$	1900	A
$i^2t$	Circuit Fusing Consideration		18050	$\text{A}^2\text{s}$
Visol	Isolation Breakdown Voltage(R.M.S)	a.c.50HZ;r.m.s.;1 min	3000	V
$T_{vj}$	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(M4)	25%	Nm
$M_t$		To terminals(M6)	$5\pm 5\%$	Nm
$M_s$		To heatsink(M6)	$5\pm 5\%$	Nm
$di/dt$	Critical Rate of Rise of On-State Current	$T_{VJ}=T_{VJM}$ , $V_D=1/2V_{DRM}$ , $I_G=100\text{mA}$ $d_i/d_t=0.1\text{A}/\mu\text{s}$	200	$\text{A}/\mu\text{s}$
$dv/dt$	Critical Rate of Rise of Off-State Voltage, min.	$T_J=T_{VJM}$ , $V_D=2/3V_{DRM}$ , linear voltage rise	500	$\text{V}/\mu\text{s}$

### Electrical and Thermal Characteristics

Symbol	Item	Conditions	Values			Units
			Min.	Typ.	Max.	
$V_{TM}$	Peak On-State Voltage, max.	$T=25^\circ\text{C}$ $I_T=200\text{A}$		1.35	V	
$I_{RRM}/I_{DRM}$	Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max.	$T_{VJ}=T_{VJM}$ , $V_R=V_{RRM}$ , $V_D=V_{DRM}$		100	mA	
$V_{GT}$	Gate Trigger Voltage, max.	$T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$		3	V	
$I_{GT}$	Gate Trigger Current, max.	$T_{VJ}=25^\circ\text{C}$ , $V_D=6\text{V}$		150	mA	
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case			0.14	$^\circ\text{C}/\text{W}$
$R_{th(c-s)}$	Thermal Impedance, max.	Case to Heatsink			0.06	$^\circ\text{C}/\text{W}$

## Performance Curves

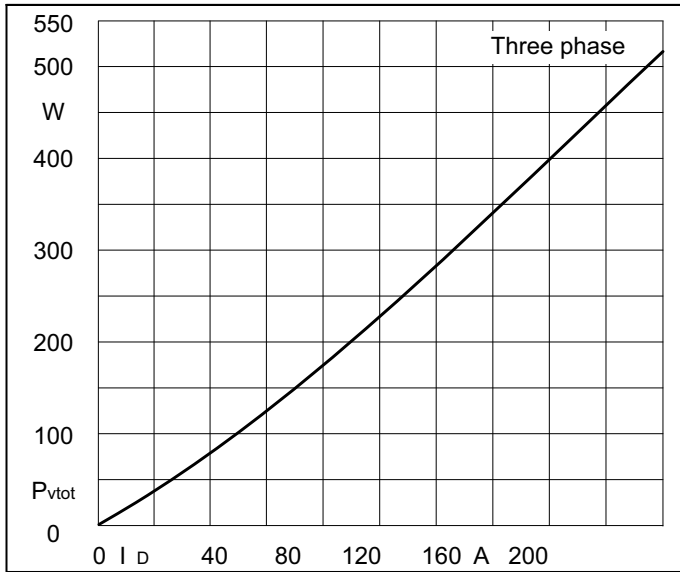


Fig1. Power dissipation

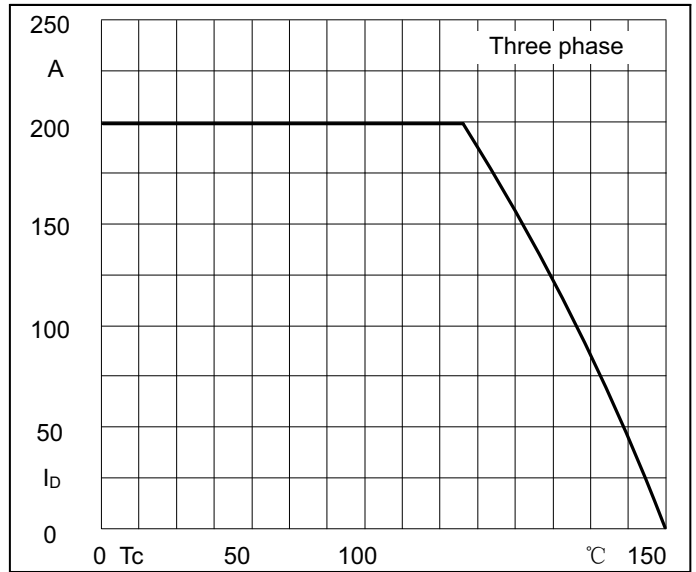


Fig2. Forward Current Derating Curve

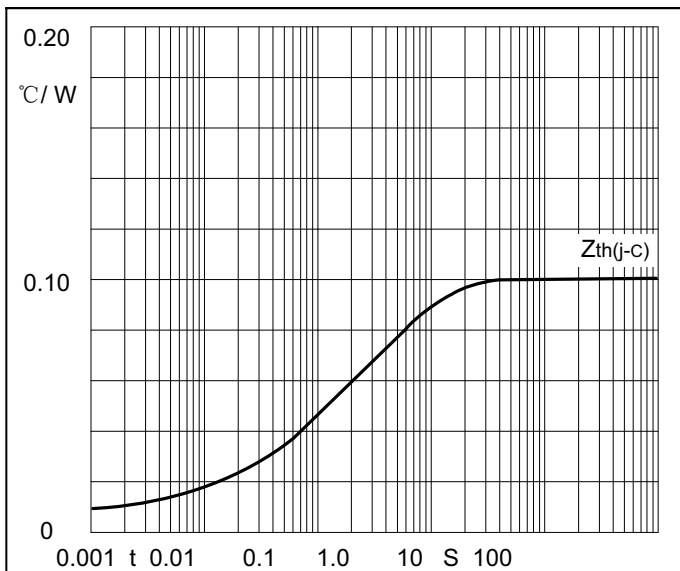


Fig3. Transient thermal impedance

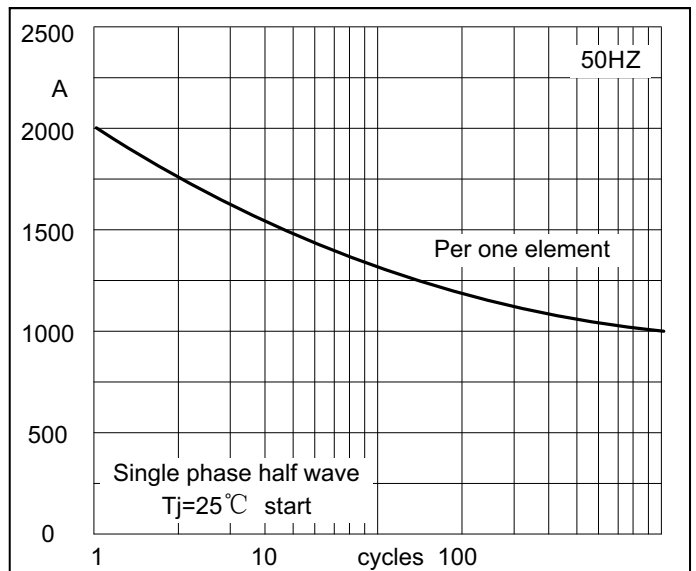


Fig4. Max Non-Repetitive Forward Surge Current

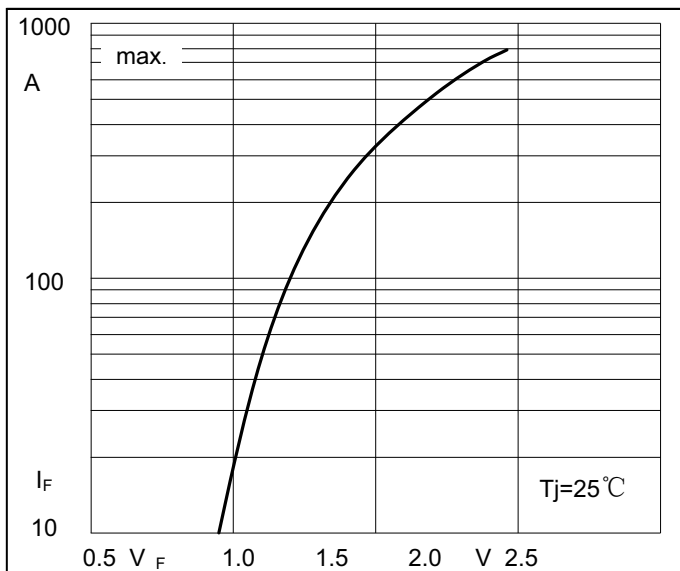


Fig5. Forward Characteristics

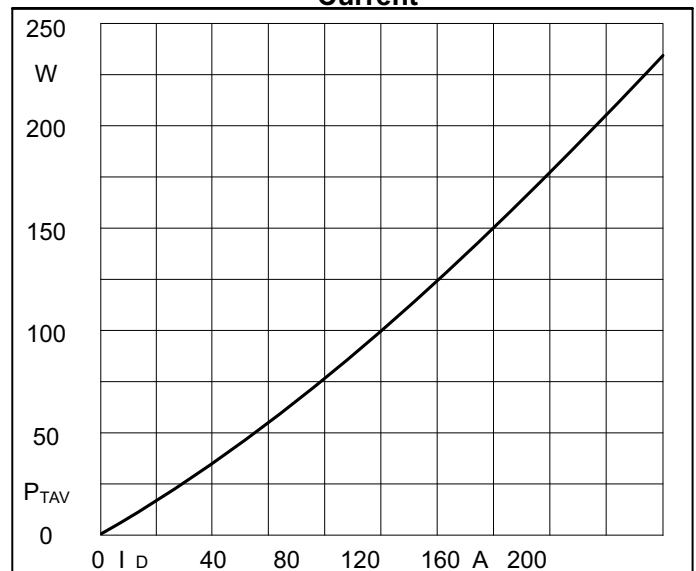


Fig6. SCR Power dissipation

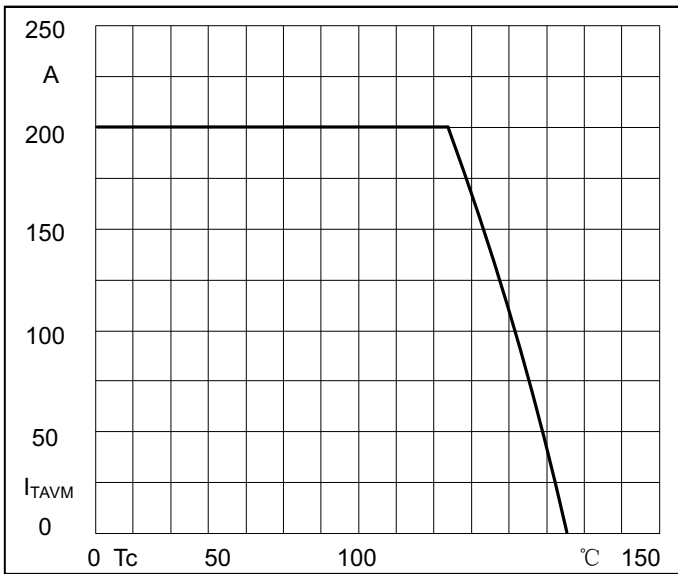


Fig7. SCR Forward Current Derating Curve

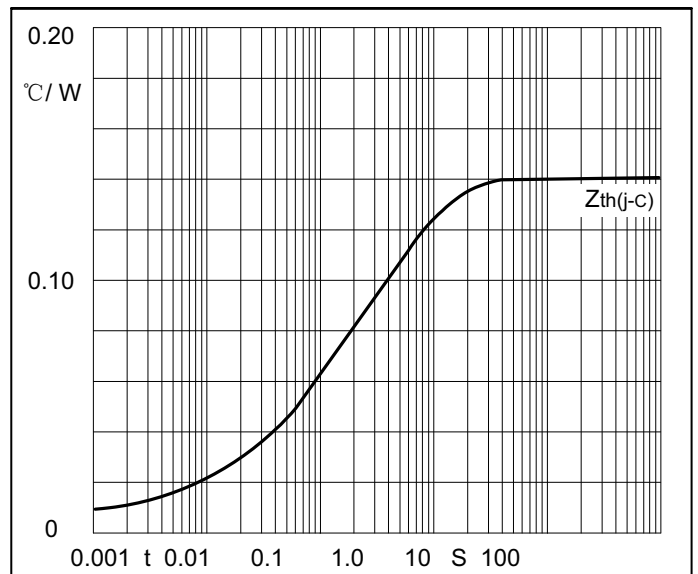


Fig8. SCR Transient thermal impedance

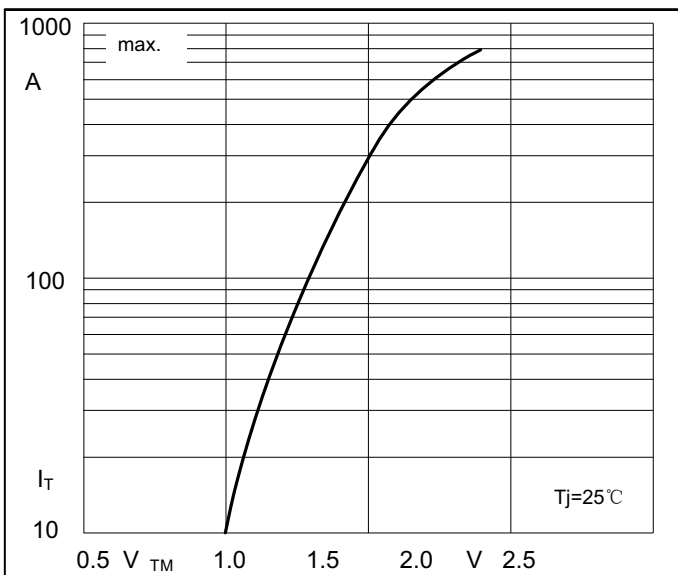


Fig9. SCR Forward Characteristics

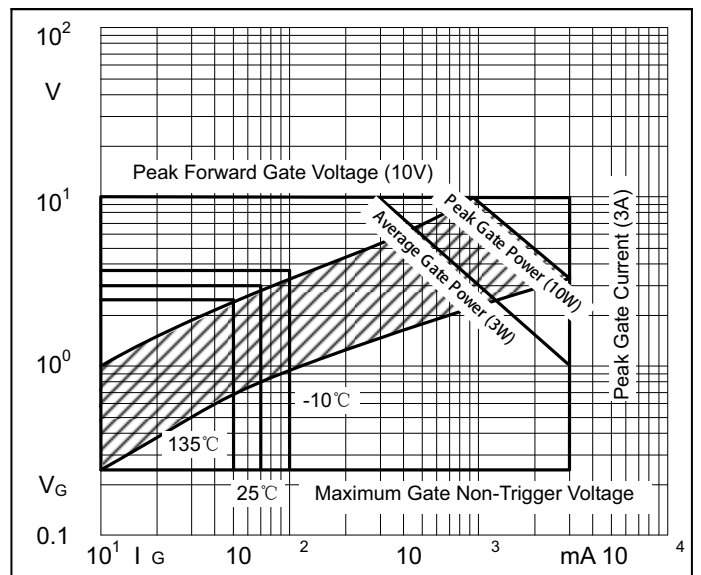
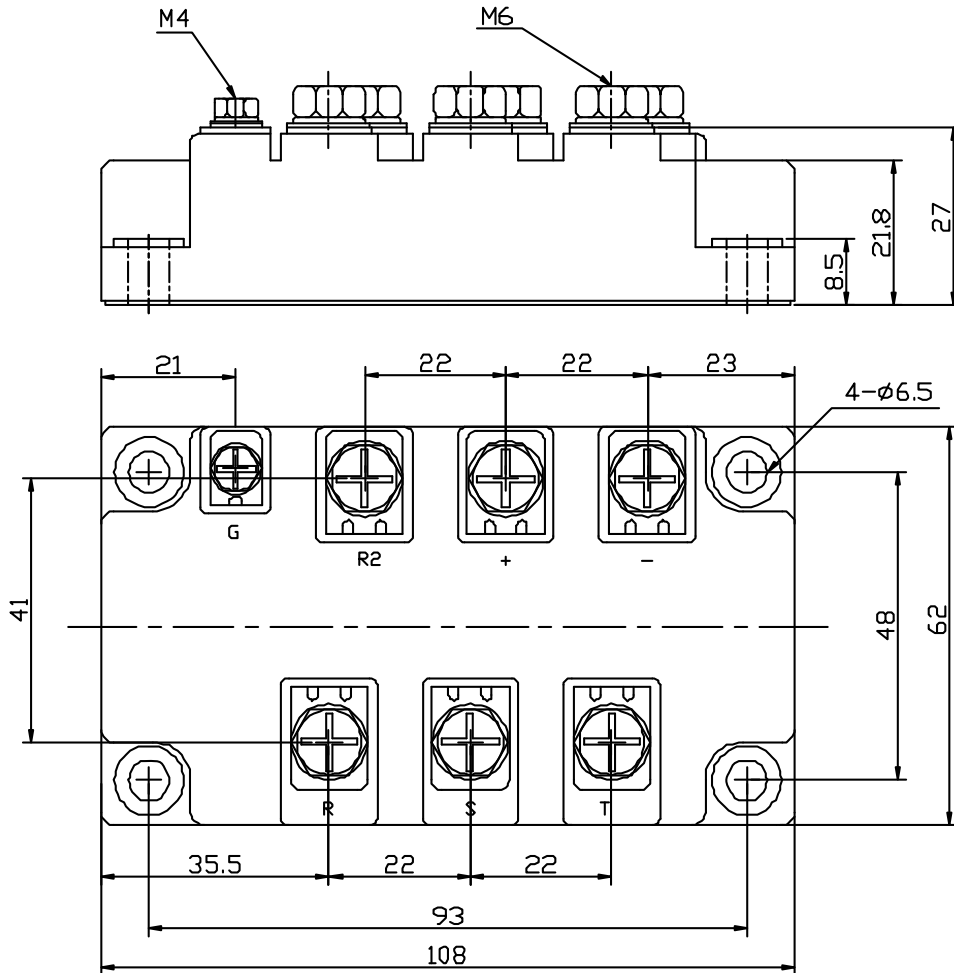


Fig10. Gate trigger Characteristics

## Package Outline Information



Dimensions in mm

