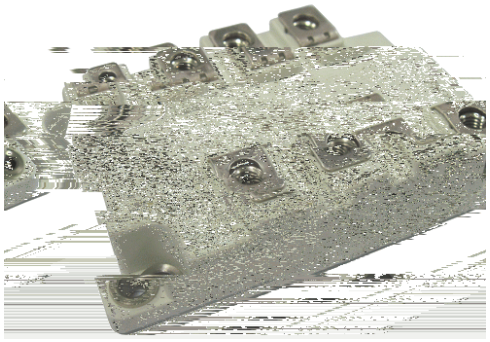
# MT150DT-L2

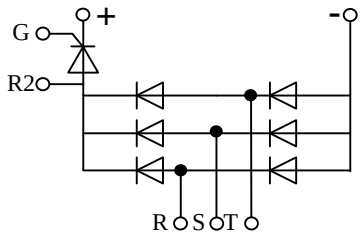
RoHS COMPLIANT



## Three Phase Bridge + Thyristor

**VRRM / VDRM** 800 to 1800V
**IFAV / ITAV** 150A

**Circuit**




**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

UL recognized applied for file no. E360040

### Module Type

| TYPE | VRRM/ VDRM | VRSM |
|---|---|---|
| MT150DT08L2 | 800V | 900V |
| MT150DT12L2 | 1200V | 1300V |
| MT150DT16L2 | 1600V | 1700V |
| MT150DT18L2 | 1800V | 1900V |

### Diode

### Maximum Ratings

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| ID | Output Current(D.C.) | Tc=93 Three phase full wave | 150 | A |
| IFSM | Surge forward current | t=10mS Tvj =45 | 1500 | A |
| $i^2t$ | Circuit Fusing Consideration | | 11250 | $A^2s$ |
| 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±15% | 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) | 0.14 | /W |
| Rth(c-s) | Thermal Impedance, max. | Case to Heat sink | 0.07 | /W |

### Electrical Characteristics

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| VFM | Forward Voltage Drop, max. | T=25 IF =150A | 1.35 | V |
| IRRM | Repetitive Peak Reverse Current, max. | Tvj =25 VRD=VRRM<br>Tvj =150 VRD=VRRM | ≤2<br>≤10 | mA<br>mA |

## Thyristor

## Maximum Ratings

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| $I_{TAV}$ | Average On-State Current | Tc=93 , Single Phase half wave 180° conduction | 150 | A |
| $I_{TSM}$ | Surge On-State Current | TVJ=45 t=10ms (50Hz), sine VR=0 | 1500 | A |
| $i^2t$ | Circuit Fusing Consideration | | 11250 | $A^2s$ |
| Visol | Isolation Breakdown Voltage(R.M.S) | a.c.50HZ;r.m.s.;1 min | 3000 | V |
| Tvj | Operating Junction Temperature | | -40 to +125 | |
| Tstg | Storage Temperature | | -40 to +125 | |
| Mt | Mounting Torque | To terminals(M4) | 2±15% | Nm |
| Mt | | To terminals(M6) | 5±15% | |
| Ms | | To heatsink(M6) | 5±15% | Nm |
| di/dt | Critical Rate of Rise of On-State Current | $T_{VJ}=T_{VJM}$, $V_D=1/2V_{DRM}$ ,$I_G$ =100mA $d_{iG}/d_t$=0.1A/μs | 150 | A/μs |
| dv/dt | Critical Rate of Rise of Off-State Voltage, min. | $T_J=T_{VJM}$,$V_D=2/3V_{DRM}$,linear voltage rise | 500 | V/μs |

## Electrical and Thermal Characteristics

| Symbol | Item | Conditions | Values | | | Units |
|---|---|---|---|---|---|---|
| | | | Min. | Typ. | Max. | |
| $V_{TM}$ | Peak On-State Voltage, max. | T=25 $I_T$ =150A | | | 1.35 | V |

$I_{RRM}/I_{DRM}$

## Performance Curves

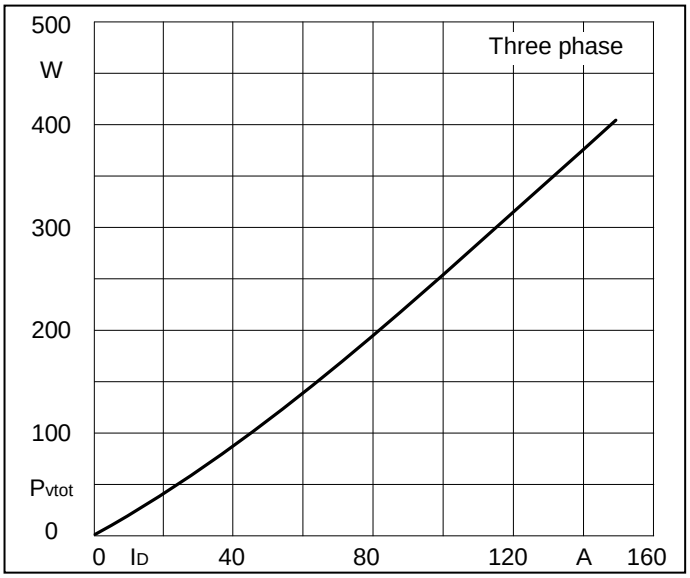



Fig1. Power dissipation

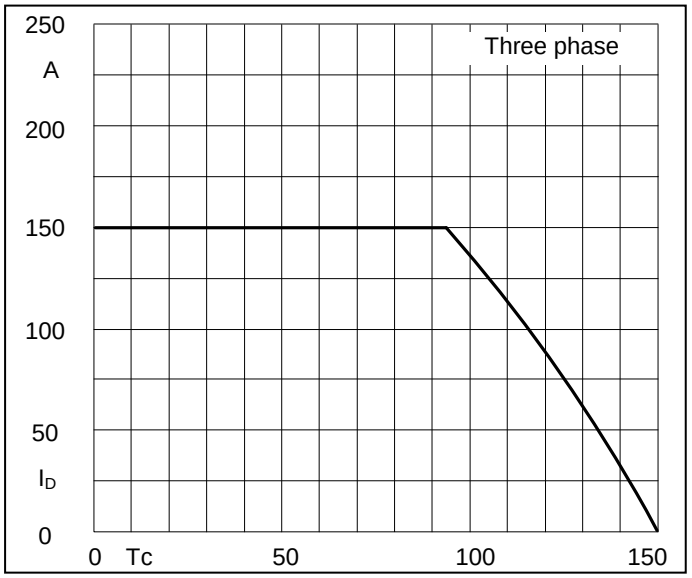



Fig2. Forward Current Derating Curve

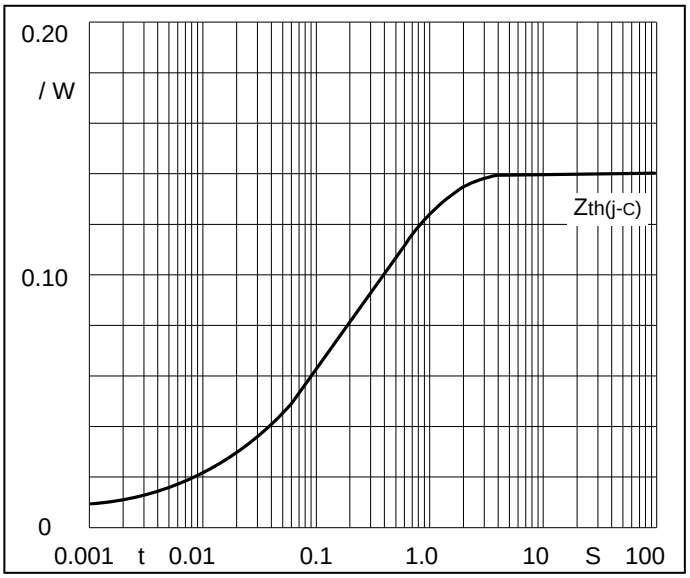



Fig3. Transient thermal impedance

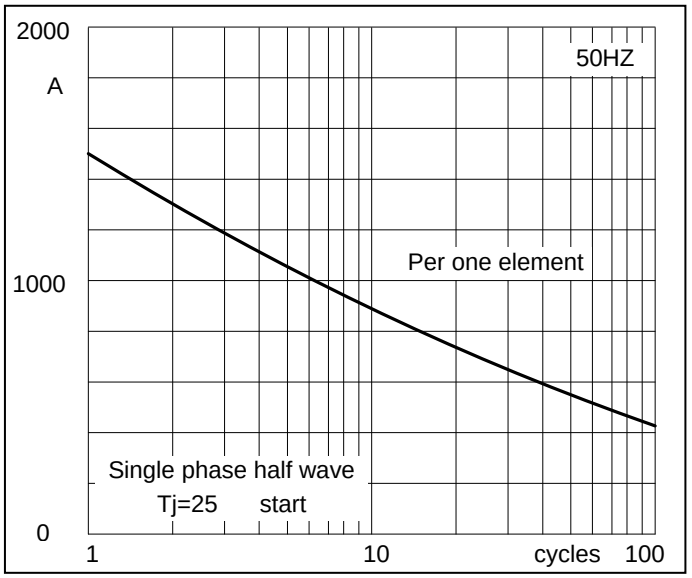



Fig4. Max Non-Repetitive Forward Surge Current

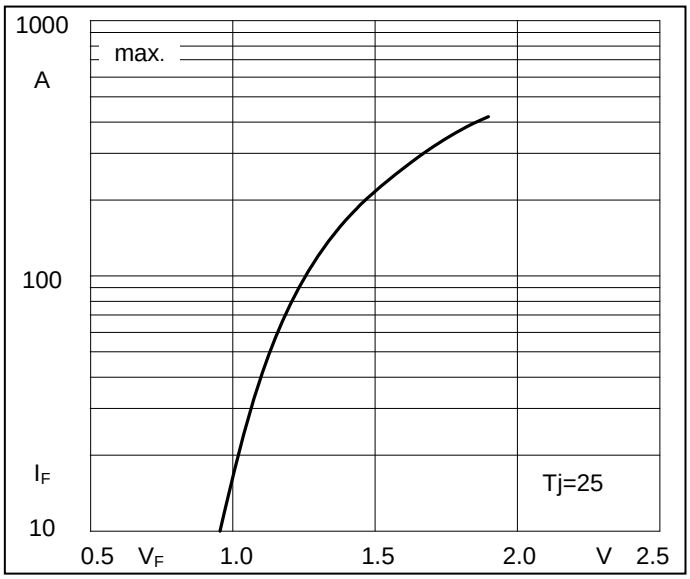



Fig5. Forward Characteristics

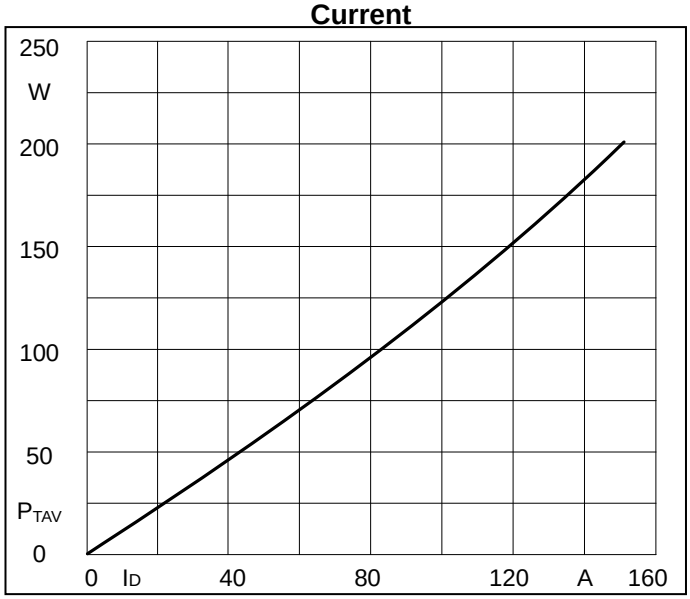



Fig6. SCR Power dissipation