# MT100DT-L1

RoHS COMPLIANT

## Three Phase Bridge + Thyristor

| | |
|---|---|
| **VRRM / VDRM** | 800 to 1800V |
| **IFAV / ITAV** | 100A |

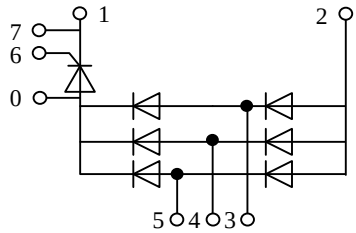
### Features

- Blocking voltage:800 to 1800V
- Three Phase Bridge and a Thyristor
- Isolated Module package

### Applications

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply
- UL recognized applied for file no. E360040

**Circuit**




### Module Type

| TYPE | VRRM / VDRM | VRSM |
|---|---|---|
| MT100DT08L1 | 800V | 900V |
| MT100DT12L1 | 1200V | 1300V |
| MT100DT16L1 | 1600V | 1700V |
| MT100DT18L1 | 1800V | 1900V |

## ◆Diode

### Maximum Ratings

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| ID | Output Current(D.C.) | Tc=100℃ Three phase full wave | 100 | A |
| IFSM | Surge forward current | t=10mS Tvj =45℃ | 1200 | A |
| $i^2t$ | Circuit Fusing Consideration | | 7200 | $A^2s$ |
| 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(M5) | 3±15% | Nm |
| Ms | | To heatsink(M5) | 3±15% | Nm |
| Weight | | Module（Approximately） | 210 | g |

### Thermal Characteristics

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| Rth(j-c) | Thermal Impedance, max. | Junction to Case(TOTAL) | 0.18 | ℃/W |
| Rth(c-s) | Thermal Impedance, max. | Case to Heatsink | 0.10 | ℃/W |

### Electrical Characteristics

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| VFM | Forward Voltage Drop, max. | T=25℃ IF =100A | 1.35 | V |
| IRRM | Repetitive Peak Reverse Current, max. | Tvj =25℃ VRD=VRRM<br>Tvj =150℃ VRD=VRRM | ≤0.5<br>≤6 | mA<br>mA |

## ◆Thyristor

### Maximum Ratings

| Symbol | Item | Conditions | Values | Units |
|---|---|---|---|---|
| $I_{TAV}$ | Average On-State Current | Tc=92℃, Single Phase half wave 180° conduction | 100 | A |
| $I_{TSM}$ | Surge On-State Current | $T_{VJ}$=45℃ t=10ms (50Hz), sine $V_R$=0 | 1200 | A |
| $i^2t$ | Circuit Fusing Consideration | | 7200 | $A^2s$ |
| Visol | Isolation Breakdown Voltage(R.M.S) | a.c.50$H_Z$;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(M5) | 3±15% | Nm |
| Ms | | To heatsink(M5) | 3±15% | Nm |
| di/dt | Critical Rate of Rise of On-State Current | $T_{VJ}$=$T_{VJM}$, $V_D$=1/2$V_{DRM}$ ,$I_G$ =100mA $d_{iG}/d_t$=0.1A/μs | 150 | A/μs |
| dv/dt | Critical Rate of Rise of Off-State Voltage, min. | $T_J$=$T_{VJM}$,$V_D$=2/3$V_{DRM}$,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℃ $I_T$=100A | | | 1.25 | V |
| $I_{RRM}/I_{DRM}$ | Repetitive Peak Reverse Current, max. / Repetitive Peak Off-State Current, max. | $T_{VJ}$=$T_{VJM}$ ,$V_R$=$V_{RRM}$ ,$V_D$ =$V_{DRM}$ | | | 20 | mA |
| $V_{GT}$ | Gate Trigger Voltage, max. | $T_{VJ}$ =25℃ , $V_D$ =6V | | 1 | 3 | V |
| $I_{GT}$ | Gate Trigger Current, typ /max. | $T_{VJ}$ =25℃ , $V_D$ =6V | | 65 | 150 | mA |
| $I_H$ | Hoding Current, typ / max. | $T_{VJ}$ =25℃ , $V_D$ =6V | | 120 | 220 | mA |
| $I_L$ | Iatching Current, typ / max. | $T_{VJ}$ =25℃ , R =33Ω | | 180 | 400 | mA |
| Rth(j-c) | Thermal Impedance, max. | Junction to Case | | | 0.26 | ℃/W |
| Rth(c-s) | Thermal Impedance, max. | Case to Heatsink | | | 0.10 | ℃/W |

## Performance Curves

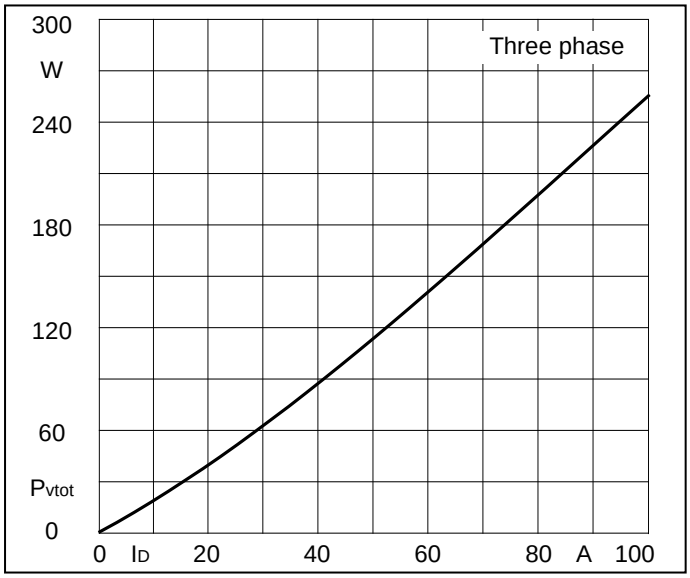



Fig1. Power dissipation

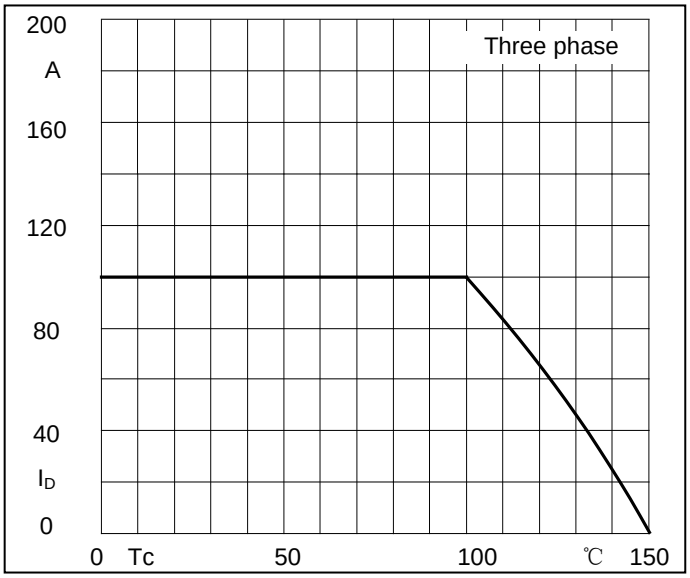



Fig2. Forward Current Derating Curve

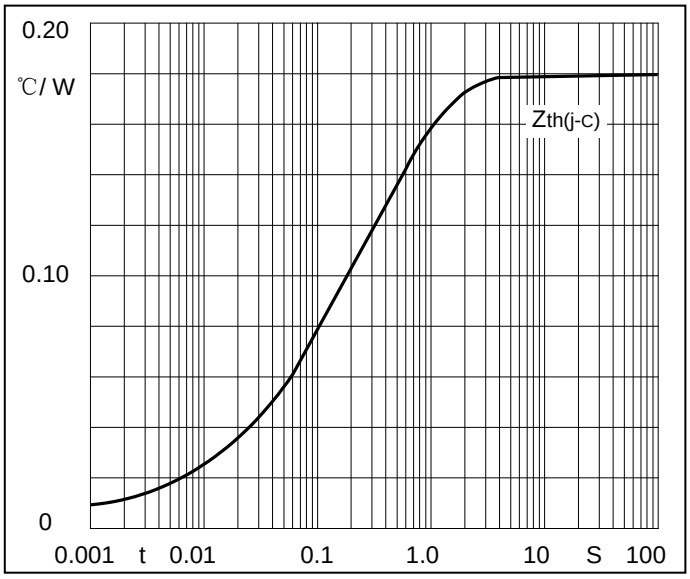



Fig3. Transient thermal impedance

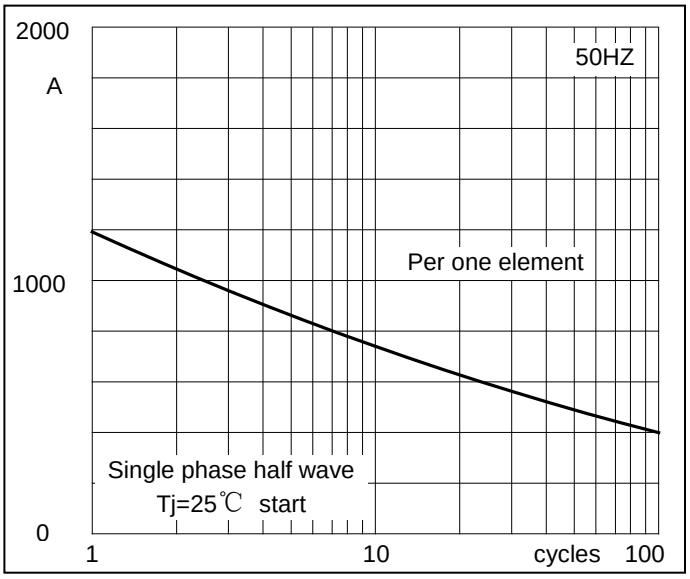



Fig4. Max Non-Repetitive Forward Surge Current

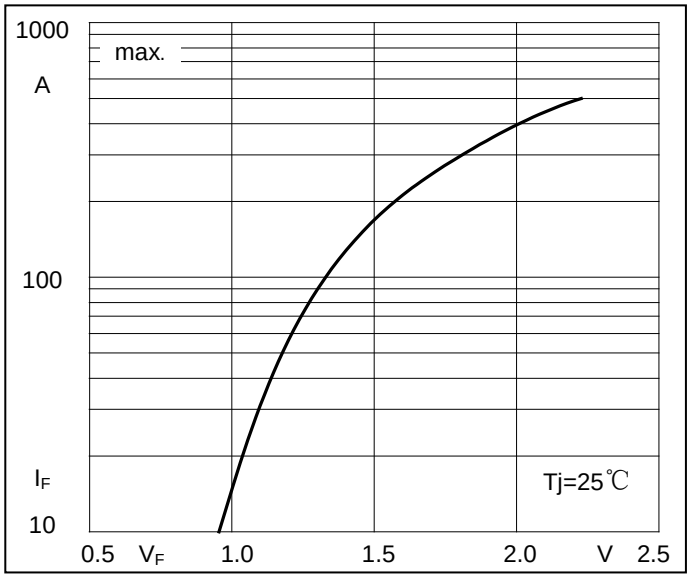



Fig5. Forward Characteristics

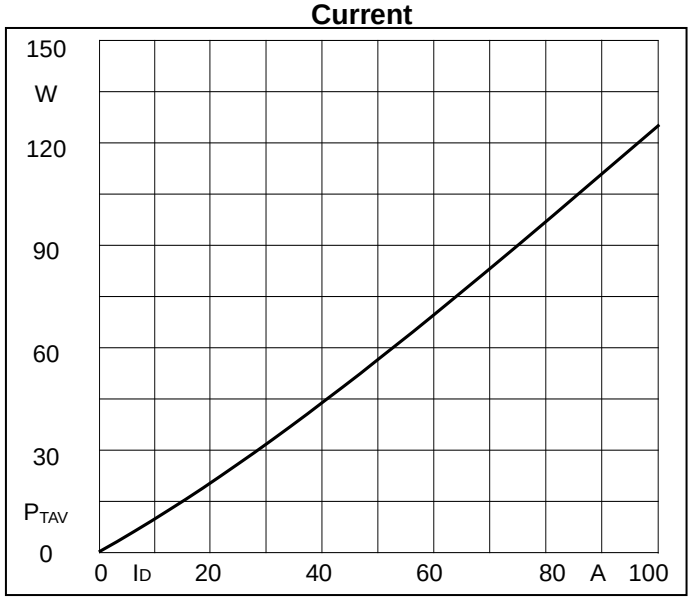



Fig6. SCR Power dissipation

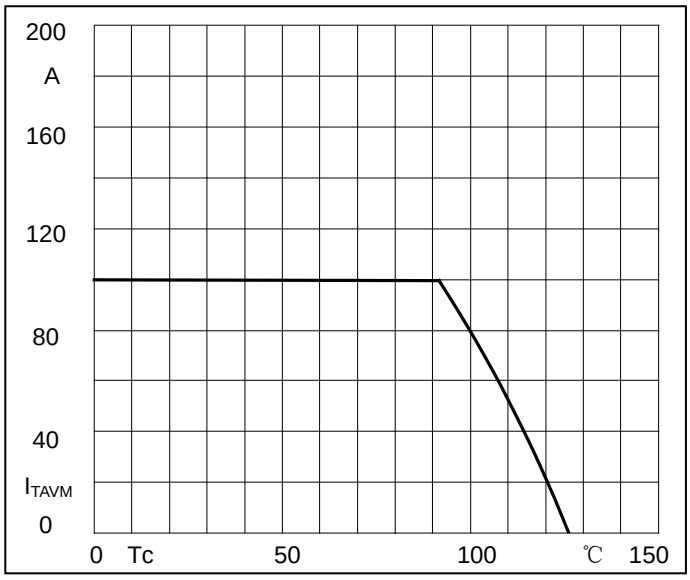



**Fig7. SCR Forward Current Derating Curve**

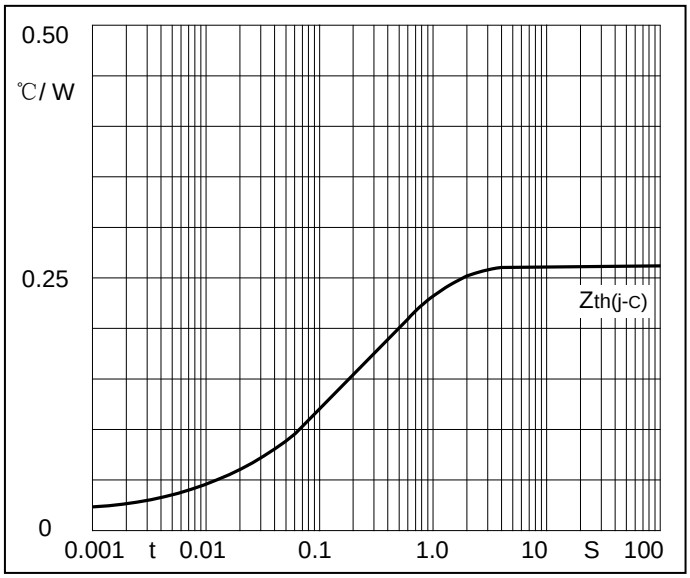



**Fig8. SCR Transient thermal impedance**

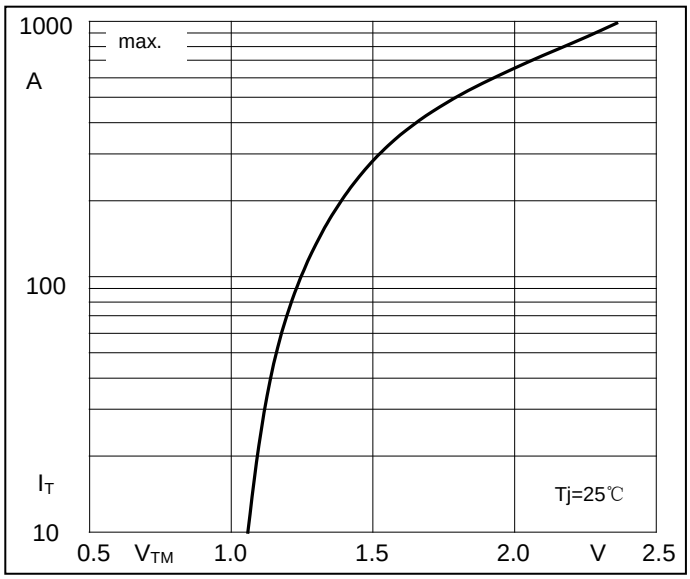



**Fig9. SCR Forward Characteristics**

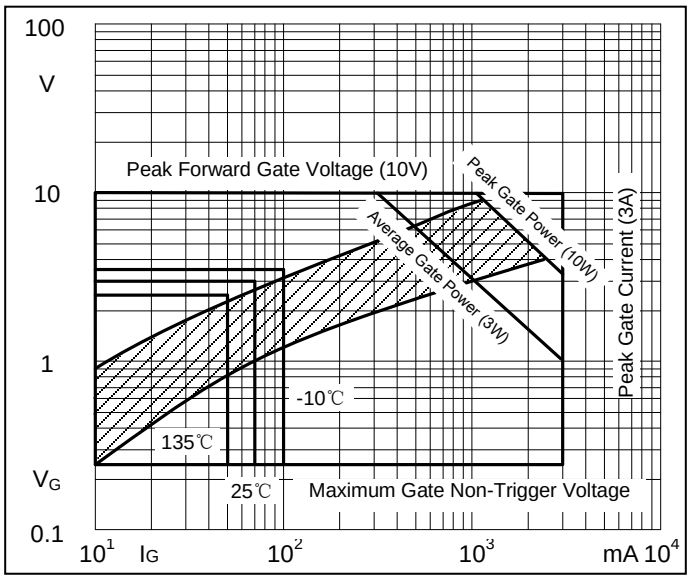
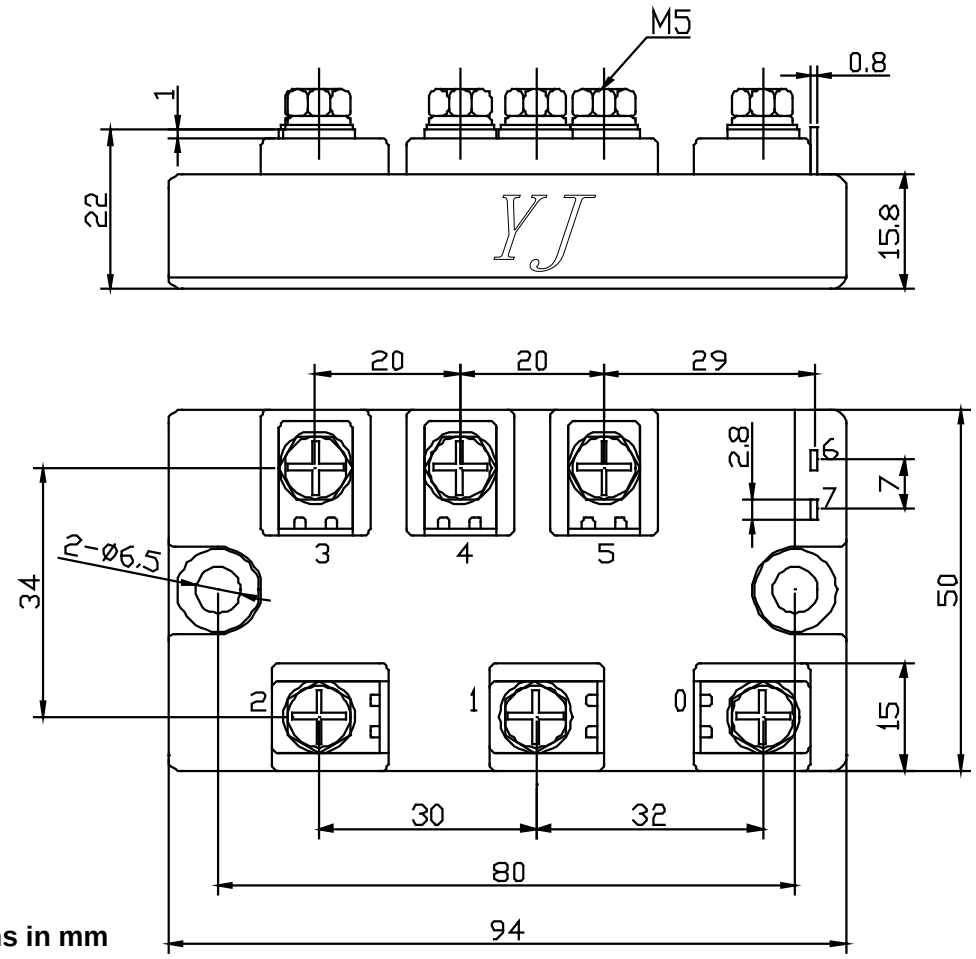



**Fig10. Gate trigger Characteristics**

## Package Outline Information

**CASE: L1**




**Dimensions in mm**

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