

Phase Control Thyristor

multicomp PRO

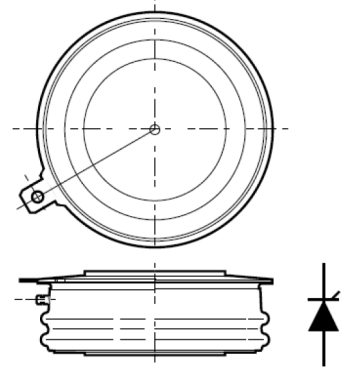


Features

- Double Side Cooling
- High Surge Capability

Applications

- High Power Drives
- High Voltage Power Supplies
- Static Switches



Outline type code: D

Key Parameters

| V _{DRM} | I _{T(AV)} | I _{TSM} | dV/dt* | dI/dt |
|------------------|--------------------|------------------|----------|---------|
| 2400V | 750A | 10000A | 1000V/μs | 200A/μs |

*Higher dV/dt selections available

Voltage Ratings

| Part Number | Repetitive Peak Voltages V _{DRM} and V _{VRRM} V | Conditions |
|------------------------------|---|---|
| MPPCT750D220 MPPCT750D240 | 2200 2400 | T _{vj} = -40°C to +125°C, I _{DRM} = I _{VRRM} = 50mA, V _{DRM} , V _{VRRM} t _p = 10ms, V _{DSM} & V _{VRSM} = V _{DRM} & V _{VRRM} +100V respectively |

Current Ratings

T_{case} = 60°C unless stated otherwise

| Symbol | Parameter | Test Conditions | Max. | Units |
|---------------------------|--------------------------------------|--------------------------|------|-------|
| Double Side Cooled | | | | |
| I _{T(AV)} | Mean on-state current | Half wave resistive load | 750 | A |
| I _{T(RMS)} | RMS value | - | 1180 | |
| I _T | Continuous (direct) on-state current | - | 1060 | |

Surge Ratings

| Symbol | Parameter | Test Conditions | Max. | Units |
|------------------|---|---|------|-------------------|
| I _{TSM} | Surge (non-repetitive) on-state current | 10ms half sine, T _{case} = 125°C V _R = 0 | 10 | kA |
| I ² t | I ² t for fusing | | 0.5 | MA ² s |

Thermal and Mechanical Ratings

| Symbol | Parameter | Test Conditions | | Min. | Max. | Units |
|---------------|---------------------------------------|--------------------------------|----|------|-------|-------|
| $R_{th(j-c)}$ | Thermal resistance – junction to case | Double side cooled | DC | - | 0.035 | °C/W |
| $R_{th(c-h)}$ | Thermal resistance – case to heatsink | Double side cooled | DC | - | 0.01 | °C/W |
| T_{vj} | Virtual junction temperature | Blocking V_{DRM} / V_{RRM} | | - | 125 | °C |
| T_{stg} | Storage temperature range | | | -40 | 140 | °C |
| F_m | Clamping force | | | 8 | 12 | kN |

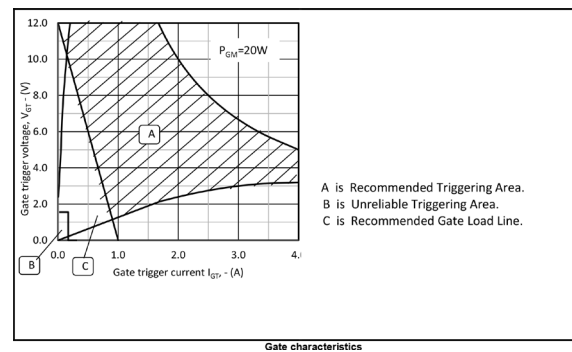
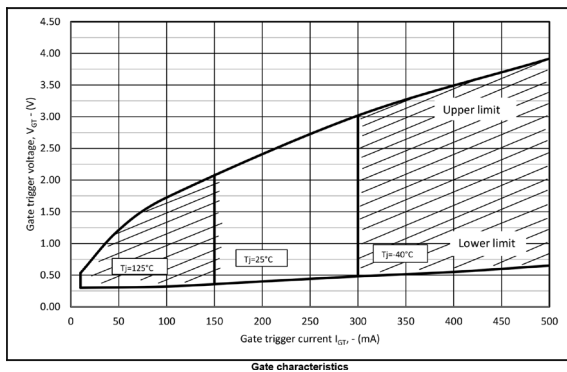
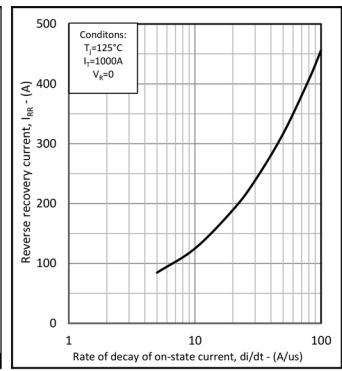
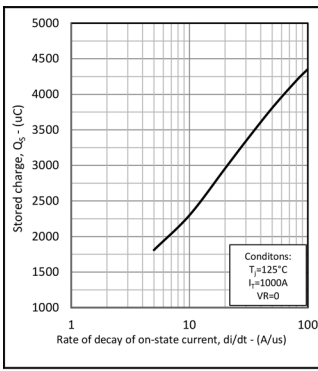
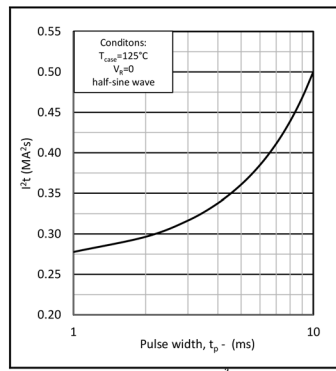
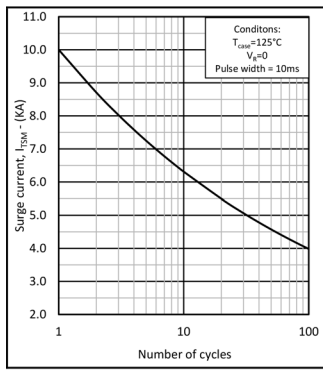
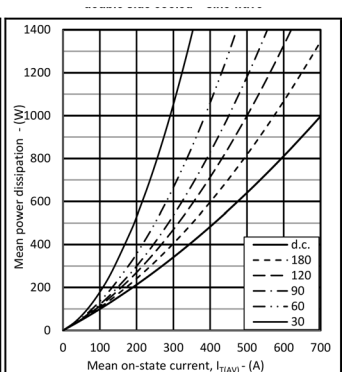
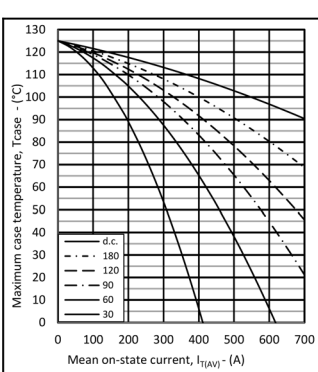
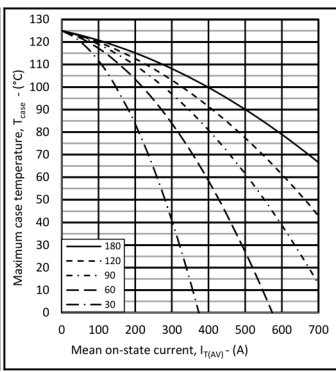
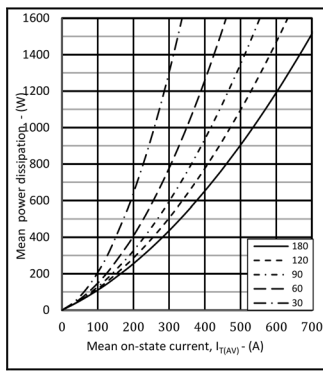
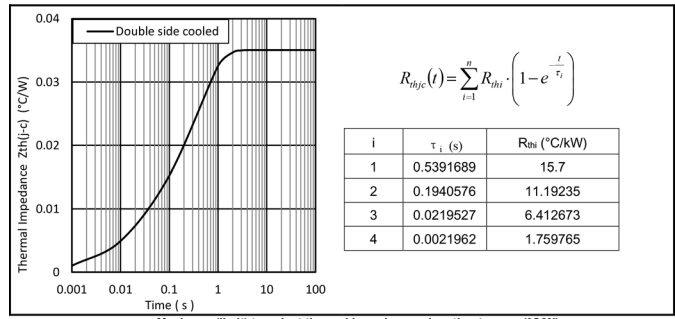
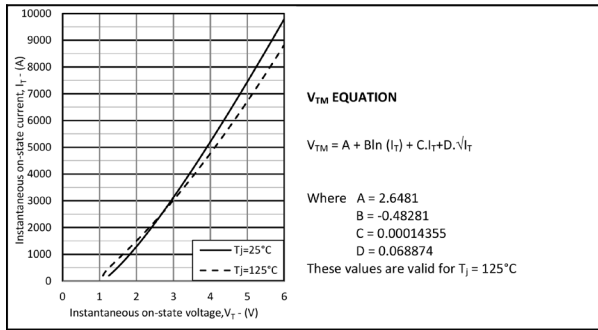
Dynamic Characteristics

| Symbol | Parameter | Test Conditions | | Min. | Max. | Units |
|-------------------|---|---|-----------------|------|------|------------------|
| I_{RRM}/I_{DRM} | Peak reverse and off-state current | At V_{RRM}/V_{DRM} , $T_{case} = 125^\circ\text{C}$ | | - | 50 | mA |
| dV/dt | Max. linear rate of rise of off-state voltage | To 67% V_{DRM} , $T_j = 125^\circ\text{C}$, gate open | | 1000 | - | V/ μs |
| di/dt | Rate of rise of on-state current | From 67% V_{DRM} to 1000A Gate source 30V, 10 Ω , $t_r < 0.5\text{ms}$, $T_j = 125^\circ\text{C}$ | Repetitive 50Hz | - | 200 | A/ μs |
| | | | Non-repetitive | - | 1000 | A/ μs |
| V_T | On-state voltage | $I_T = 1500\text{A}$, $T_{case} = 125^\circ\text{C}$ | | - | 2 | V |
| $V_{T(RO)}$ | Threshold voltage | $T_{case} = 125^\circ\text{C}$ | | - | 0.92 | V |
| r_T | On-state slope resistance | $T_{case} = 125^\circ\text{C}$ | | - | 0.72 | m Ω |
| t_{gd} | Delay time | $V_D = 67\% V_{DRM}$, gate source 30V, 10 Ω $t_r = 0.5\mu\text{s}$, $T_j = 25^\circ\text{C}$ | | - | 3 | μs |
| t_q | Turn-off time | $T_j = 125^\circ\text{C}$, $V_R = 100\text{V}$, $di/dt = 10\text{A}/\mu\text{s}$, $dV_{DR}/dt = 20\text{V}/\mu\text{s}$ linear to 67% V_{DRM} | | - | 150 | μs |
| Q_S | Stored charge | $I_T = 1000\text{A}$, $t_p = 1000\mu\text{s}$, $T_j = 125^\circ\text{C}$, | | - | 2300 | μC |
| I_{RR} | Reverse recovery current | $di/dt = 10\text{A}/\mu\text{s}$, | | - | 125 | A |
| I_L | Latching current | $T_j = 25^\circ\text{C}$, | | - | 1 | A |
| I_H | Holding current | $T_j = 25^\circ\text{C}$, | | - | 200 | mA |

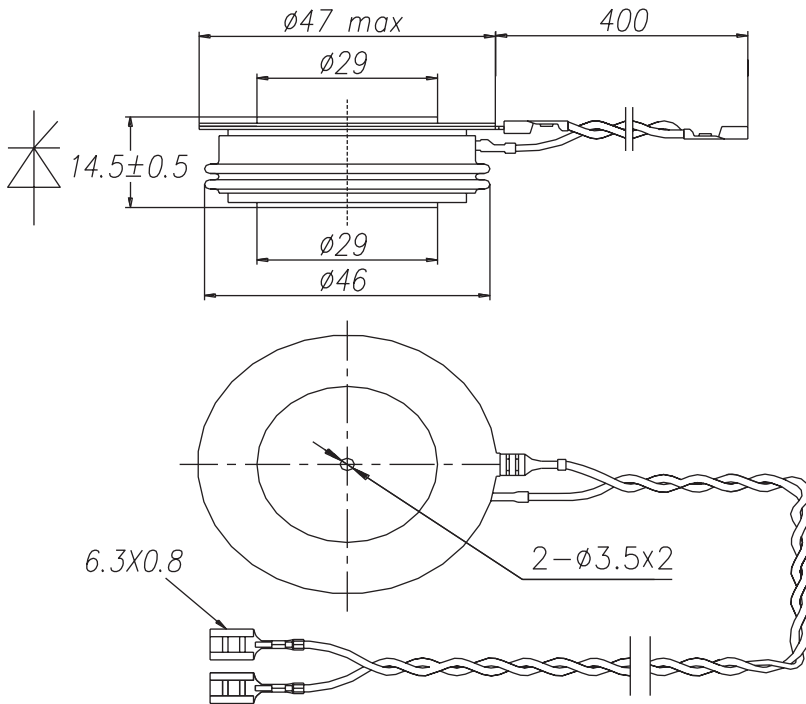
Gate Trigger Characteristics and Ratings

| Symbol | Parameter | Test Conditions | Max. | Units |
|----------|--------------------------|---|------|-------|
| V_{GT} | Gate trigger voltage | $V_{DRM} = 5\text{V}$, $T_{case} = 25^\circ\text{C}$ | 3 | V |
| V_{GD} | Gate non-trigger voltage | At 40% V_{DRM} , $T_{case} = 125^\circ\text{C}$ | 0.3 | V |
| I_{GT} | Gate trigger current | $V_{DRM} = 5\text{V}$, $T_{case} = 25^\circ\text{C}$ | 300 | mA |
| I_{GD} | Gate non-trigger current | At 40% V_{DRM} , $T_{case} = 125^\circ\text{C}$ | 20 | mA |

Curves



Diagram



Package outline type code: D

Part Number Table

| Description | Part Number |
|--|--------------|
| Phase Control Thyristor Module, 2200V, 780A, D Case Code | MPPCT750D220 |
| Phase Control Thyristor Module, 2400V, 750A, D Case Code | MPPCT750D240 |

Dimensions : Millimetres

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