

DCR7610H28

Phase Control Thyristor

DS6062-1 April 2011 (LN28302)

FEATURES

- Double Side Cooling
- High Surge Capability

VDRM 2800 V

KEY PARAMETERS

| ▼ DRM | 2000 V |
|--------------------|-----------|
| I _{T(AV)} | 7610 A |
| ITSM | 105000 A |
| dV/dt* | 1000 V/µs |
| dl/dt | 200 A/µs |
| | |

APPLICATIONS

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

VOLTAGE RATINGS

| Part and Ordering Number | Repetitive Peak Voltages V _{DRM} and V _{RRM} V | Conditions |
|--|---|--|
| DCR7610H28 DCR7610H26 DCR7610H24 DCR7610H22 | 2800 2600 2400 2200 | $\begin{array}{l} T_{vj} = -40^{\circ}\text{C to } 125^{\circ}\text{C}, \\ I_{DRM} = I_{RRM} = 700\text{mA}, \\ V_{DRM}, V_{RRM} t_p = 10\text{ms}, \\ V_{DSM} \& V_{RSM} = \\ V_{DRM} \& V_{RRM} + 100V \\ respectively \end{array}$ |

Lower voltage grades available.

ORDERING INFORMATION

When ordering, select the required part number shown in the Voltage Ratings selection table.

For example:

DCR7610H28

Note: Please use the complete part number when ordering and quote this number in any future correspondence relating to your order.

* Higher dV/dt selections available



Fig. 1 Package outline



CURRENT RATINGS

T_{case} = 60°C unless stated otherwise

| Symbol | Parameter | Test Conditions | Max. | Units |
|---------------------|--------------------------------------|--------------------------|-------|-------|
| Double Si | de Cooled | | | |
| I _{T(AV)} | Mean on-state current | Half wave resistive load | 7610 | А |
| I _{T(RMS)} | RMS value | - | 11950 | А |
| Ι _Τ | Continuous (direct) on-state current | - | 10760 | А |

SURGE RATINGS

| Symbol | Parameter | Test Conditions | Max. | Units |
|------------------|---|---|-------|-------------------|
| I _{TSM} | Surge (non-repetitive) on-state current | 10ms half sine, T _{case} = 125°C | 105.0 | kA |
| l ² t | I ² t for fusing | V _R = 0 | 55.13 | 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 | - | 0.004 | °C/W |
| R _{th(c-h)} | Thermal resistance – case to heatsink | Double side cooled | DC | - | 0.0008 | °C/W |
| T _{vj} | Virtual junction temperature | Blocking V _{DRM} / _{VRRM} | | -40 | 125 | °C |
| T _{stg} | Storage temperature range | | | -40 | 140 | °C |
| F _m | Clamping force | | | 110 | 130 | 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°C | At V _{RRM} /V _{DRM} , T _{case} = 125°C | | 700 | mA |
| dV/dt | Max. linear rate of rise of off-state voltage | To 67% V _{DRM} , T _j = 125°C, g | ate open | 1000 | - | V/µs |
| dl/dt | Rate of rise of on-state current | From 67% V _{DRM} to 5000A | Repetitive 50Hz | - | 200 | A/µs |
| | | Gate source 30V, 10Ω , | Non-repetitive | - | 1000 | A/µs |
| | | t _r < 0.5µs, T _j = 125°C | | | | |
| VT | On-state voltage | I _T = 6000A, T _{case} = 125°C | | | 1.19 | V |
| $V_{T(TO)}$ | Threshold voltage | T _{case} = 125°C | | - | 0.88 | V |
| r _T | On-state slope resistance | T _{case} = 125°C | | - | 0.052 | mΩ |
| t _{gd} | Delay time | V_D = 67% V_{DRM} , gate source 30V, 10 Ω | | - | 3.0 | μs |
| | | t _r = 0.5μs, Τ _j = 25°C | | | | |
| tq | Turn-off time | T _j = 125°C, V _R = 100V, dl/dt = 1.5A/µs, | | - | 800 | μs |
| | | $dV_{DR}/dt = 20V/\mu s$ linear to 67% V_{DRM} | | | | |
| Qs | Stored charge | I _T = 2500A, tp = 1000us,T _j = 125°C, dI/dt =1.5A/μs, | | - - | 5000 | μC |
| ΙL | Latching current | $T_j = 25^{\circ}C,$ | | - | 1 | А |
| Ι _Η | Holding current | T _j = 25°C, | | - | 200 | mA |

GATE TRIGGER CHARACTERISTICS AND RATINGS

| Symbol | Parameter | Test Conditions | Max. | Units |
|-----------------|--------------------------|--|------|-------|
| V _{GT} | Gate trigger voltage | V _{DRM} = 5V, T _{case} = 25°C | 2.6 | V |
| V_{GD} | Gate non-trigger voltage | At 40% V _{DRM,} T _{case} = 125°C | TBD | V |
| I _{GT} | Gate trigger current | V _{DRM} = 5V, T _{case} = 25°C | 400 | mA |
| I _{GD} | Gate non-trigger current | At 40% V _{DRM,} T _{case} = 125°C | TBD | mA |



CURVES



Fig.2 Maximum & minimum on-state characteristics



Fig.3 Maximum (limit) transient thermal impedance – junction to case (°C/W)





double side cooled - rectangular wave







Fig.10 Gate characteristics

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PACKAGE DETAILS

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Fig.12 Package outline



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