

Supersedes September 1995 version, DS4064 - 2.2

DS4084 - 2.3 March 1998

APPLICATIONS

- Rectification.
- Freewheel Diode.
- DC Motor Control.
- Power Supplies.
- Welding.
- Battery Chargers.

KEY PARAMETERS

| | |
|-------------|--------------|
| V_{RRM} | 2500V |
| $I_{F(AV)}$ | 180A |
| I_{FSM} | 2200A |

FEATURES

- High Surge Capability.

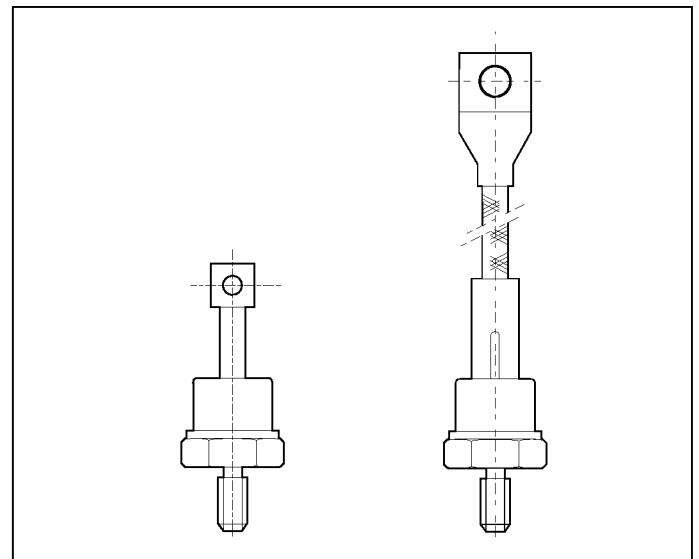
VOLTAGE RATINGS

| Type Number | Repetitive Peak Reverse Voltage V_{RRM} V | Conditions |
|-------------------|---|----------------------------|
| SV10 25 M or K(R) | 2500 | $V_{RSM} = V_{RRM} + 100V$ |
| SV10 20 M or K(R) | 2000 | |
| SV10 16 M or K(R) | 1600 | |

Lower voltage grades available.

M for M12 thread. K for 1/2" - 20UNF thread, R for reverse polarity.

Add C to type number for DO8C package.



Outline type codes: DO8C and DO8.
See package outlines for further information.

CURRENT RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|---------------------------|-------------------------------------|---|------|-------|
| Single Side Cooled | | | | |
| $I_{F(AV)}$ | Mean forward current | Half wave resistive load, $T_{case} = 100^{\circ}C$ | 180 | A |
| $I_{F(RMS)}$ | RMS value | $T_{case} = 100^{\circ}C$ | 283 | A |
| I_F | Continuous (direct) forward current | $T_{case} = 100^{\circ}C$ | 233 | A |

SV10

SURGE RATINGS

| Symbol | Parameter | Conditions | Max. | Units |
|-----------|--|---|--------------------|------------------|
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 175^{\circ}C$ | 1.76 | kA |
| I^2t | I^2t for fusing | $V_R = 50\% V_{RRM}$ - 1/4 sine | 14.9×10^3 | A ² s |
| I_{FSM} | Surge (non-repetitive) forward current | 10ms half sine; $T_{case} = 175^{\circ}C$ | 2.2 | kA |
| I^2t | I^2t for fusing | $V_R = 0$ | 24.0×10^3 | A ² s |

THERMAL AND MECHANICAL DATA

| Symbol | Parameter | Conditions | Min. | Max. | Units |
|---------------|---------------------------------------|---|------|------|---------------|
| $R_{th(j-c)}$ | Thermal resistance - junction to case | dc | - | 0.23 | $^{\circ}C/W$ |
| $R_{th(c-h)}$ | Thermal resistance - case to heatsink | Mounting torque 15.0Nm with mounting compound | - | 0.08 | $^{\circ}C/W$ |
| T_{vj} | Virtual junction temperature | On-state (conducting) | - | 175 | $^{\circ}C$ |
| | | Reverse (blocking) | - | 175 | $^{\circ}C$ |
| T_{stg} | Storage temperature range | | -55 | 200 | $^{\circ}C$ |
| - | Mounting Torque | | 12.0 | 15.0 | Nm |

CHARACTERISTICS

| Symbol | Parameter | Conditions | Typ. | Max. | Units |
|-----------|-----------------------|--|------|------|------------|
| V_{FM} | Forward voltage | At 300A peak, $T_{case} = 25^{\circ}C$ | - | 1.5 | V |
| I_{RRM} | Peak reverse current | At V_{RRM} , $T_{case} = 175^{\circ}C$ | - | 20 | mA |
| Q_S | Total stored charge | $I_F = 100A$, $dI_{RR}/dt = 20A/\mu s$, $T_{case} = 25^{\circ}C$ | 300* | - | μC |
| I_{RM} | Peak recovery current | | 100* | - | A |
| t_{rr} | reverse recovery time | | 6.5* | - | μs |
| V_{TO} | Threshold voltage | At $T_{vj} = 175^{\circ}C$ | - | 1.1 | V |
| r_T | Slope resistance | At $T_{vj} = 175^{\circ}C$ | - | 1.3 | m Ω |

*Typical values.

CURVES

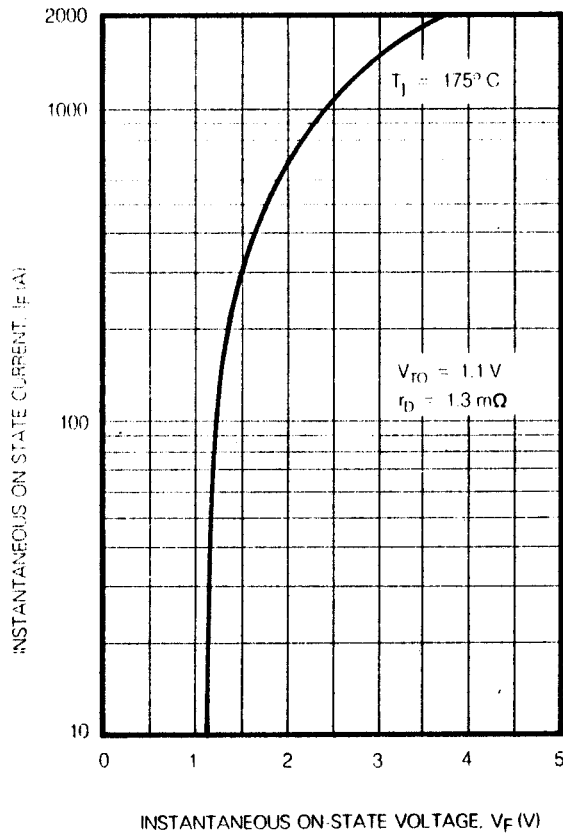


FIG. 1 MAXIMUM (LIMIT) FORWARD CONDUCTION CHARACTERISTIC

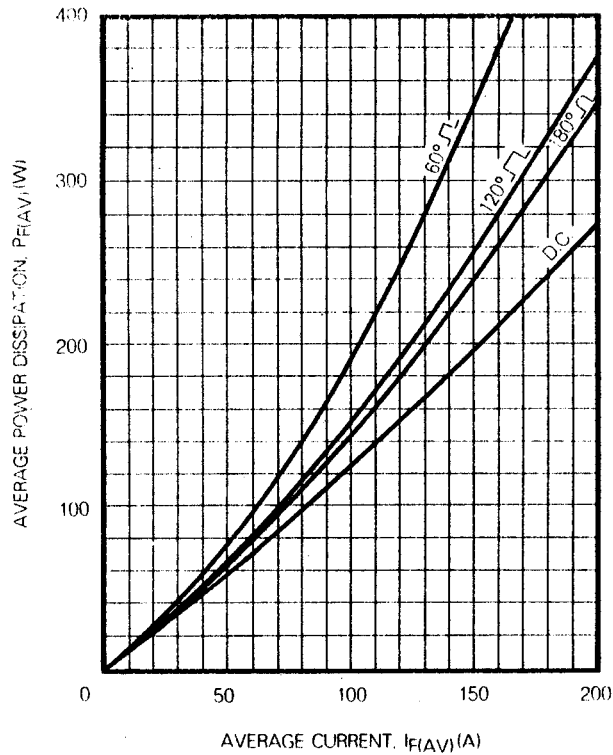


FIG. 2 MAXIMUM FORWARD POWER DISSIPATION

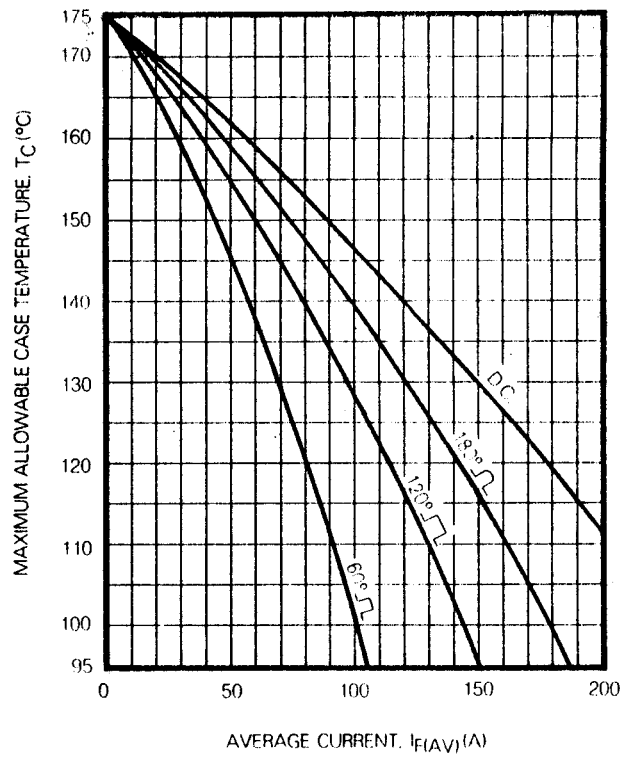


FIG. 3 MAXIMUM ALLOWABLE CASE TEMPERATURE

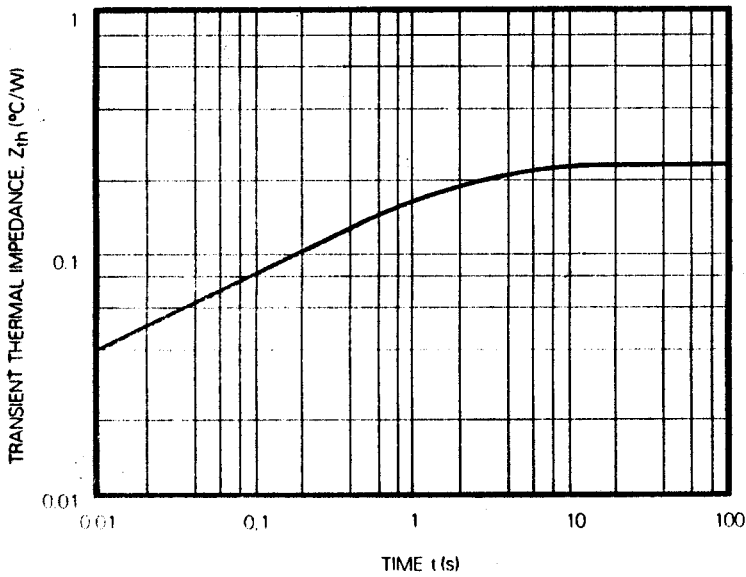


FIG. 4 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE

| Conduction angle | Effective thermal Resistance (°C/W) Junction to case | |
|------------------|---|-------------|
| | Sinusoidal | Rectangular |
| 180° | 0.248 | 0.276 |
| 120° | 0.258 | 0.311 |
| 60° | 0.299 | 0.391 |

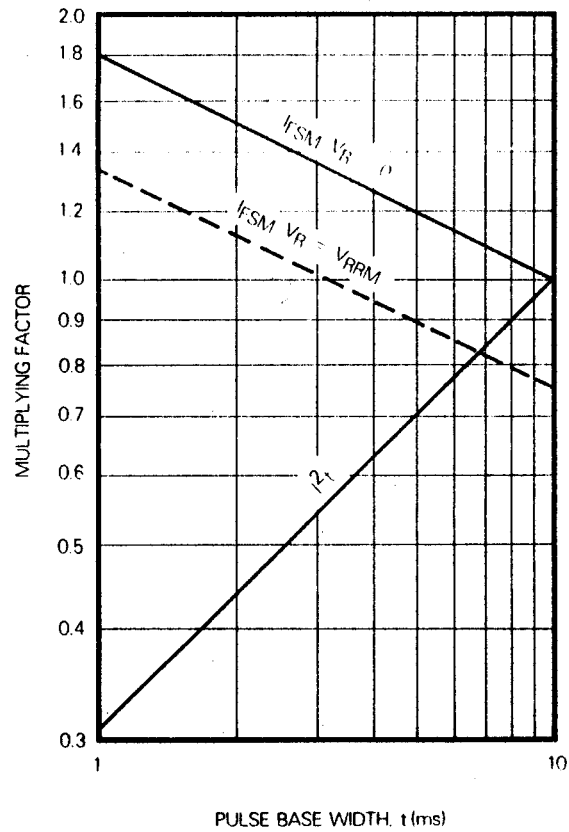


FIG. 5 MULTIPLYING FACTOR FOR NON-REPETITIVE SUB-CYCLE FORWARD CURRENT AND I^2t RATING

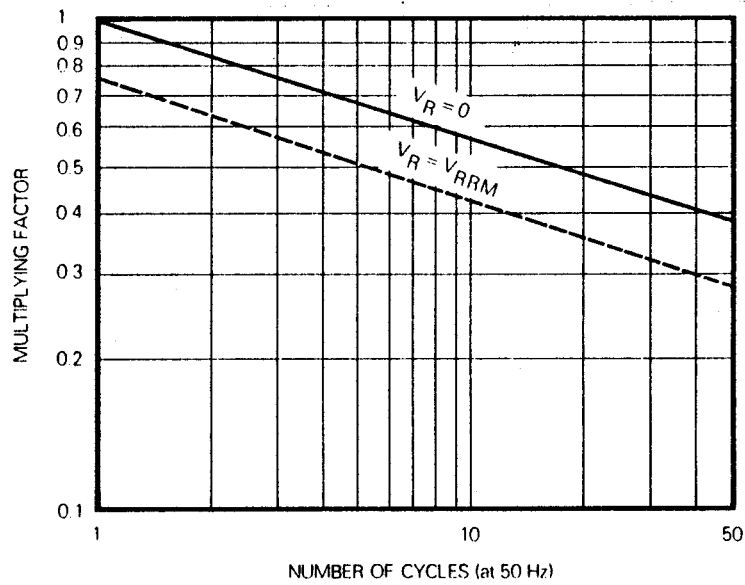
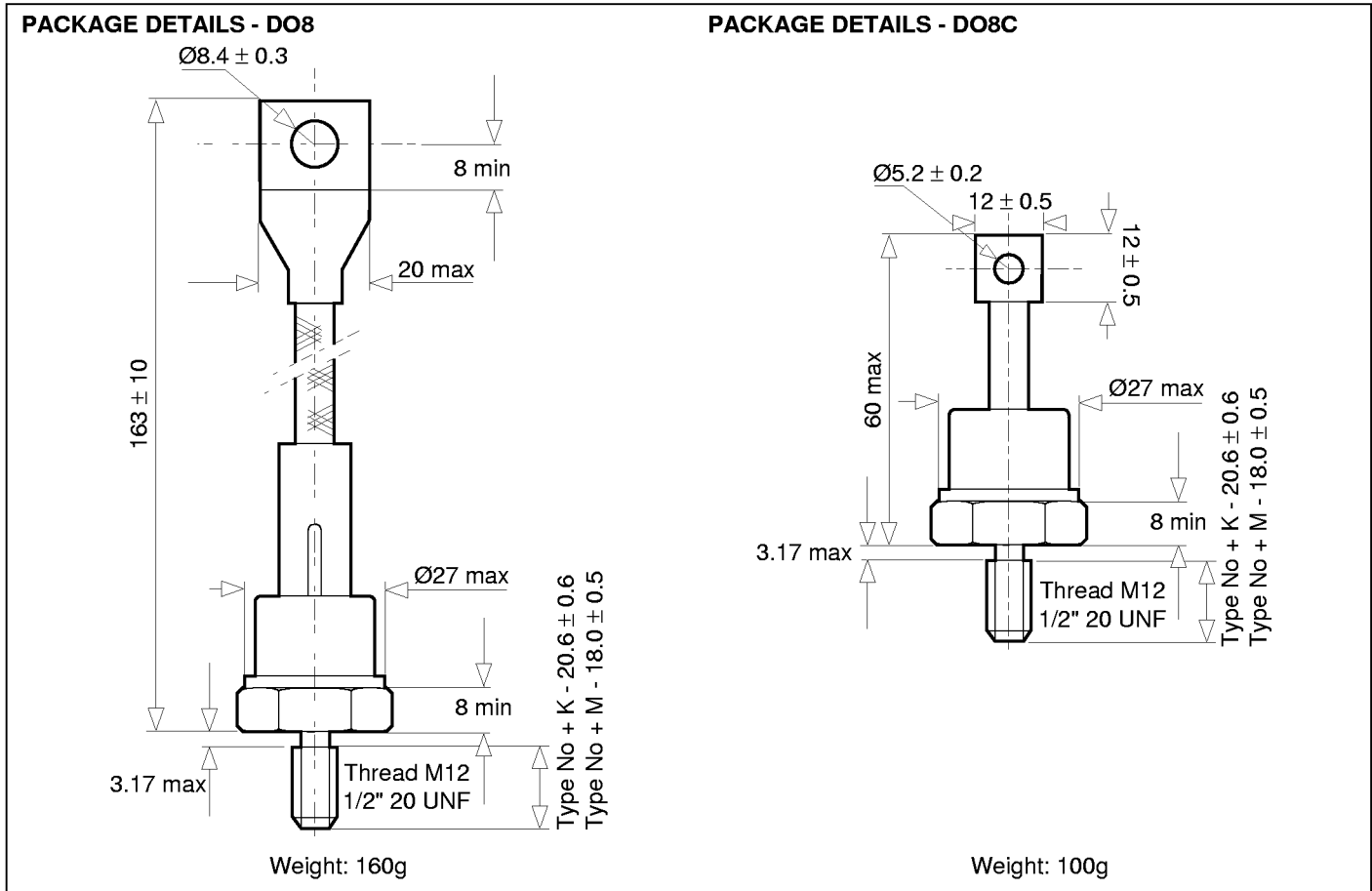


FIG. 6 MULTIPLYING FACTOR FOR NON-REPETITIVE FORWARD CURRENT

SV10

PACKAGE OUTLINES - DO8

For further package information, please contact your local Customer Service Centre. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



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