

Supersedes September 1995 version, DS4085 - 2.2

DS4085 - 2.3 March 1998

### APPLICATIONS

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

### KEY PARAMETERS

$V_{RRM}$	<b>2000V</b>
$I_{F(AV)}$	<b>220A</b>
$I_{FSM}$	<b>4000A</b>

### FEATURES

- High Surge Capability.

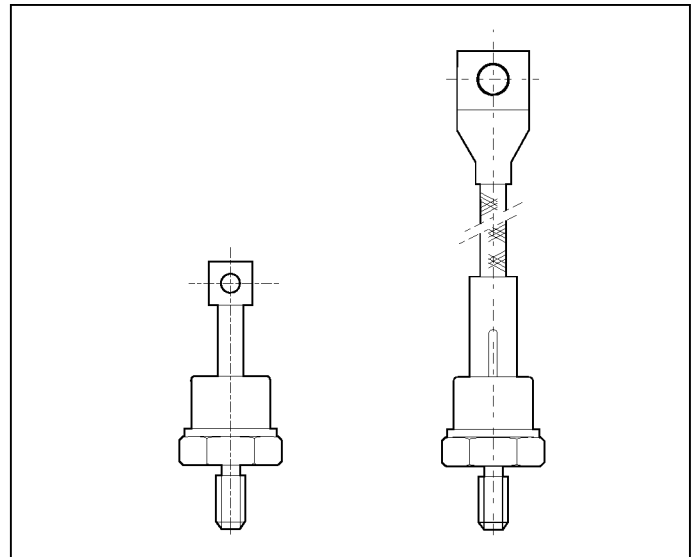
### VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage $V_{RRM}$ V	Conditions
SV20 20 M or K(R)	2000	$V_{RSM} = V_{RRM} + 100V$
SV20 14 M or K(R)	1400	
SV20 10 M or K(R)	1000	
SV20 06 M or K(R)	600	

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 Turn to page 6 for further information.

### CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
<b>Single Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	220	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	350	A
$I_F$	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	297	A

## SV20

### SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}C$	3.2	kA
$I^2t$	$I^2t$ for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	$51.2 \times 10^3$	A <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 175^{\circ}C$	4.0	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	$80.0 \times 10^3$	A <sup>2</sup> 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	Forward (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 600A peak, $T_{case} = 25^{\circ}C$	-	1.4	V
$I_{RRM}$	Peak reverse current	At $V_{RRM}$ , $T_{case} = 175^{\circ}C$	-	20	mA
$Q_S$	Total stored charge	$I_F = 100A$ , $dI_{RR}/dt = 20A/\mu s$ , $T_{case} = 25^{\circ}C$	200*	-	$\mu C$
$I_{RM}$	Peak recovery current		70*	-	A
$t_{rr}$	reverse recovery time		5.5*	-	$\mu s$
$V_{TO}$	Threshold voltage	At $T_{vj} = 175^{\circ}C$	-	0.8	V
$r_T$	Slope resistance	At $T_{vj} = 175^{\circ}C$	-	1.0	m $\Omega$

\*Typical values.

CURVES

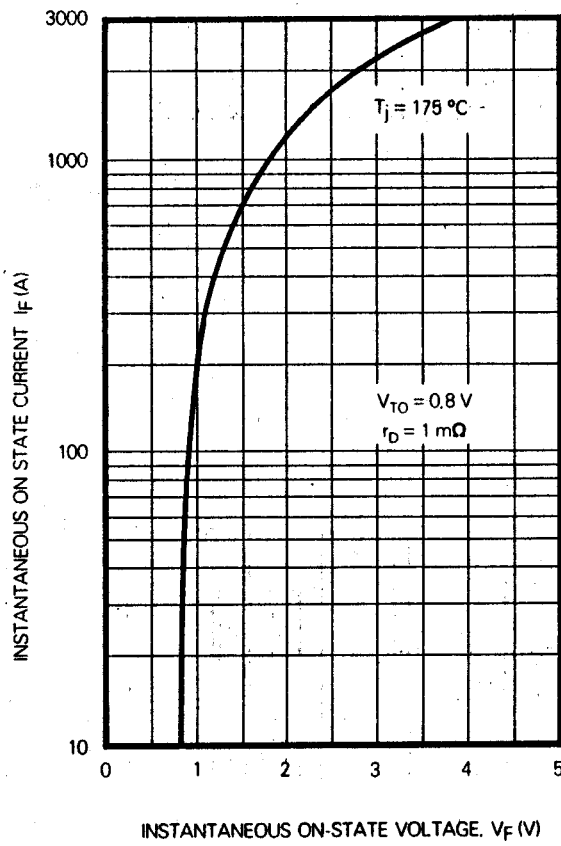


FIG. 1 MAXIMUM (LIMIT) FORWARD CONDUCTION CHARACTERISTIC

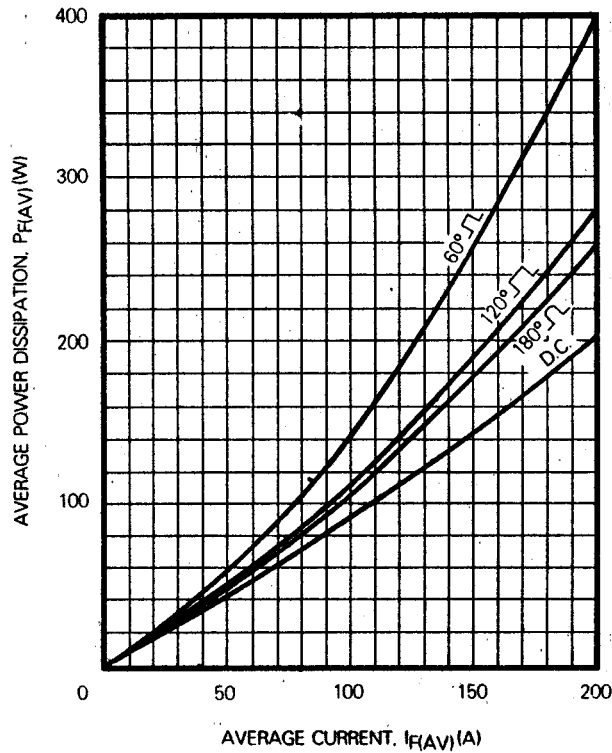


FIG. 2 MAXIMUM FORWARD POWER DISSIPATION

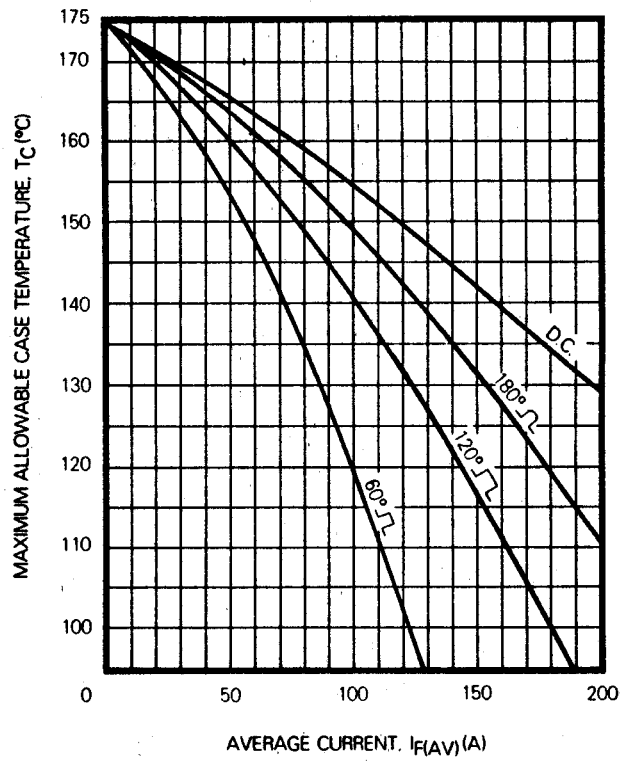


FIG. 3 MAXIMUM ALLOWABLE CASE TEMPERATURE

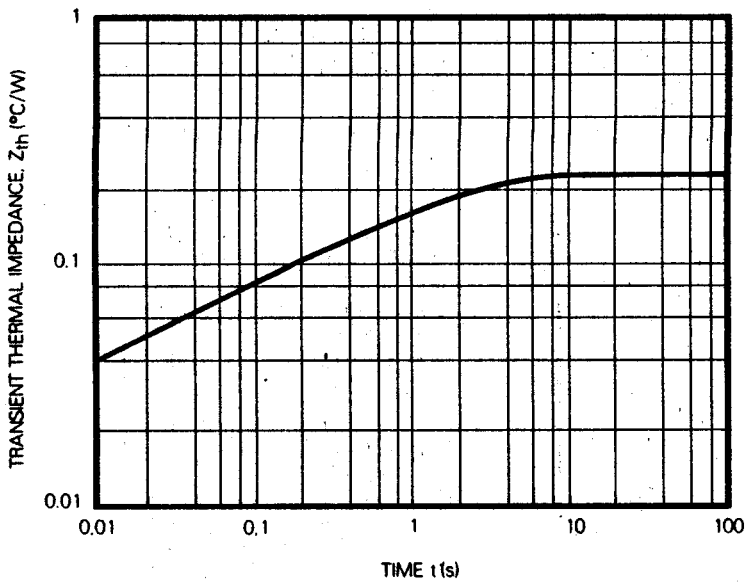


FIG. 4 TRANSIENT THERMAL IMPEDANCE - JUNCTION TO CASE

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

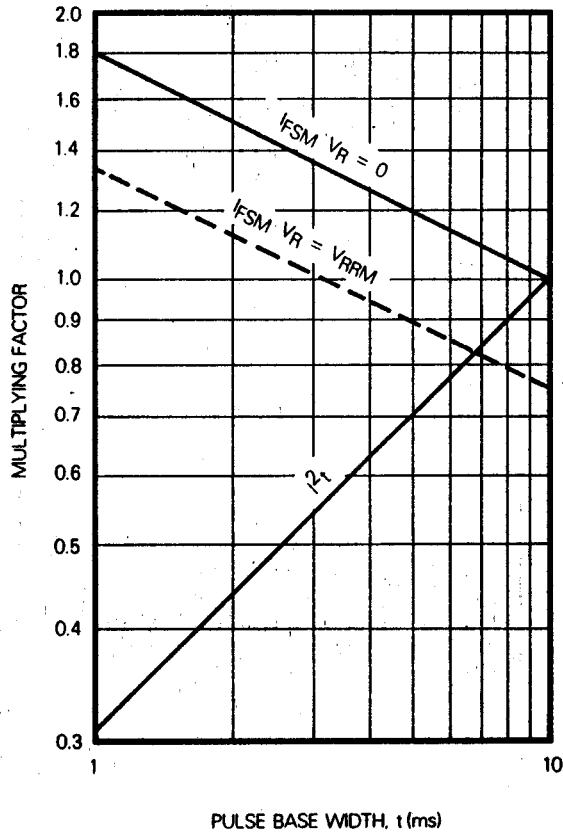


FIG. 5 MULTIPLYING FACTOR FOR NON-REPETITIVE SUB-CYCLE FORWARD CURRENT AND  $I^2t$  RATING

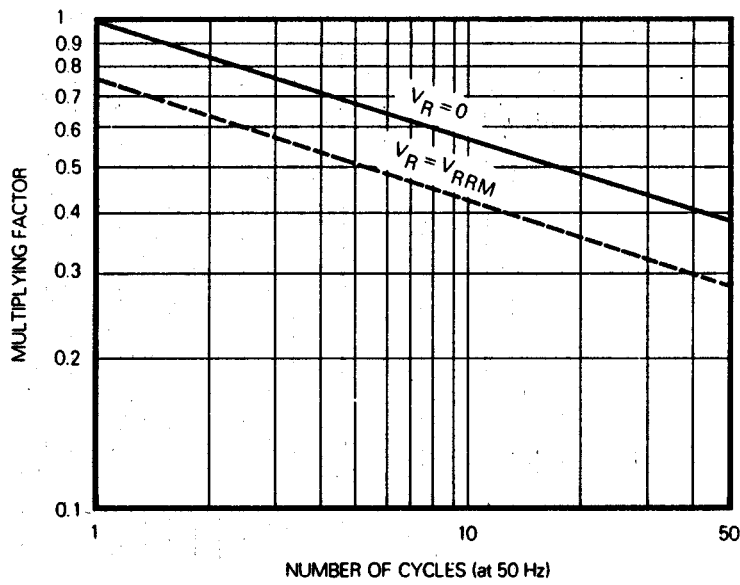
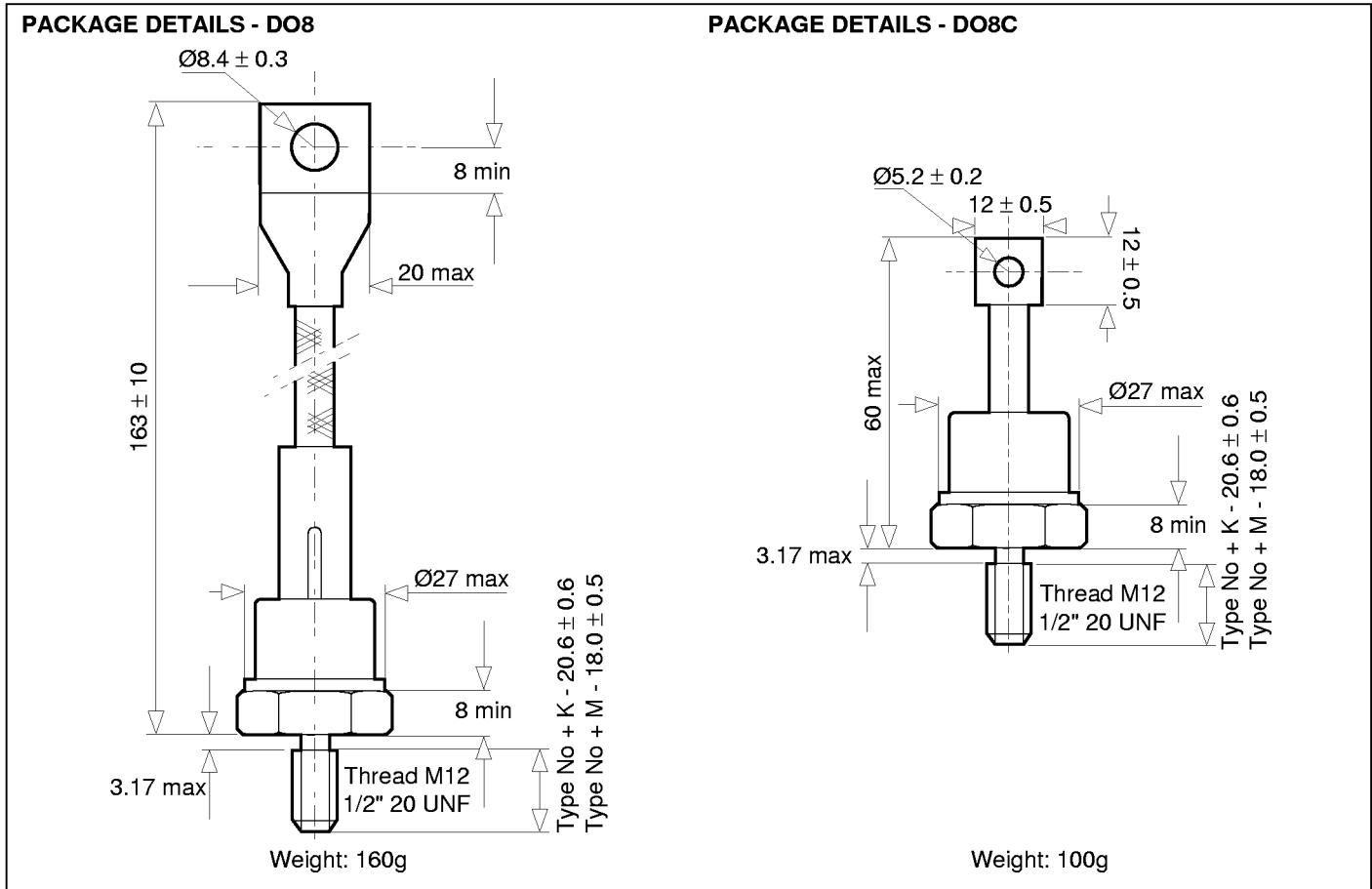


FIG. 6 MULTIPLYING FACTOR FOR NON-REPETITIVE FORWARD CURRENT

# SV20

## PACKAGE DETAILS - DO8

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



HEADQUARTERS OPERATIONS  
**MITEL SEMICONDUCTOR**  
 Cheney Manor, Swindon,  
 Wiltshire SN2 2QW, United Kingdom.  
 Tel: (01793) 518000  
 Fax: (01793) 518411

**MITEL SEMICONDUCTOR**  
 1500 Green Hills Road,  
 Scotts Valley, California 95066-4922  
 United States of America.  
 Tel (408) 438 2900  
 Fax: (408) 438 5576/6231

Internet: <http://www.gpsemi.com>  
 POWER PRODUCT CUSTOMER SERVICE CENTRES

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- **UK** Lincoln Tel: (01522) 500500 Fax : (01522) 510550

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