

**FEATURES**

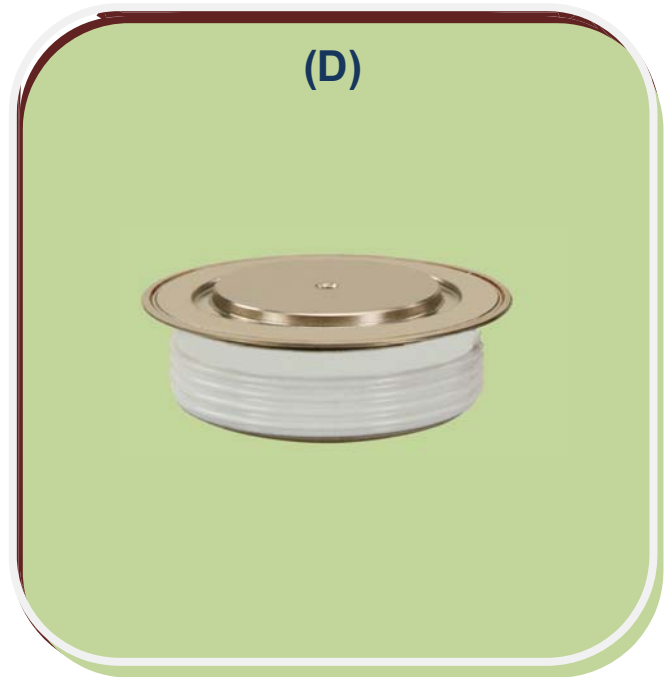
- Wide current range
- High voltage ratings up to 4000 V
- High surge current capabilities
- Diffused junction

**TYPICAL APPLICATIONS**

- Converters
- Power supplies
- Machine tool controls
- High power drives
- Medium traction applications

**TECHNICAL DATA**

DEVICE TYPE	$V_{RRM}$ (V)	$V_{RSM}$ (V)
DS2007SD36	3600	3700
DS2007SD38	3800	3900
DS2007SD40	4000	4100



**CURRENT RATINGS**

$T_{case} = 75^{\circ}C$  unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1594	A
$I_{F(RMS)}$	RMS value	-	2504	A
$I_F$	Continuous (direct) forward current	-	2295	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1144	A
$I_{F(RMS)}$	RMS value	-	1797	A
$I_F$	Continuous (direct) forward current	-	1553	A

$T_{case} = 100^{\circ}\text{C}$  unless otherwise stated

Symbol	Parameter	Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	1225	A
$I_{F(RMS)}$	RMS value	-	1923	A
$I_F$	Continuous (direct) forward current	-	1720	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load	820	A
$I_{F(RMS)}$	RMS value	-	1287	A
$I_F$	Continuous (direct) forward current	-	1050	A

**SURGE RATINGS**

Symbol	Parameter	Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}\text{C}$	20.0	kA
$I^2t$	$I^2t$ for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	$2.0 \times 10^6$	A <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}\text{C}$	25.0	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	$3.125 \times 10^6$	A <sup>2</sup> s

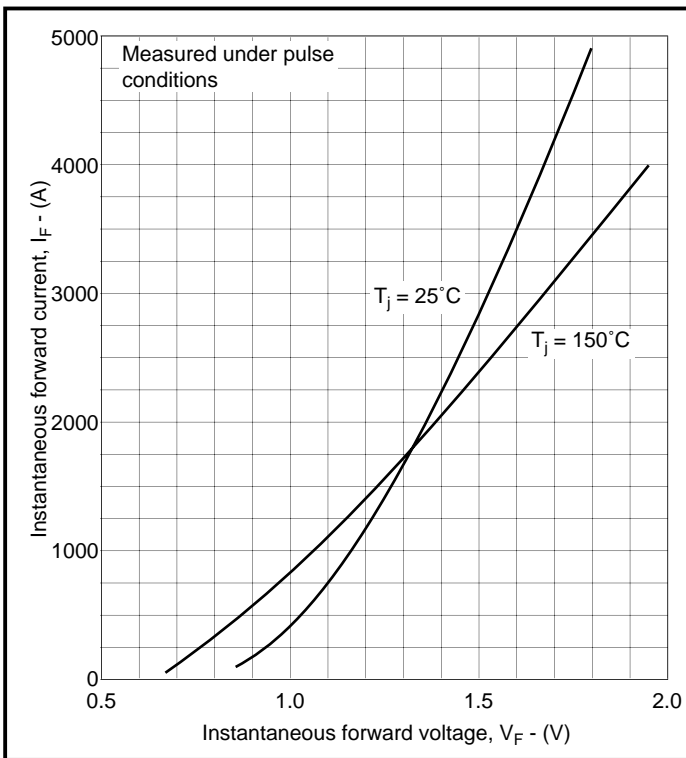
**THERMAL AND MECHANICAL DATA**

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.022 °C/W
		Single side cooled	Anode dc	-	0.038 °C/W
			Cathode dc	-	0.052 °C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004 °C/W
			Single side	-	0.008 °C/W
$T_{vj}$	Virtual junction temperature	Forward (conducting)	-	160	°C
		Reverse (blocking)	-	150	°C
$T_{stg}$	Storage temperature range		-55	175	°C
-	Clamping force		18.0	22.0	kN

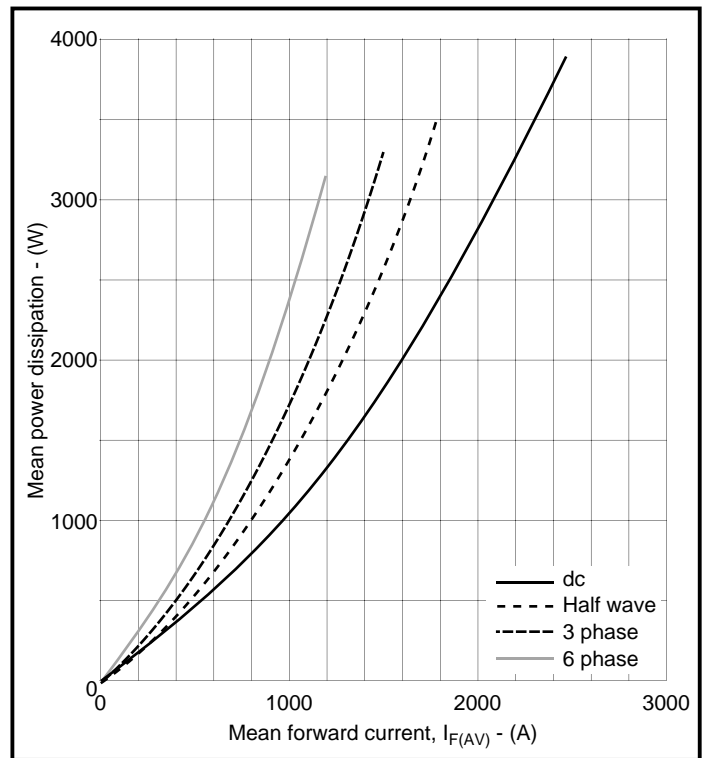
**CHARACTERISTICS**

Symbol	Parameter	Conditions	Min.	Max.	Units
$V_{FM}$	Forward voltage	At 3400A peak, $T_{case} = 25^{\circ}C$	-	1.6	V
$I_{RRM}$	Peak reverse current	At $V_{RRM}$ , $T_{case} = 150^{\circ}C$	-	75	mA
$Q_S$	Total stored charge	$I_F = 2000A$ , $di_{RR}/dt = 3A/\mu s$ ,	-	3500	$\mu C$
$I_{RR}$	Peak recovery current	$T_{case} = 150^{\circ}C$ , $V_R = 100V$	-	110	A
$V_{TO}$	Threshold voltage	At $T_{vj} = 150^{\circ}C$	-	0.82	V
$r_T$	Slope resistance	At $T_{vj} = 150^{\circ}C$	-	0.29	m $\Omega$

**CURVES**



**Fig.2 Maximum (limit) forward characteristics**



**Fig.3 Dissipation curves**

$V_{FM}$  Equation:-

$$V_{FM} = A + B \ln(I_F) + C \cdot I_F + D \cdot \sqrt{I_F}$$

Where

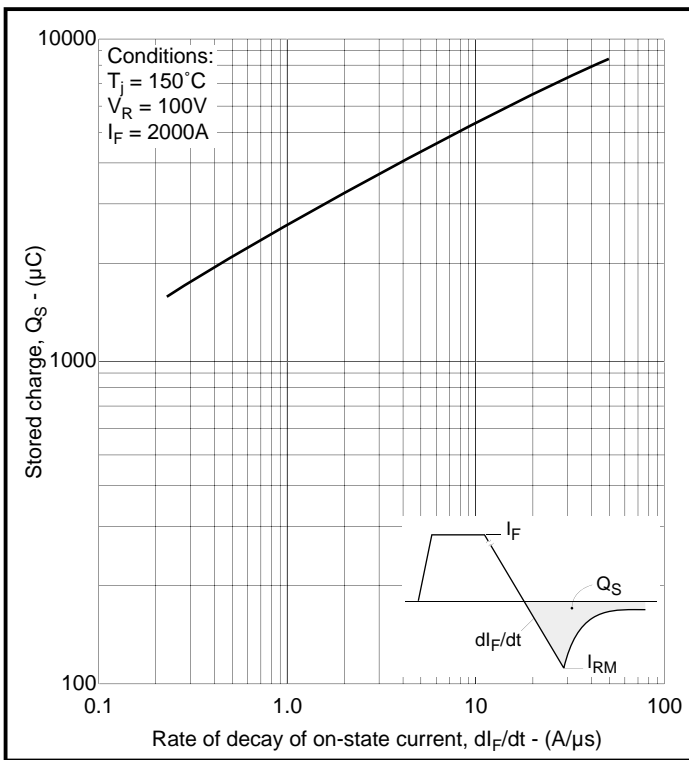
A = 0.658789

B = -0.01706

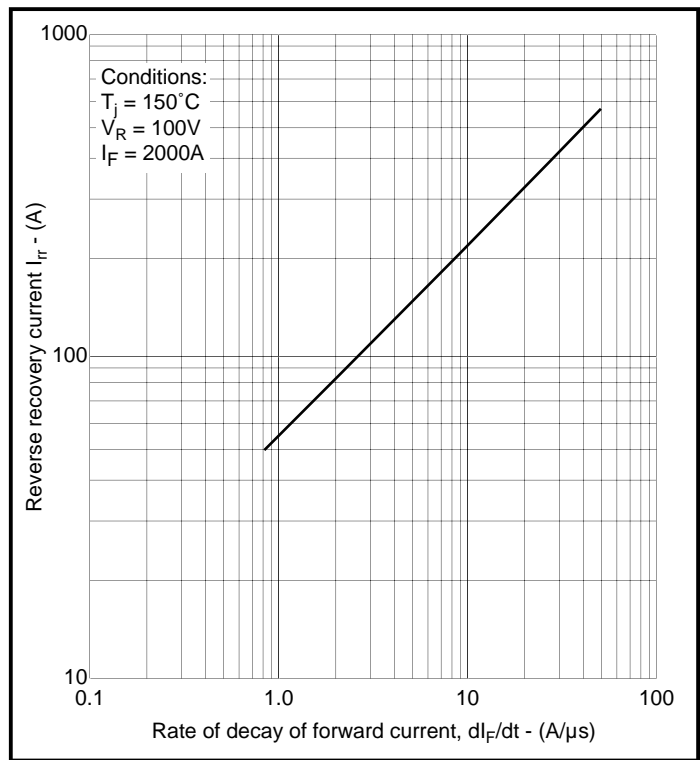
C = 0.000194

D = 0.010358

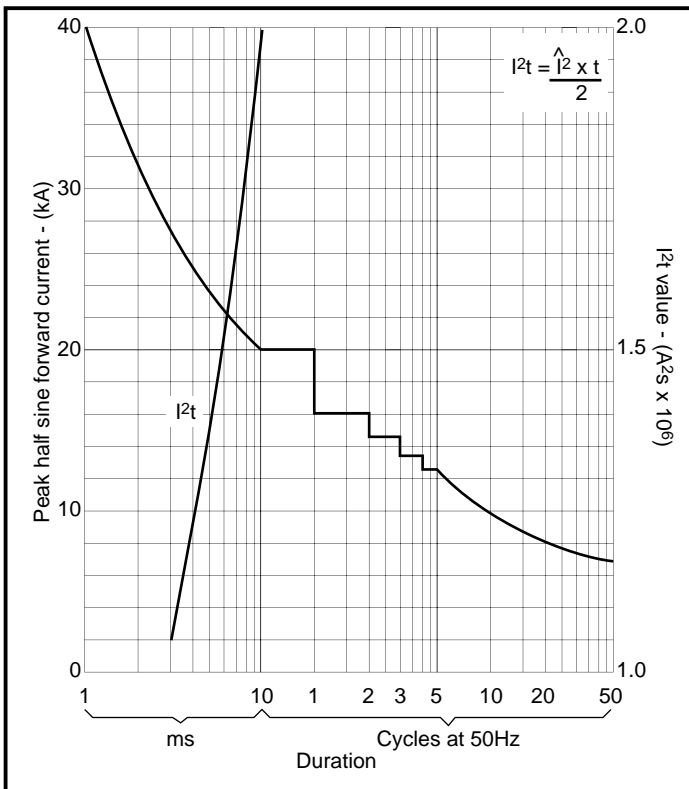
these values are valid for  $T_{vj} = 125^{\circ}C$  for  $I_F$  500A to 5000A



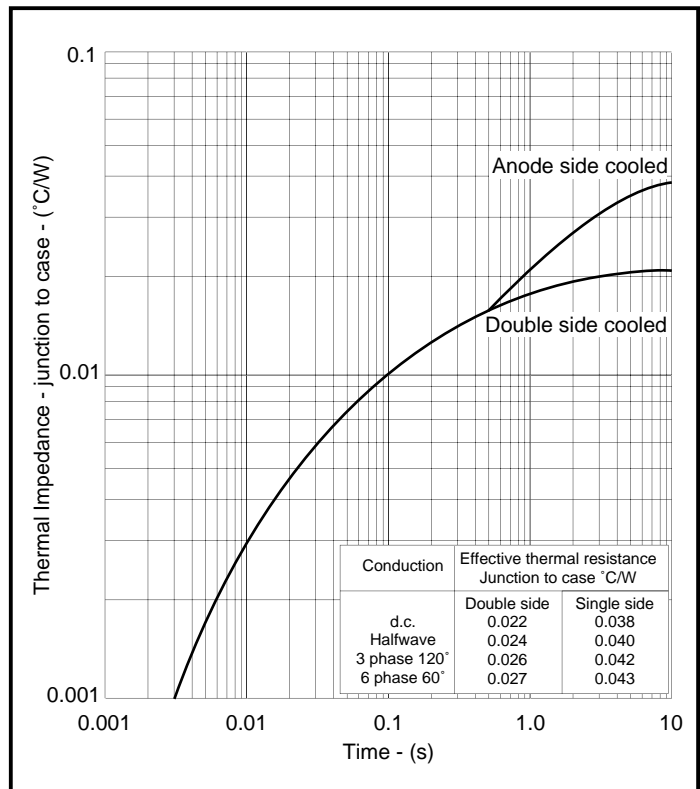
**Fig.4 Total stored charge**



**Fig.5 Maximum reverse recovery current**

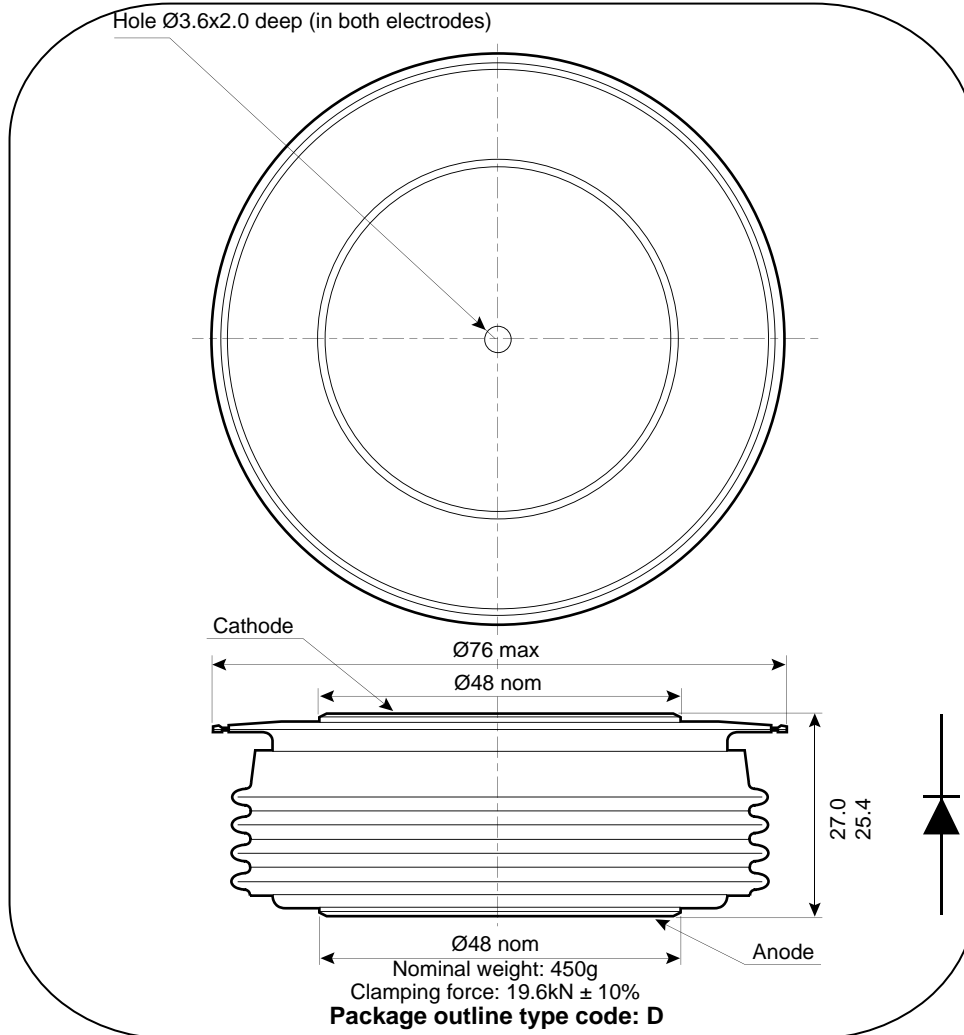


**Fig.6 Surge (non-repetitive) forward current vs time (with 50%  $V_{RRM}$  at  $T_{case} 150^\circ\text{C}$ )**



**Fig.7 Maximum (limit) transient thermal impedance - junction to case**

**PACKAGE OUTLINE**



All dimensions are in mm.

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