

### APPLICATIONS

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

### FEATURES

- Double Side Cooling
- High Surge Capability

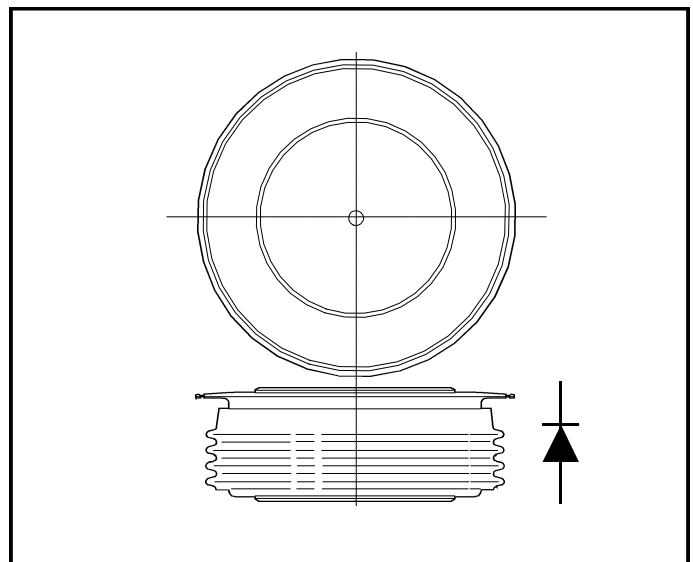
### VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage $V_{RRM}$	Conditions
TR2009SF48	4800	$V_{RSM} = V_{RRM} + 100V$
TR2009SF47	4700	
TR2009SF46	4600	
TR2009SF45	4500	
TR2009SF44	4400	
TR2009SF43	4300	

Lower voltage grades available.

### KEY PARAMETERS

$V_{RRM}$	<b>4800V</b>
$I_{F(AV)}$	<b>1105A</b>
$I_{FSM}$	<b>20500A</b>



Outline type code: F.  
See Package Details for further information.

### CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	1105	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	1735	A
$I_F$	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	1580	A
<b>Single Side Cooled (Anode side)</b>				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, $T_{case} = 100^{\circ}C$	730	A
$I_{F(RMS)}$	RMS value	$T_{case} = 100^{\circ}C$	1145	A
$I_F$	Continuous (direct) forward current	$T_{case} = 100^{\circ}C$	960	A

# TR2009SF

## SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}C$	16.5	kA
$I^2t$	$I^2t$ for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	$1.35 \times 10^6$	A <sup>2</sup> s
$I_{FSM}$	Surge (non-repetitive) forward current	10ms half sine; $T_{case} = 150^{\circ}C$	20.5	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	$2.125 \times 10^6$	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	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.038	$^{\circ}C/W$
			Cathode dc	-	0.052	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	Double side	-	0.004	$^{\circ}C/W$
			Single side	-	0.008	$^{\circ}C/W$
$T_{vj}$	Virtual junction temperature	On-state (conducting)		-	160	$^{\circ}C$
		Reverse (blocking)		-	150	$^{\circ}C$
$T_{stg}$	Storage temperature range		-55	175	$^{\circ}C$	
-	Clamping force		18.0	22.0	kN	

## CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
$V_{FM}$	Forward voltage	At 3400A peak, $T_{case} = 25^{\circ}C$	-	1.8	V
$I_{RRM}$	Peak reverse current	At $V_{RRM}$ , $T_{case} = 150^{\circ}C$	-	75	mA
$Q_S$	Total stored charge	$I_F = 2000A$ , $dI_{RR}/dt = 3A/\mu s$ ,	-	4000	$\mu C$
$I_{RM}$	Peak recovery current	$T_{case} = 150C$ , $V_R = 100V$	-	115	A
$V_{TO}$	Threshold voltage	At $T_{vj} = 150C$	-	0.84	V
$r_T$	Slope resistance	At $T_{vj} = 150C$	-	0.383	m $\Omega$

## CURVES

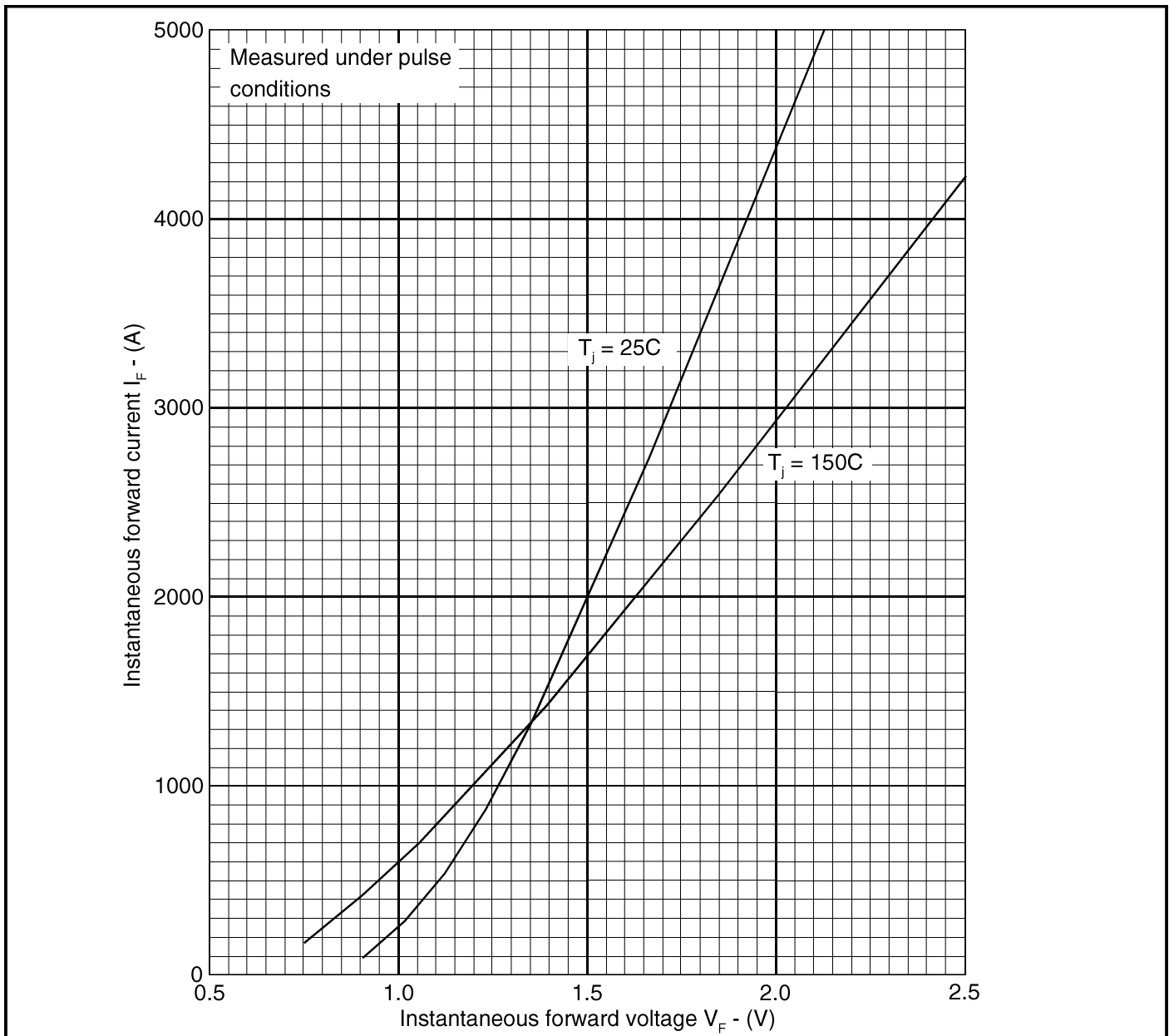


Fig. 1 Maximum (limit) forward characteristics

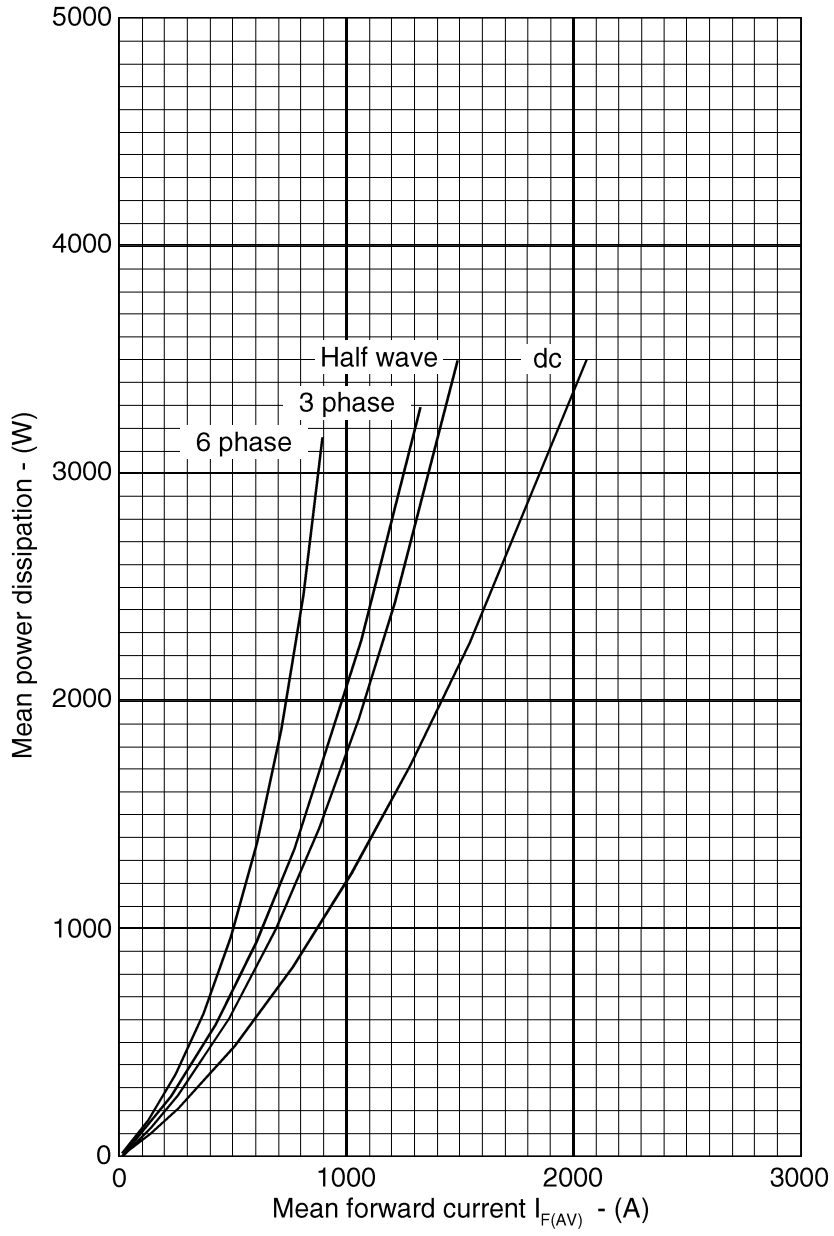


Fig. 2 Dissipation curves

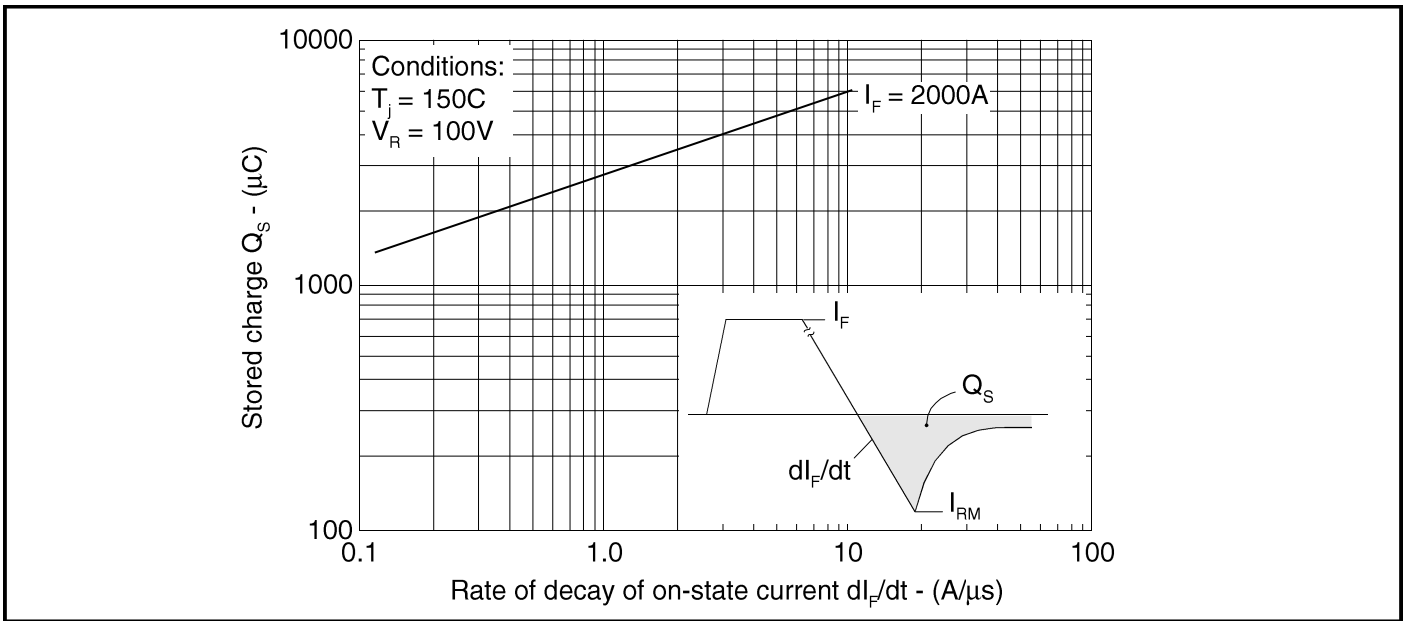


Fig. 3 Maximum total stored charge

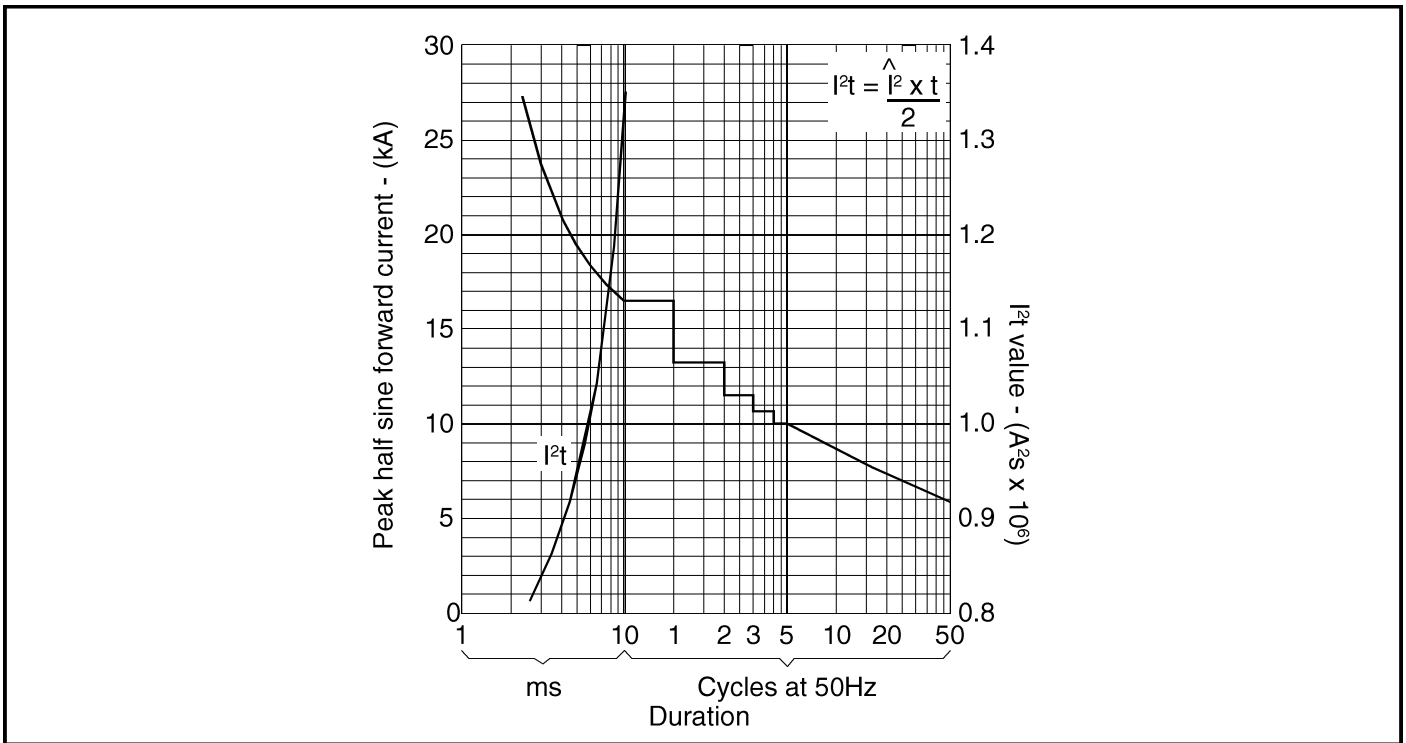


Fig. 4 Surge (non-repetitive) forward current vs time (with 50%  $V_{RRM}$ ,  $T_{case} = 150C$ )

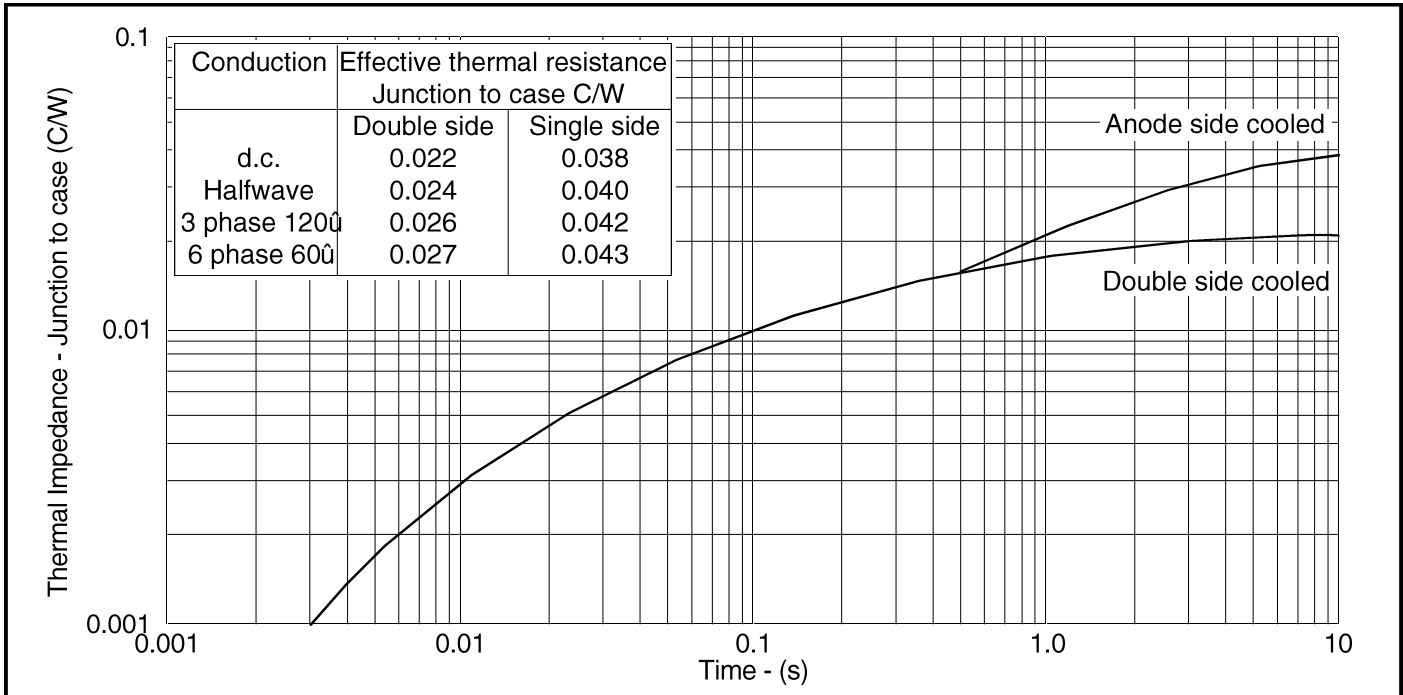


Fig. 5 Transient thermal impedance - junction to case - (C/W)

**PACKAGE DETAILS**

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

