DSF8045SK

Fast Recovery Diode

Supersedes July 1996 version, DS4150 - 5.5

DS4150 - 5.6 March 1998

APPLICATIONS

- Snubber Diode For GTO Applications.

KEY PARAMETERS

V_{RRM}	4500V
$I_{F(AV)}$	430A
I_{FSM}	3500A
Q_r	440μC
t_{rr}	3.07μs

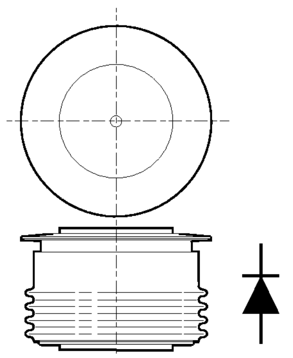
FEATURES

- Double side cooling.
- High surge capability.
- Low recovery charge.

VOLTAGE RATINGS

Type Number	Repetitive Peak Reverse Voltage V_{RRM} V	Conditions
DSF8045SK45	4500	$V_{RSM} = V_{RRM}$ + 100V
DSF8045SK44	4400	
DSF8045SK43	4300	
DSF8045SK42	4200	
DSF8045SK41	4100	
DSF8045SK40	4000	

Lower voltage grades available.



Outline type code: K. See package outlines for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	430	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	680	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	600	A
Single Side Cooled (Anode side)				
$I_{F(AV)}$	Mean forward current	Half wave resistive load, T_{case} = 65°C	285	A
$I_{F(RMS)}$	RMS value	T_{case} = 65°C	445	A
I_F	Continuous (direct) forward current	T_{case} = 65°C	380	A

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 0% $V_{RRM,}$ T_j = 150°C	3.5	kA
I^2t	I^2t for fusing		61.25×10^3	A^2s
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; with 50% $V_{RRM,}$ T_j = 150°C	2.8	kA
I^2t	I^2t for fusing		39.2×10^3	A^2s

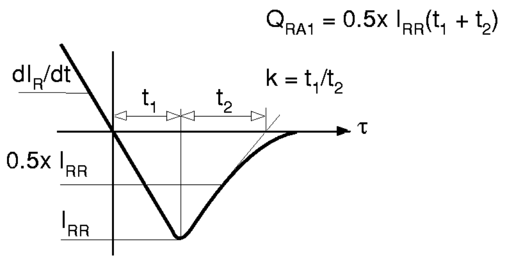
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.048	°C/W
		Single side cooled	Anode dc	-	0.09	°C/W
			Cathode dc	-	0.103	°C/W
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 8.0kN with mounting compound	Double side	-	0.01	°C/W
			Single side	-	0.02	°C/W
T_{vj}	Virtual junction temperature	Forward (conducting)		-	150	°C
T_{stg}	Storage temperature range			-55	175	°C
-	Clamping force			7.0	9.0	kN

CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{FM}	Forward voltage	At 1000A peak, T_{case} = 25°C	-	4.0	V
I_{RRM}	Peak reverse current	At V_{RRM}, T_{case} = 150°C	-	50	mA
t_{rr}	Reverse recovery time	I_F = 1000A, di_{RR}/dt = 100A/µs T_{case} = 150°C, V_R = 100V	-	3.07	µs
Q_{RA1}	Recovered charge (50% chord)		-	440	µC
I_{RM}	Reverse recovery current		-	240	A
K	Soft factor		-	-	-
V_{TO}	Threshold voltage	At T_{vj} = 150°C	-	1.7	V
r_T	Slope resistance	At T_{vj} = 150°C	-	2.1	mΩ
V_{FRM}	Forward recovery voltage	di/dt = 1000A/µs, T_j = 125°C	-	300	V

DEFINITION OF K FACTOR AND Q_{RA1}



CURVES

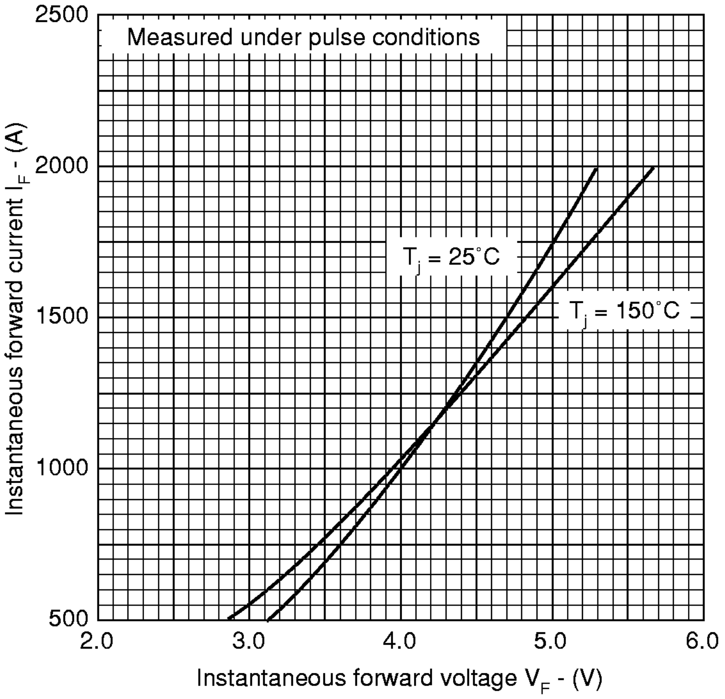


Fig.1 Maximum (limit) forward characteristics

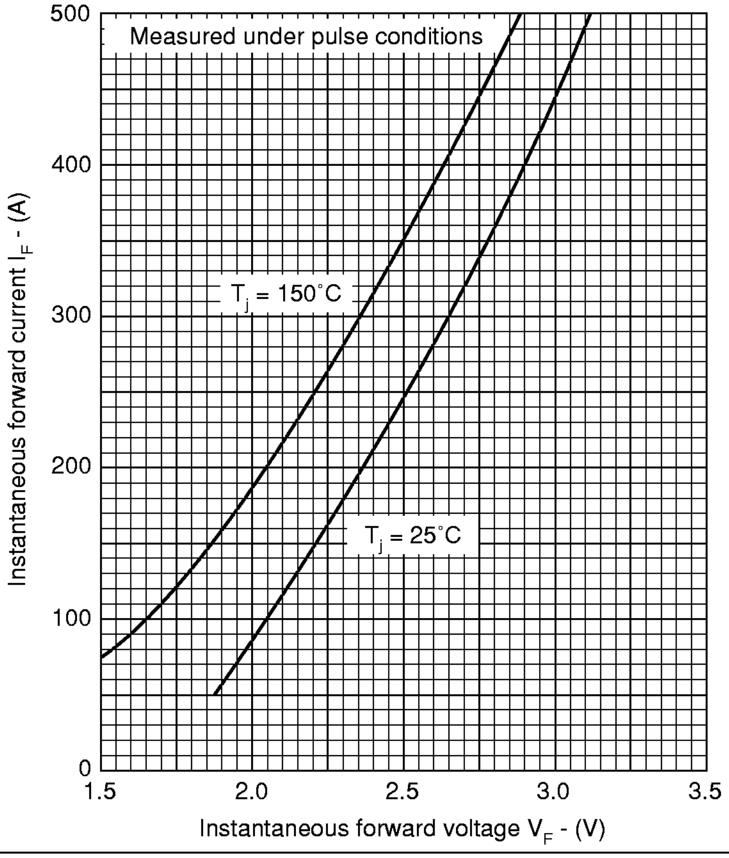


Fig.2 Maximum (limit) forward characteristics

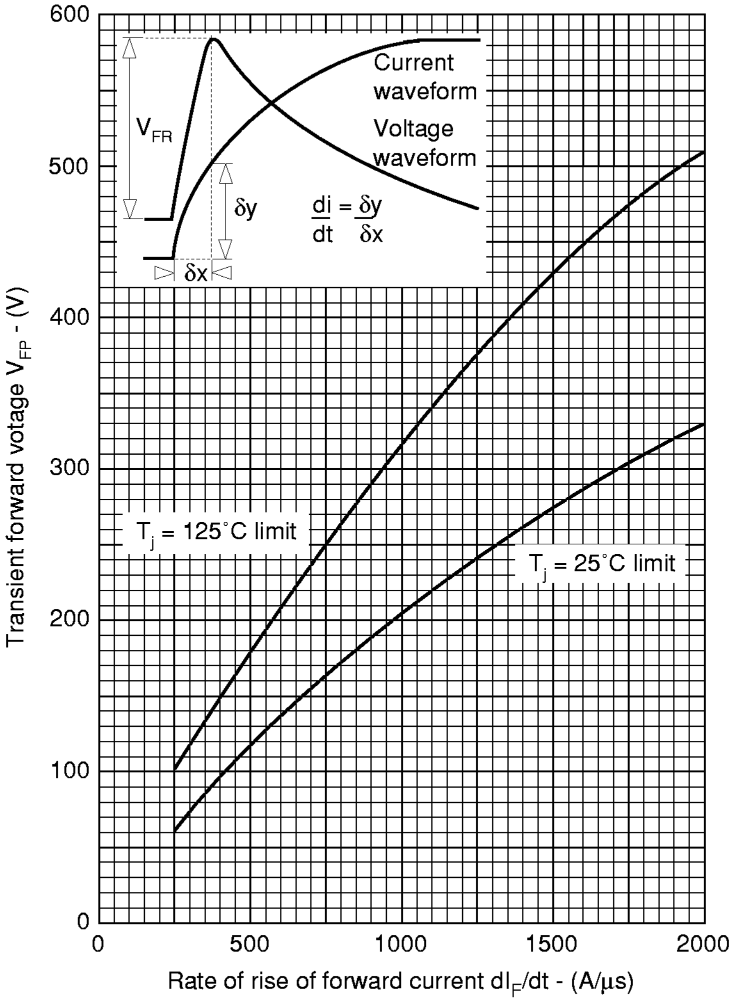


Fig.3 Transient forward voltage vs rate of rise of forward current

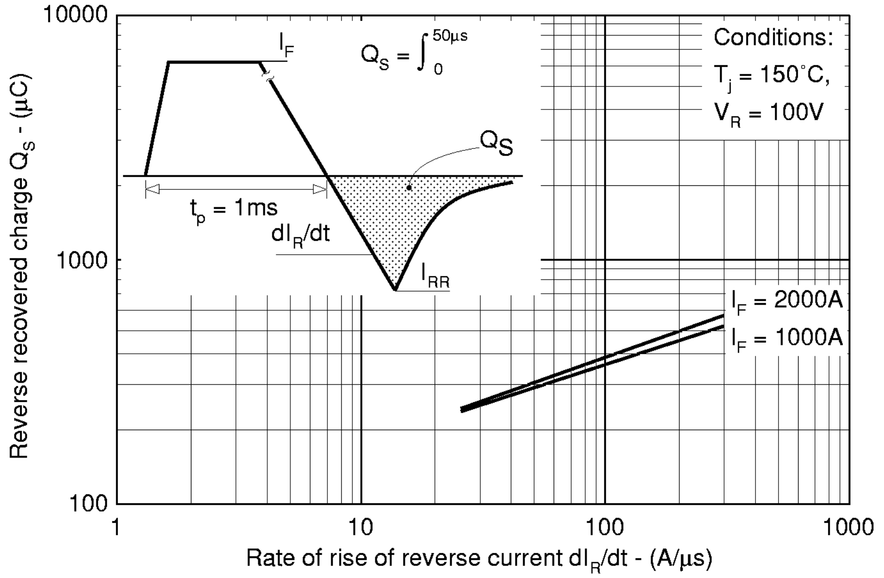


Fig. 4 Typical recovered charge

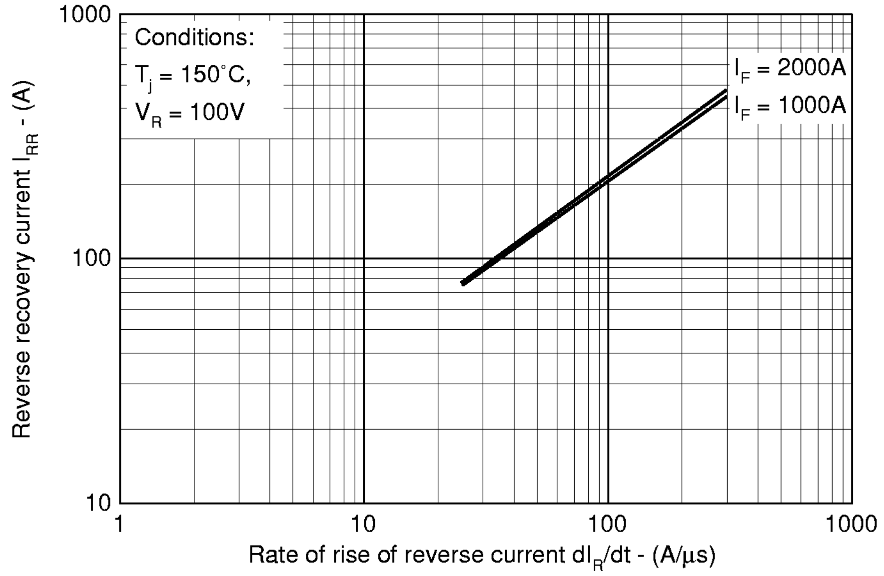


Fig. 5 Typical reverse recovery current vs rate of rise of reverse current

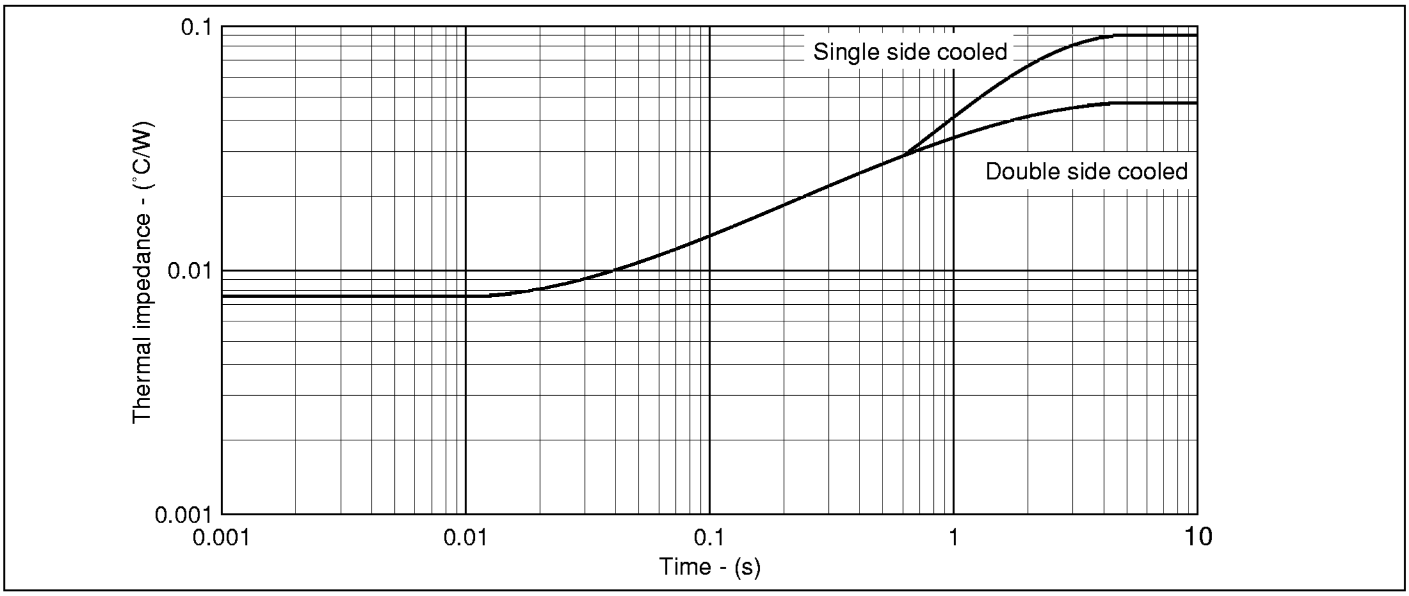
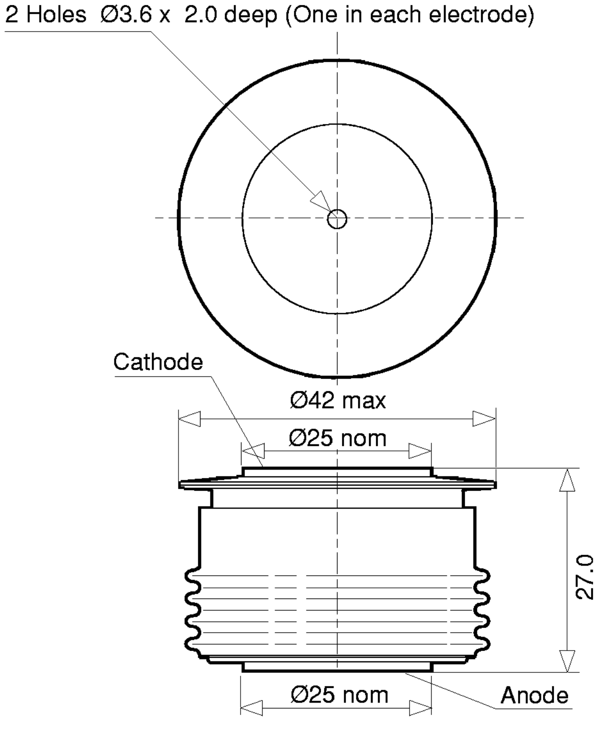


Fig.6 Maximum (limit) transient thermal impedance - junction to case - (˚C/W)

PACKAGE DETAILS - K

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



Weight: 160g

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