

APPLICATIONS

- High Voltage Power Converters.
- High Voltage Power Supplies.
- Motor Control.

KEY PARAMETERS

V_{DRM}	2800V
$I_{T(AV)}$	1575A
I_{TSM}	28000A
dV/dt	1000V/μs
di/dt	500A/μs

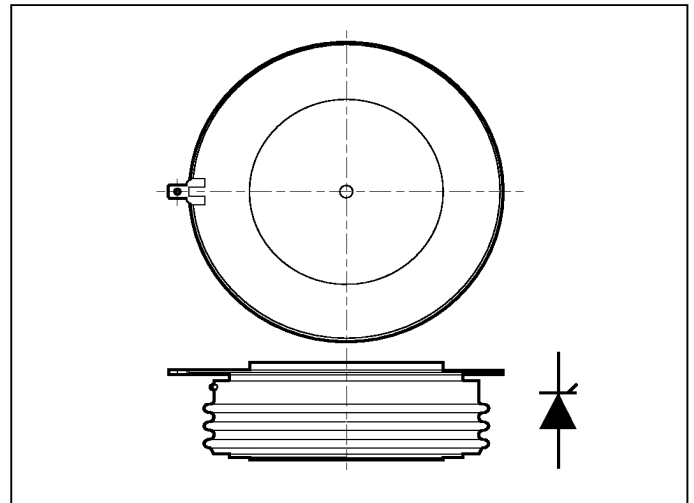
FEATURES

- Double Side Cooling.
- High Surge Capability.
- Low Turn-on Losses.

VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages V_{DRM} V_{RRM} V	Conditions
DCR1375SBA28	2800	$T_{vj} = 0^\circ$ to 125°C , $I_{DRM} = I_{RRM} = 150\text{mA}$, V_{DRM} , V_{RRM} $t_p = 10\text{ms}$, V_{DSM} & $V_{RSM} =$ V_{DRM} & $V_{RRM} + 100\text{V}$ respectively
DCR1375SBA27	2700	
DCR1375SBA26	2600	
DCR1375SBA25	2500	
DCR1375SBA24	2400	

Lower voltage grades available.



Outline type code: MU140. See package outline for further information.

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ\text{C}$	1575	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ\text{C}$	2475	A
I_T	Continuous (direct) on-state current	$T_{case} = 80^\circ\text{C}$	2200	A
Single Side Cooled (Anode side)				
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ\text{C}$	1150	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ\text{C}$	1805	A
I_T	Continuous (direct) on-state current	$T_{case} = 80^\circ\text{C}$	1520	A

DCR1375SBA

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	22.5	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	2.5×10^6	A ² s
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	28	kA
I^2t	I^2t for fusing	$V_R = 0$	3.92×10^6	A ² s

THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units	
$R_{th(j-c)}$	Thermal resistance - junction to case	Double side cooled	dc	-	0.013	$^{\circ}C/W$
		Single side cooled	Anode dc	-	0.021	$^{\circ}C/W$
			Cathode dc	-	0.034	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 40kN with mounting compound	Double side	-	0.003	$^{\circ}C/W$
			Single side	-	0.006	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	On-state (conducting)		-	135	$^{\circ}C$
		Reverse (blocking)		-	125	$^{\circ}C$
T_{stg}	Storage temperature range		-55	125	$^{\circ}C$	
-	Clamping force		36.0	44.0	kN	

DYNAMIC CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units	
I_{RRM}/I_{DRM}	Peak reverse and off-state current	At V_{RRM}/V_{DRM} , $T_{case} = 125^{\circ}C$	-	150	mA	
dV/dt	Maximum linear rate of rise of off-state voltage	To 67% V_{DRM} , $T_j = 125^{\circ}C$.	-	1000	V/ μs	
dI/dt	Rate of rise of on-state current	From 80% V_{DRM} Gate source 20V, 20 Ω $t_r \leq 1.0\mu s$, $T_j = 125^{\circ}C$.	Repetitive 50Hz	-	250	A/ μs
			Non-repetitive	-	500	A/ μs
$V_{T(TO)}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.02	V	
r_T	On-state slope resistance	At $T_{vj} = 125^{\circ}C$	-	0.259	m Ω	
t_{gd}	Delay time	$V_D = 67\% V_{DRM}$, Gate source 30V, 15 Ω Rise time 0.5 μs , $T_j = 25^{\circ}C$	-	2	μs	
t_q	Turn-off time	$I_T = 800A$, $t_p = 1ms$, $T_j = 125^{\circ}C$, $V_R = 50V$, $dI_{RRM}/dt = 20A/\mu s$, $V_{DR} = 67\% V_{DRM}$, $dV_{DR}/dt = 20V/\mu s$ linear	400	-	μs	
I_L	Latching current	$T_j = 25^{\circ}C$, $V_D = 5V$	-	500	mA	
I_H	Holding current	$T_j = 25^{\circ}C$, $V_{G-K} = \infty$	-	260	mA	

GATE TRIGGER CHARACTERISTICS AND RATINGS

Symbol	Parameter	Conditions	Max.	Units
V_{GT}	Gate trigger voltage	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	3.0	V
I_{GT}	Gate trigger current	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	350	mA
V_{GD}	Gate non-trigger voltage	At V_{DRM} , $T_{case} = 125^{\circ}C$	0.25	V
V_{FGM}	Peak forward gate voltage	Anode positive with respect to cathode	30	V
V_{FGN}	Peak forward gate voltage	Anode negative with respect to cathode	0.25	V
V_{RGM}	Peak reverse gate voltage		5	V
I_{FGM}	Peak forward gate current	Anode positive with respect to cathode	10	A
P_{GM}	Peak gate power	See table, fig.4	150	W
$P_{G(AV)}$	Mean gate power		10	W

CURVES

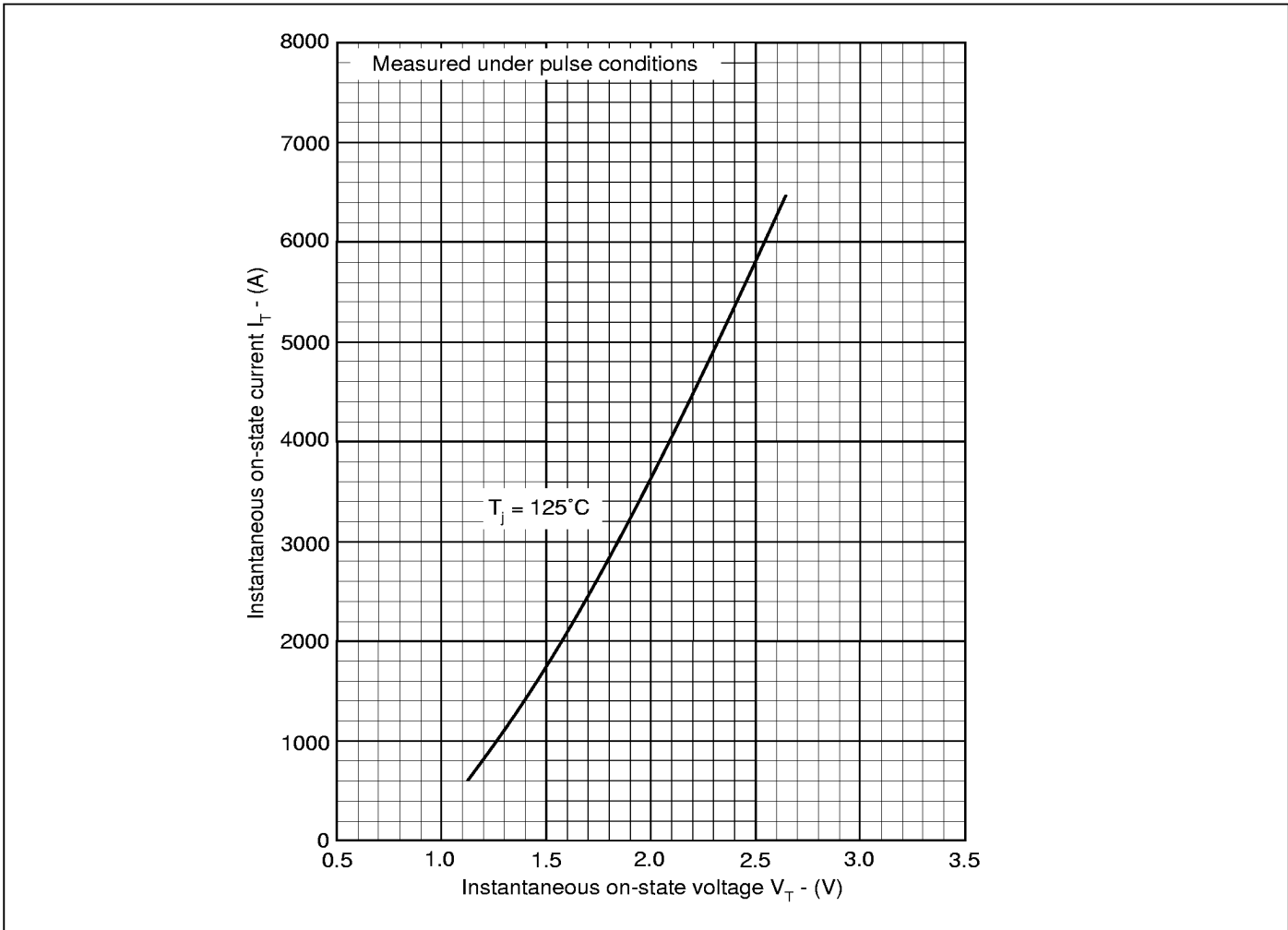


Fig.1 Maximum (limit) on-state characteristics

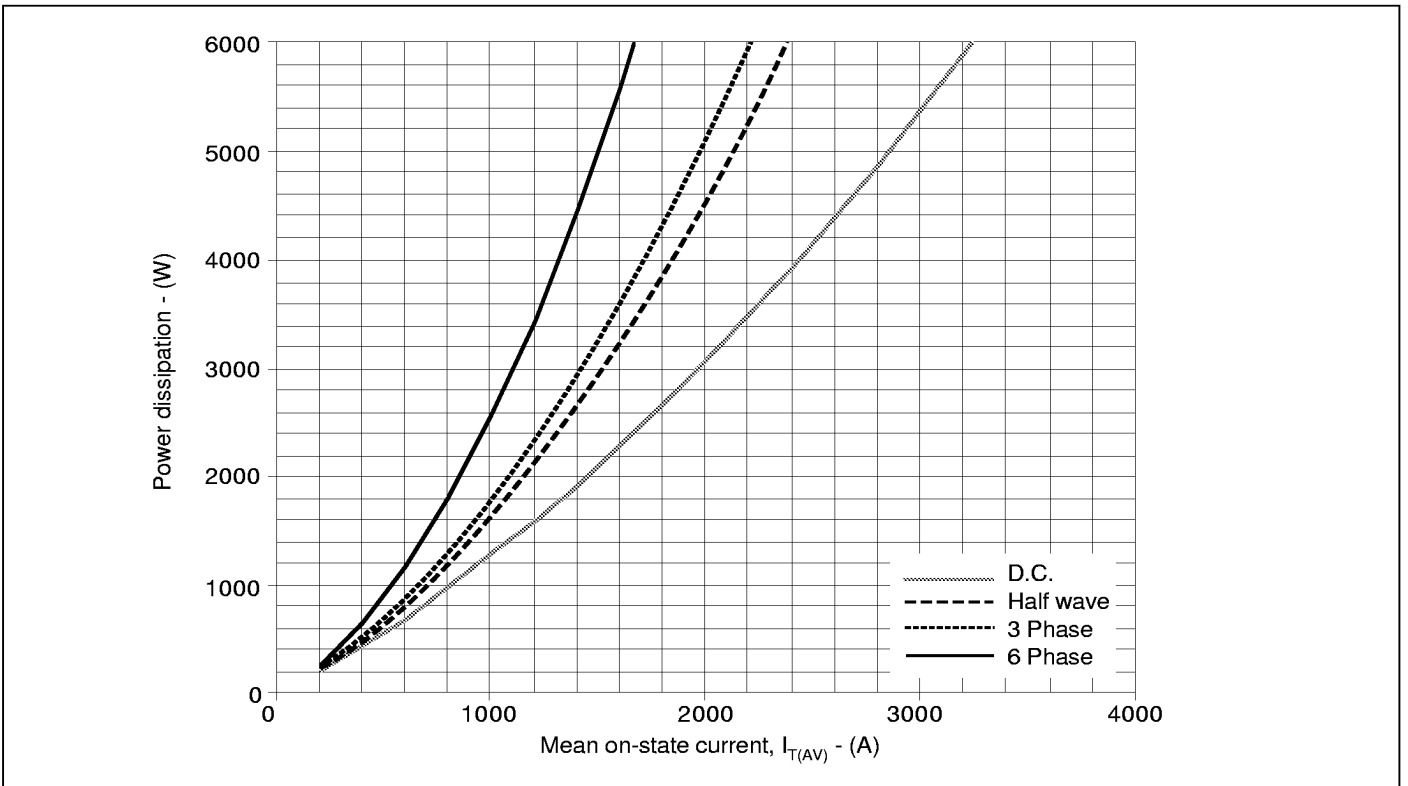


Fig.2 Dissipation curves

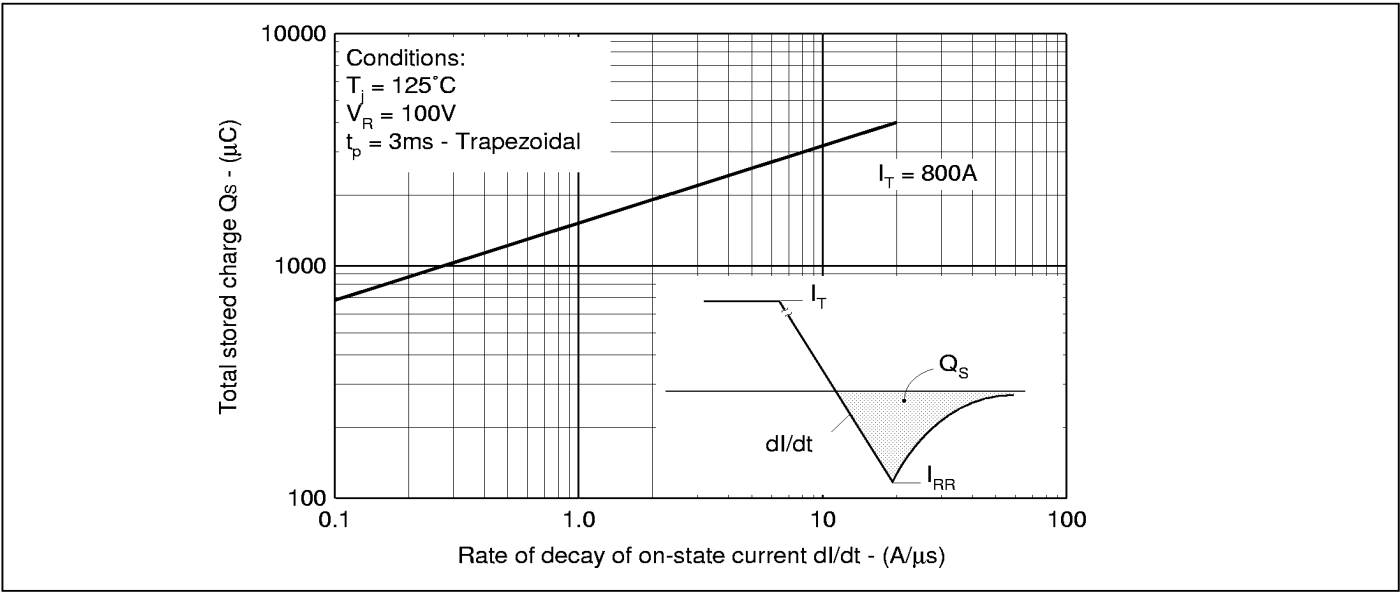


Fig.3 Stored charge

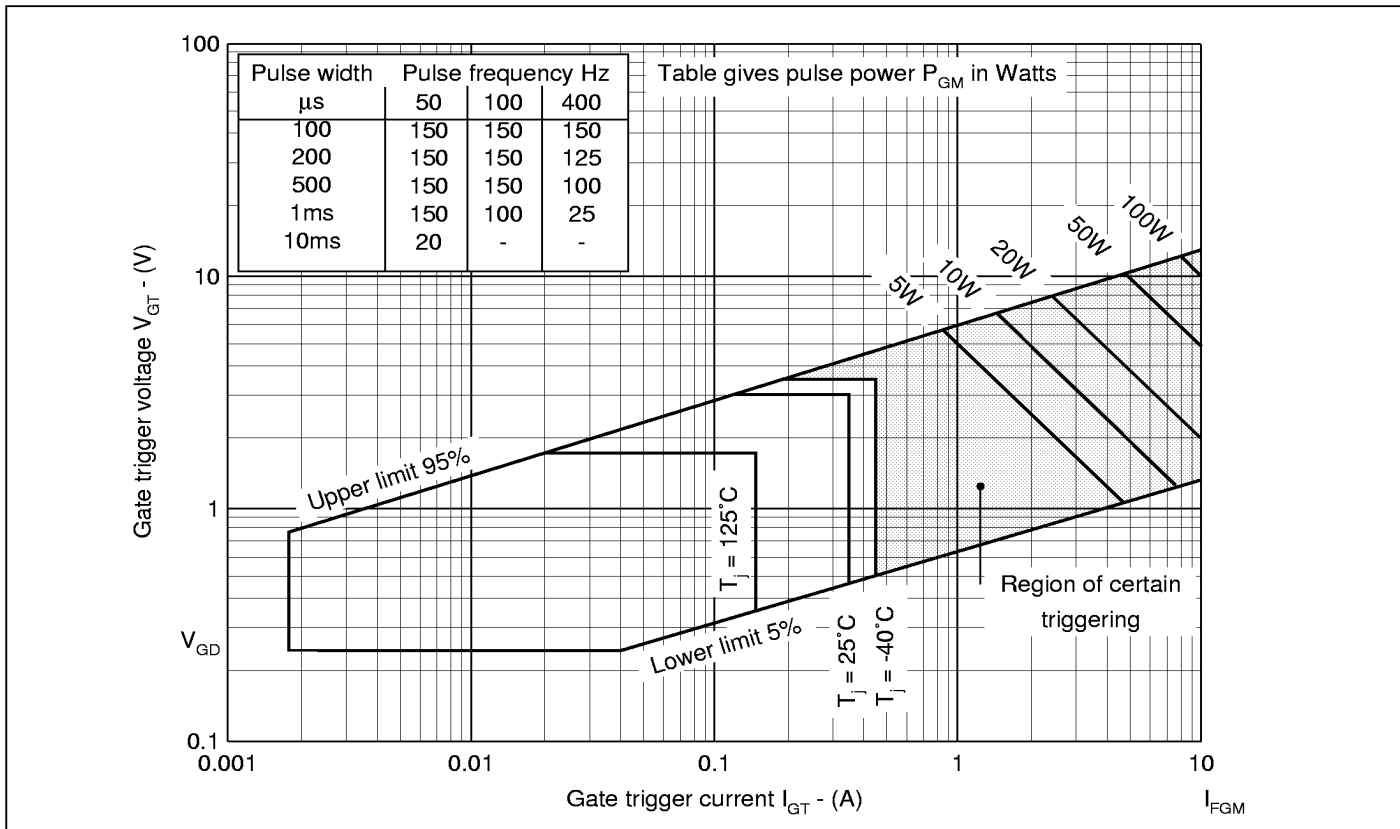


Fig.4 Gate characteristics

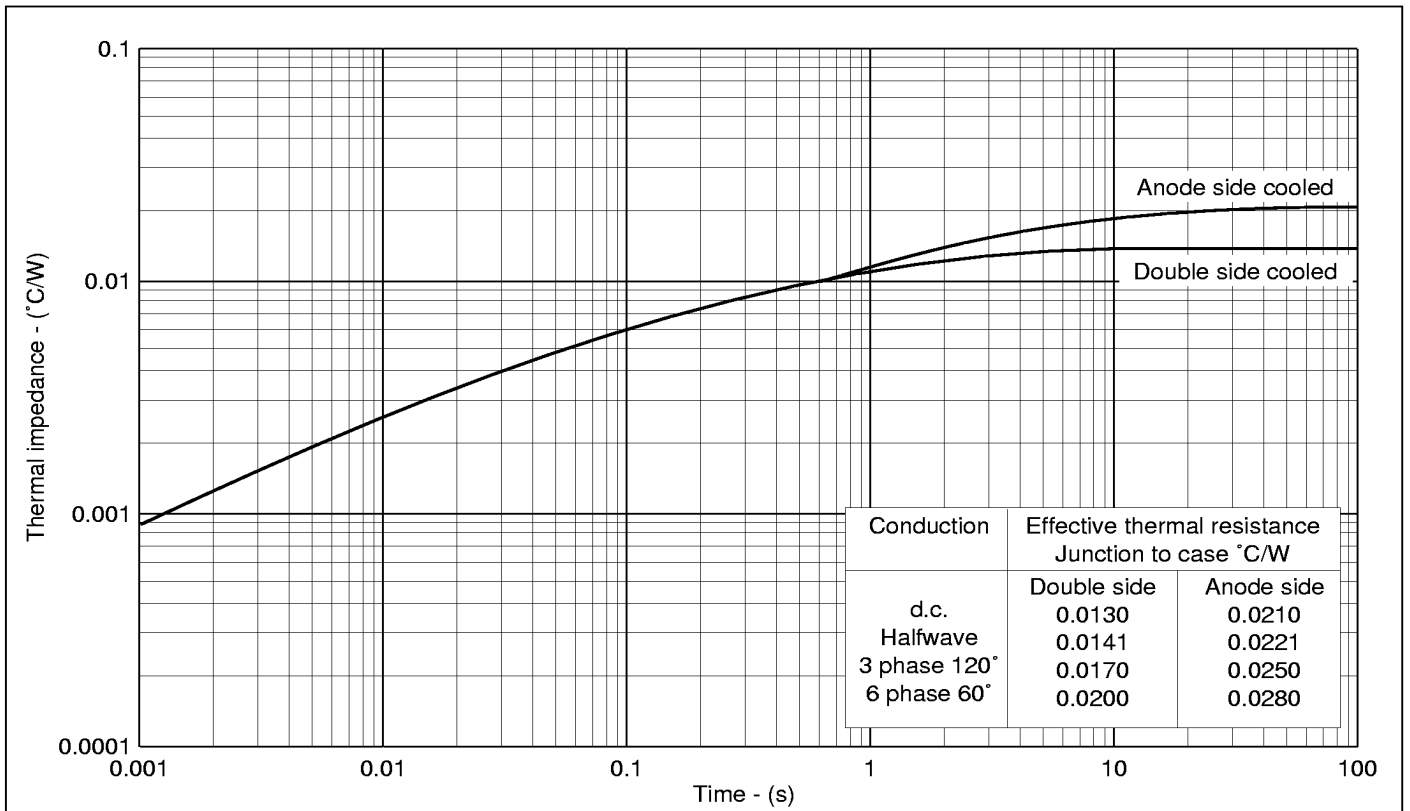


Fig.5 Maximum (limit) transient thermal impedance - junction to case (°C/W)

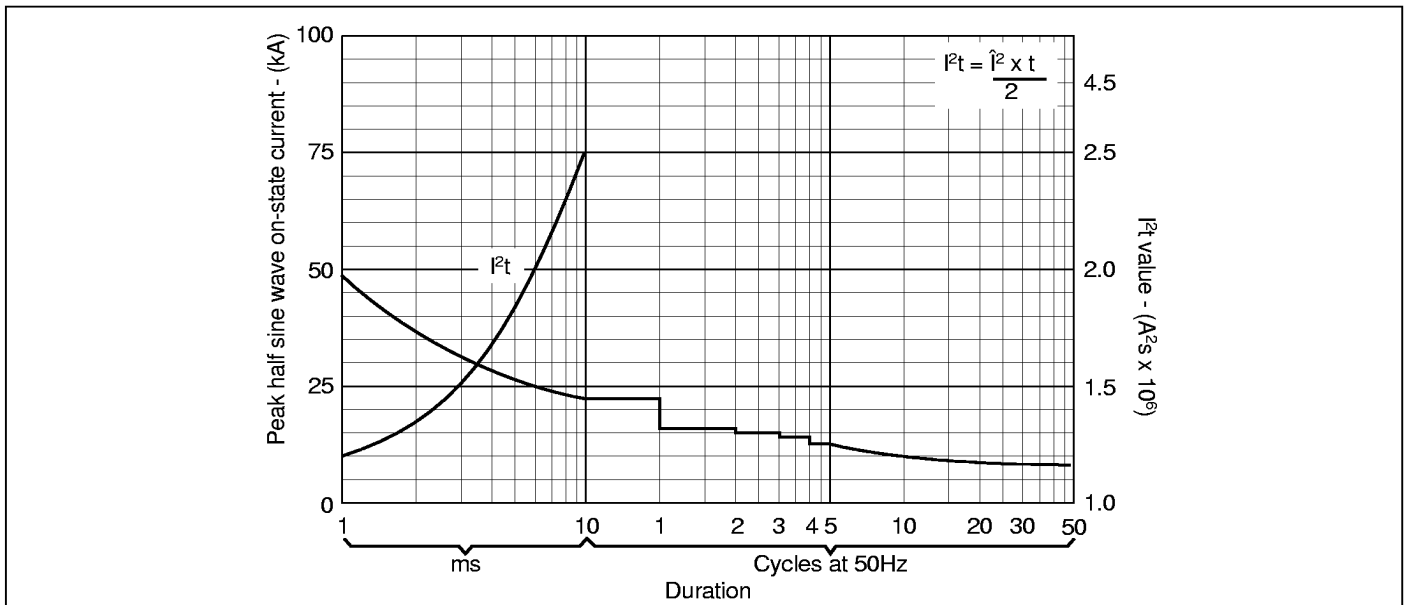
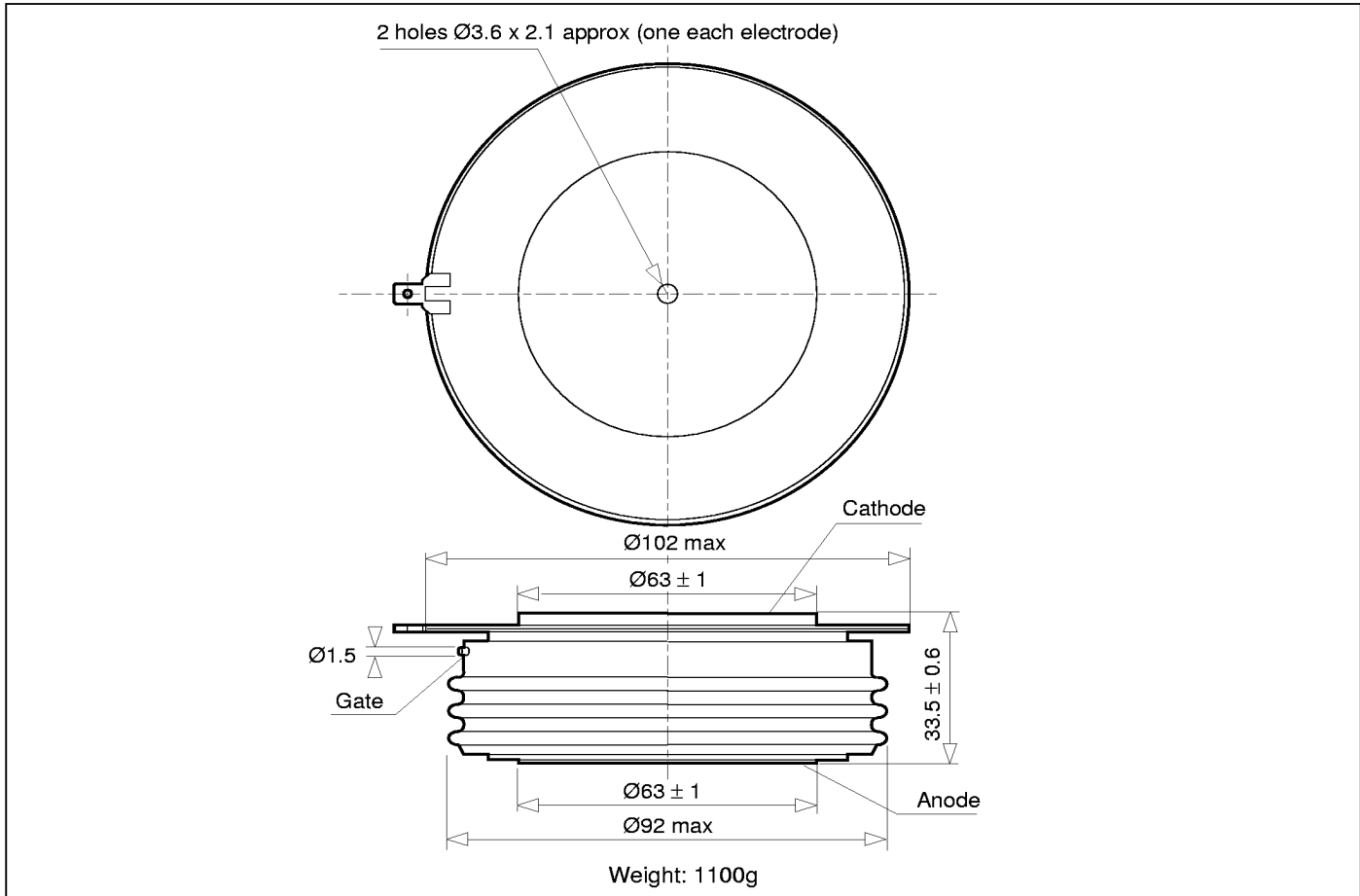


Fig.6 Surge (non-repetitive) on-state current vs time (with 50% V_{RRM} at T_{case} 125°C)

DCR1375SBA

PACKAGE OUTLINE- MU140

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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