PT85QWx45
Pulse Power Thyristor Switch

Preliminary Information

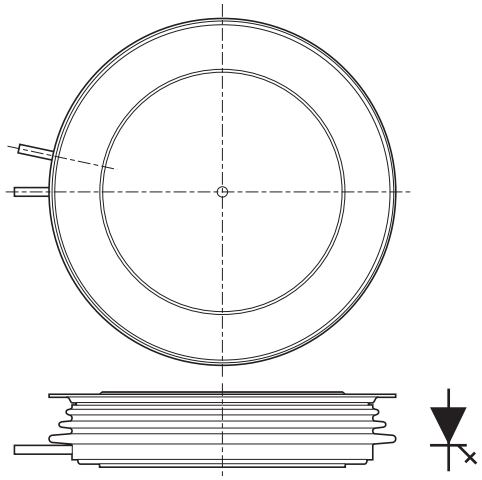
DS5334-1.3 December 2008 (LN26532)

KEY PARAMETERS

V_{DRM}	4500V
$I_{T(AV)}$	1670A
I_{TSM}	37000A
dI_T/dt	22000A/µs

APPLICATIONS
- Pulse Power
- Crowbars
- Ignitron Replacement

FEATURES
- Double Side Cooling
- Fast Turn-on
- Low Turn-on Losses



Outline type code: W

(See Package Details for further information)

Fig. 1 Package outline

VOLTAGE RATINGS

Type Number	Repetitive Peak Off-state Voltage V_{DRM} (V)	Repetitive Peak Reverse Voltage V_{RRM} (V)	Conditions
PT85QWx45	4500	16	T_{vj} = 0° to125°C, I_{DRM} =, I_{RRM} = 50mA, V_{DRM}, V_{RRM} t_p = 10ms

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{T(AV)}$	Mean on-state current	T_{case} = 80°C, Half sine 50Hz resistive load	1670	A
$I_{T(RMS)}$	RMS on-state current	T_{HS} = 80°C	1225	A

SURGE RATINGS

Symbol	Parameter	Test Conditions	Max.	Units
I_{TSM}	Surge (non repetitive) on-state current	10ms half sine. T_{case} = 125℃	29.6	kA
I^2t	I^2t for fusing	V_R = 50% V_{RRM} - ¼ sine	4.38	MA^2s
I_{TSM}	Surge (non repetitive) on-state current	10ms half sine; T_{case} = 125℃	37	kA
I^2t	I^2t for fusing	V_R = 0	6.85	MA^2s

THERMAL AND MECHANICAL RATINGS

Symbol	Parameter	Conditions		Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance – junction to case	Double side cooled	dc	-	0.01	℃/W
$R_{th(c-h)}$	Thermal resistance – case to heatsink	Clamping force 40kN with mounting compound	Double side	-	0.001	℃/W
T_{vj}	Virtual junction temperature	On-state (conducting)		-	135	℃
		Reverse (blocking)		-	125	℃
T_{stg}	Rate of rise of reverse gate current			-55	125	℃
-	Minimum permissible on time			36.0	44.0	kN

DYNAMIC CHARACTERISTICS

Symbol	Parameter	Conditions		Min.	Max.	Units
I_{RRM}/I_{DRM}	Peak reverse and off-state current	At V_{RRM}/V_{DRM} T_{case} = 125℃		-	250	mA
dV/dt	Maximum linear rate of rise of off-state voltage	To 67% V_{DRM} T_j = 125℃, R_{gk} ≤ 1.5Ω		-	200	V/µs
dI/dt	Rate of rise of on-state current	From 67%V_{DRM} to 90kA Gate source 130A t_r 1.5µs, T_j =125℃	Non-repetitive	-	22	kA/µs
$V_{T(TO)}$	Threshold voltage	At T_{vj} = 125℃		-	1.45	V
r_T	On-state slope resistance	At T_{vj} = 125℃		-	0.3	mΩ

GATE TRIGGER CHARACTERISTICS AND RATINGS

Symbol	Parameter	Conditions	Min.	Max.	Units
V_{GT}	Gate trigger voltage	V_{DRM} = 5V,T_{case} = 25℃	1.0	4.0	V
I_{GT}	Gate trigger current	V_{DRM} = 5V,T_{case} = 25℃	-	1.5	A

ORDERING INFORMATION

PT Pulse Power Thyristor
85Q Device type
W package outline type code
x lead length (see table, right)
45 Voltage x 100

Lead length (x)		
O	No lead	
C	8”	200mm
D	10”	250mm
E	12”	300mm
F	16”	400mm
G	18”	450mm
H	20”	500mm
J	24”	600mm
K	30”	750mm
L	40”	1000mm

CURVES

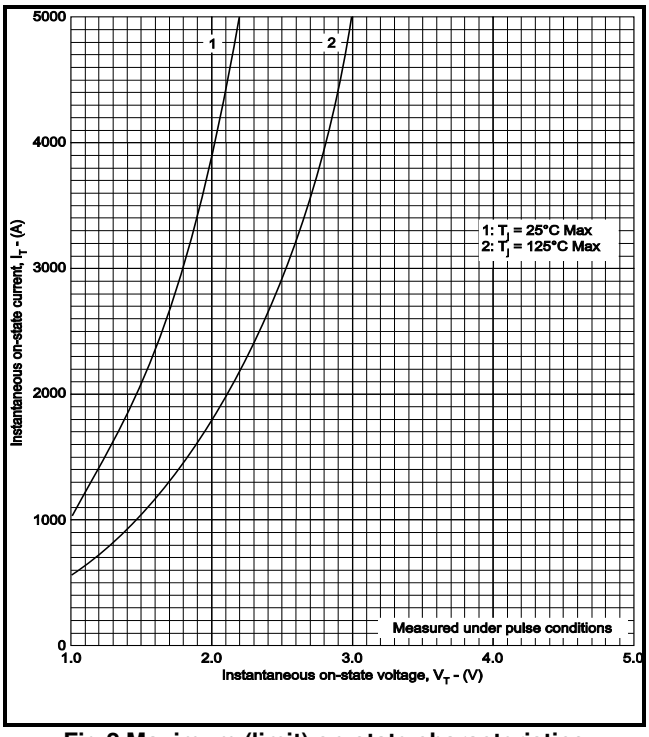


Fig.2 Maximum (limit) on-state characteristics

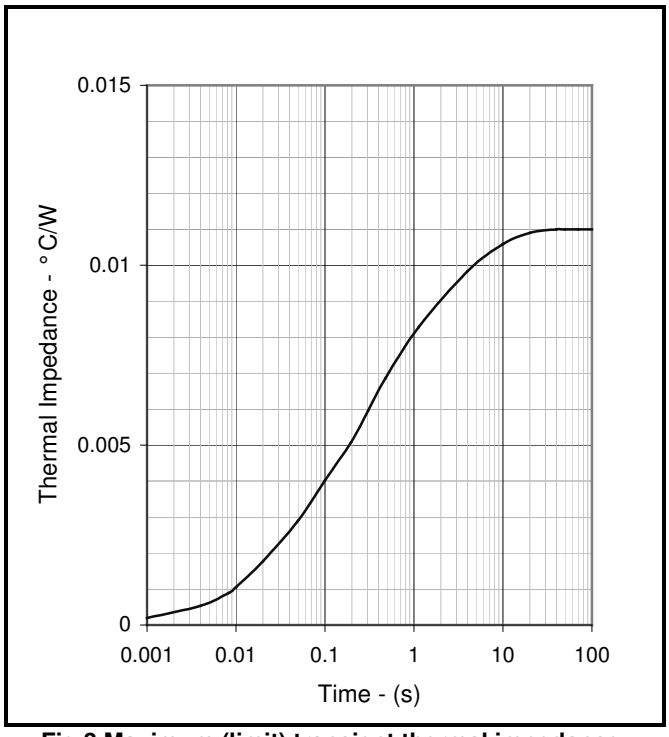
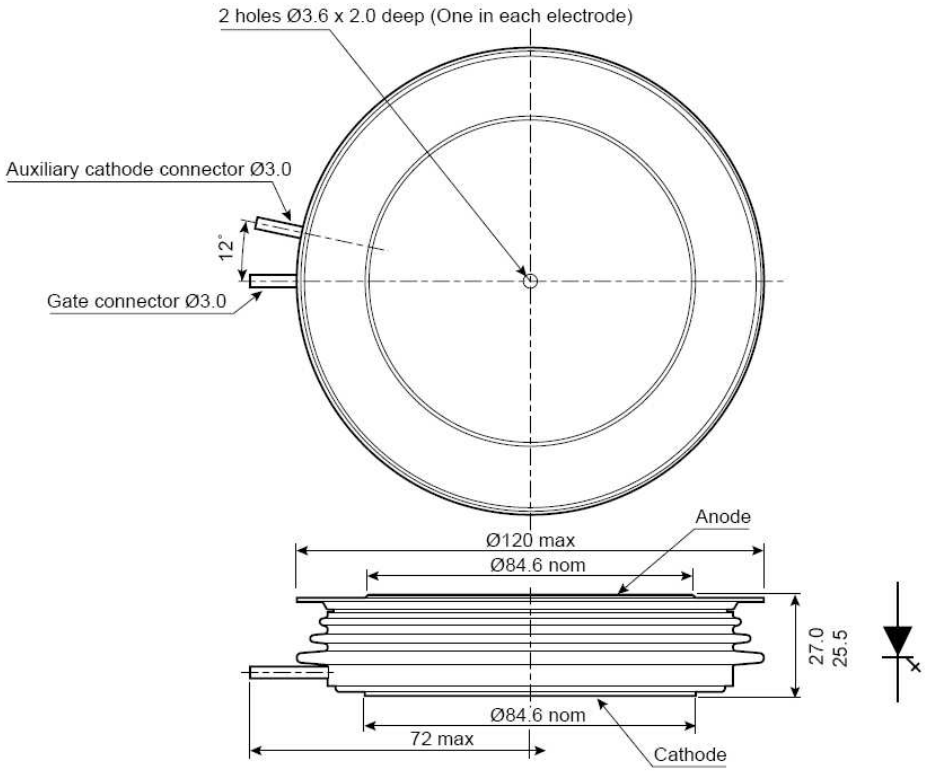


Fig.3 Maximum (limit) transient thermal impedance-double side cooled

PACKAGE DETAILS

For further package information, please contact Customer Services. All dimensions in mm, unless stated otherwise. DO NOT SCALE.



Nominal weight: 1400g
Clamping force: 40.0kN ±10%

Package outline type code: W

Fig.4 Package outline

POWER ASSEMBLY CAPABILITY

The Power Assembly group was set up to provide a support service for those customers requiring more than the basic semiconductor, and has developed a flexible range of heatsink and clamping systems in line with advances in device voltages and current capability of our semiconductors.

We offer an extensive range of air and liquid cooled assemblies covering the full range of circuit designs in general use today. The Assembly group offers high quality engineering support dedicated to designing new units to satisfy the growing needs of our customers.

Using the latest CAD methods our team of design and applications engineers aim to provide the Power Assembly Complete Solution (PACs).

HEATSINKS

The Power Assembly group has its own proprietary range of extruded aluminium heatsinks which have been designed to optimise the performance of Dynex semiconductors. Data with respect to air natural, forced air and liquid cooling (with flow rates) is available on request.

For further information on device clamps, heatsinks and assemblies, please contact your nearest sales representative or Customer Services.

Stresses above those listed in this data sheet may cause permanent damage to the device. In extreme conditions, as with all semiconductors, this may include potentially hazardous rupture of the package. Appropriate safety precautions should always be followed.

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