

APPLICATIONS

- Pulse Power
- Crowbars
- Ignitron Replacement

KEY PARAMETERS

V_{DRM}	4500V
$I_{T(AV)}$	760A
I_{TSM}	13000A
di/dt	5000A/ μ s

FEATURES

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

VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages V_{DRM} / V_{RRM}	Conditions
PT40QPx45	4500/16	$T_{vj} = 0^\circ$ to 125°C , $I_{DRM} = I_{RRM} = 50\text{mA}$, $V_{DRM}, V_{RRM} t_p = 10\text{ms}$

Lower voltage grades available.

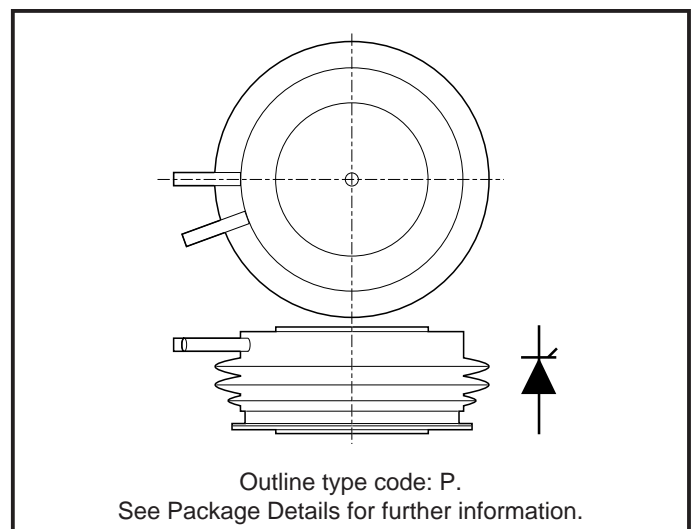


Fig.1 Package outline

CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
Double Side Cooled				
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ\text{C}$	760	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ\text{C}$	1190	A

PT40QPx45

SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	10.4	kA
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	541×10^3	A ² s
I_{TSM}	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	13.0	kA
I^2t	I^2t for fusing	$V_R = 0$	845×10^3	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	-	0.033	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 12.0kN with mounting compound Double side	-	0.008	$^{\circ}C/W$
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		11.0	15.0	kN

DYNAMIC CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
I_{RRM}/I_{DRM}	Peak reverse and off-state current	At V_{RRM}/V_{DRM} , $T_{case} = 125^{\circ}C$	-	50	mA
dV/dt	Maximum linear rate of rise of off-state voltage	To 67% V_{DRM} , $T_j = 125^{\circ}C$, $R_{gk} \leq 1.5\Omega$	-	200	V/ μ s
dI/dt	Rate of rise of on-state current	From 67% V_{DRM} to 20kA Gate source 30A $t_r = 1.5\mu$ s, $T_j = 25^{\circ}C$ Non-repetitive	-	5000	A/ μ s
$V_{T(TO)}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.4	V
r_T	On-state slope resistance	At $T_{vj} = 125^{\circ}C$	-	0.152	m Ω

GATE TRIGGER CHARACTERISTICS AND RATINGS

Symbol	Parameter	Conditions	Typ.	Max.	Units
V_{GT}	Gate trigger voltage	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	1.0	4.0	V
I_{GT}	Gate trigger current	$V_{DRM} = 5V$, $T_{case} = 25^{\circ}C$	-	1.5	A

ORDERING INFORMATION

PT Pulse Power Thyristor
 40Q Device type
 P Package outline type code
 x lead length (see table, right)
 45 Voltage x100

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

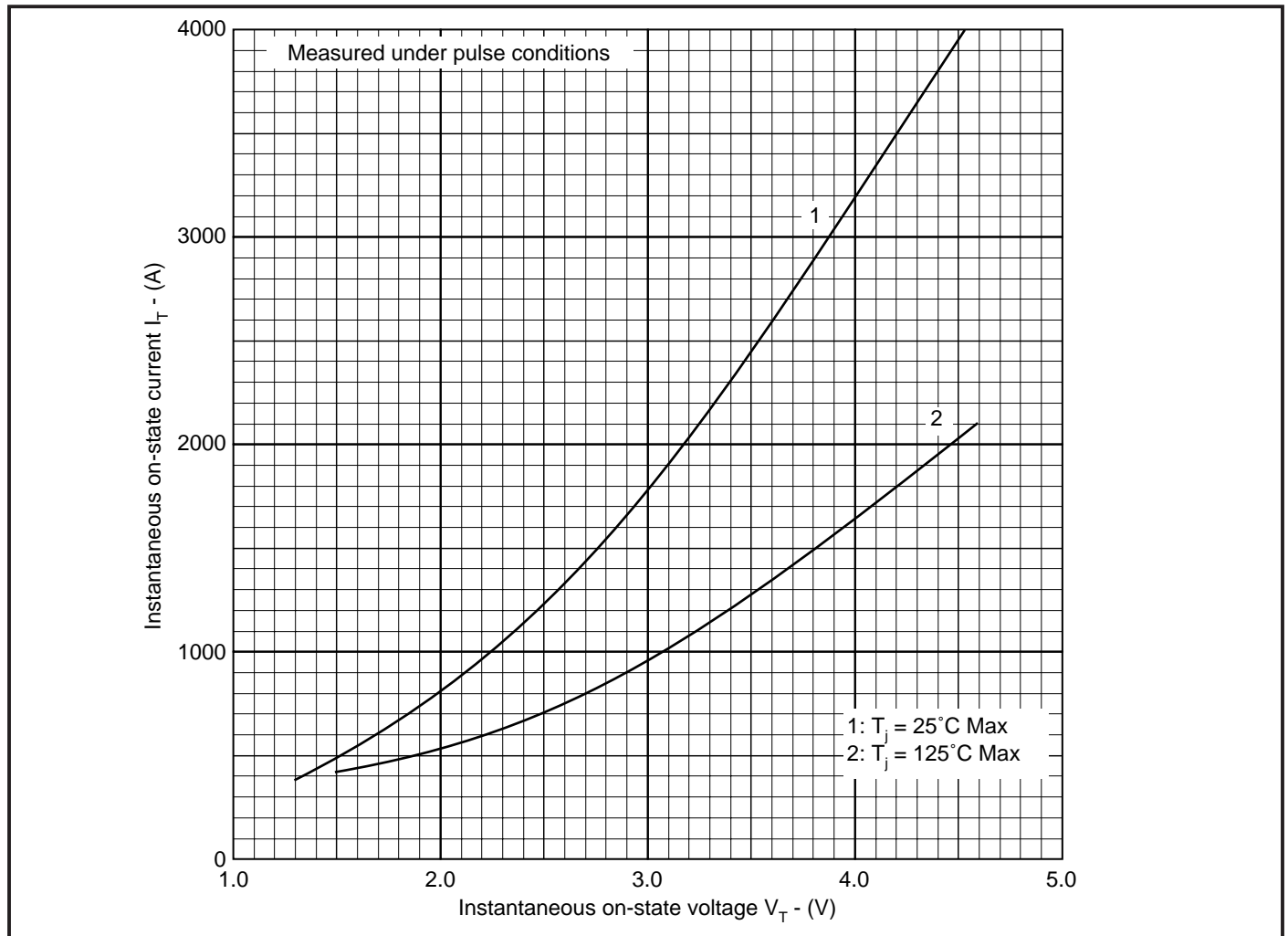


Fig.2 Maximum (limit) on-state characteristics

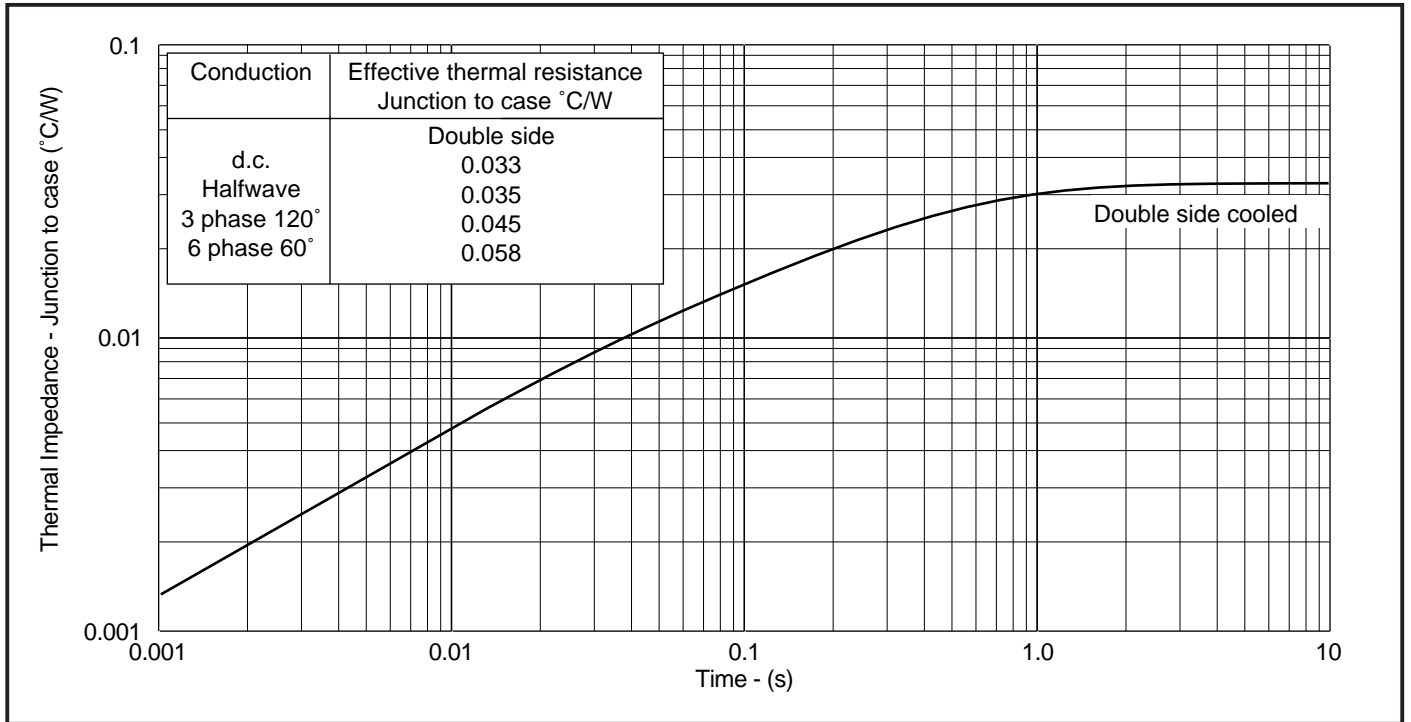
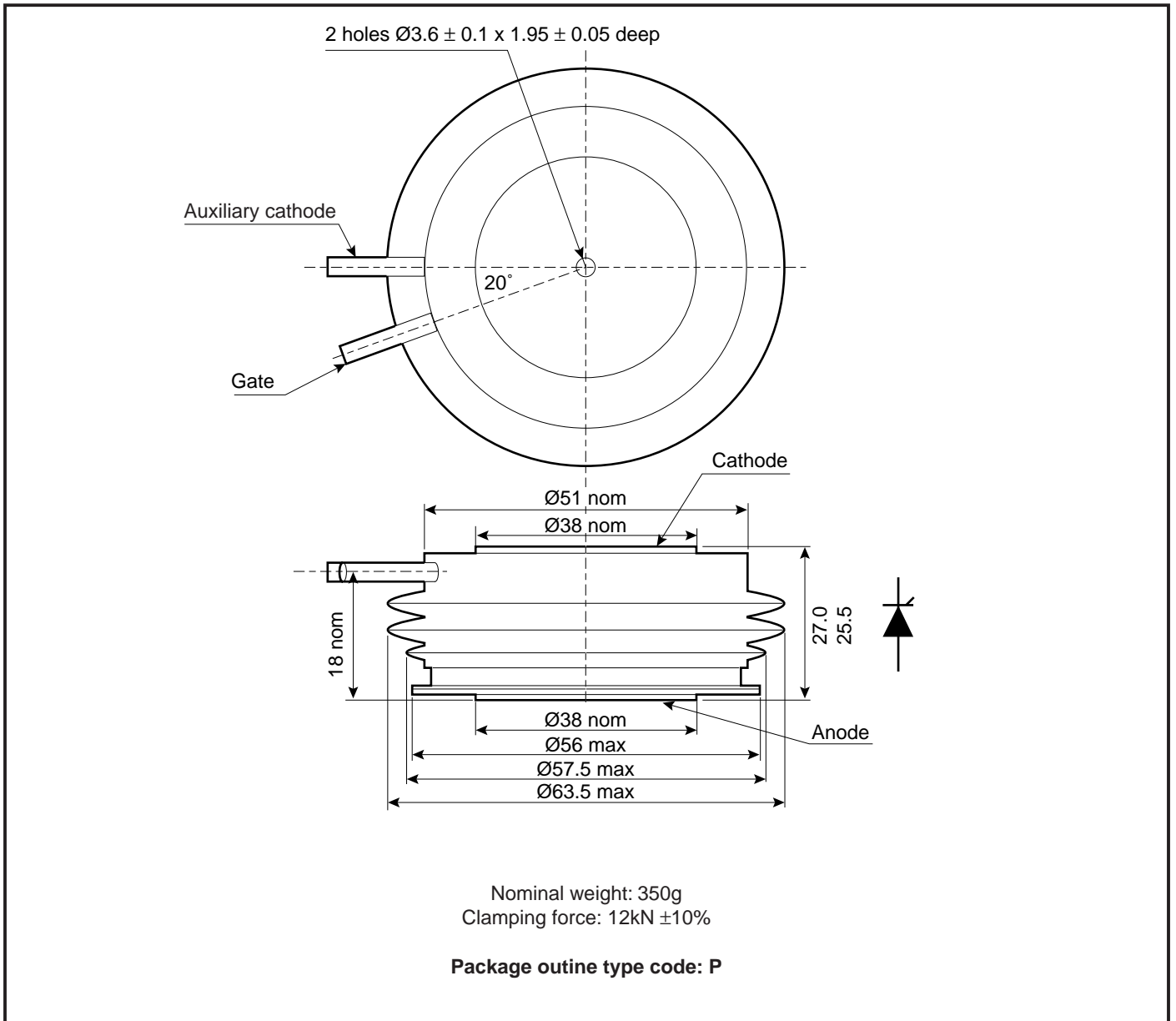


Fig.3 Maximum (limit) transient thermal impedance - junction to case

PACKAGE DETAILS

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



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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