

#### APPLICATIONS

- Pulse Power
- Crowbars
- Ignitron Replacement

#### KEY PARAMETERS

$V_{DRM}$	<b>4500V</b>
$I_{T(AV)}$	<b>1000A</b>
$I_{TSM}$	<b>22500A</b>
$di/dt$	<b>10,000A/μs</b>

#### FEATURES

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

#### VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages $V_{DRM}/V_{RRM}$	Conditions
PT60QHx45	4500/16	$T_{vj} = 0^\circ \text{ to } 125^\circ \text{C}$ , $I_{DRM} = I_{RRM} = 100\text{mA}$ , $V_{DRM}, V_{RRM}, t_p = 10\text{ms}$

Lower voltage grades available.

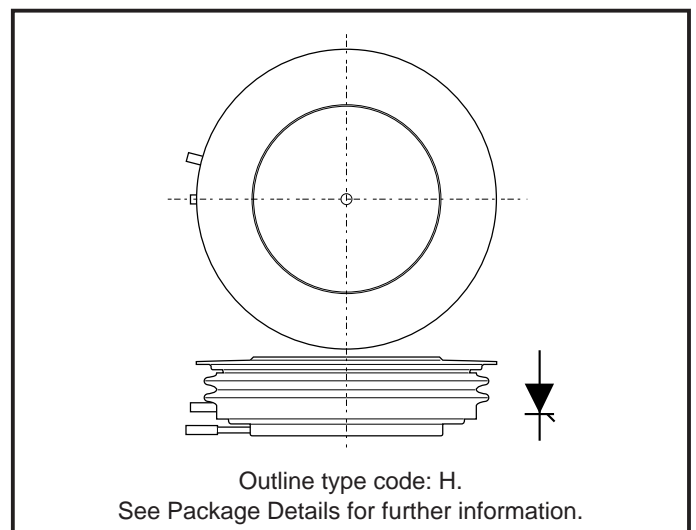


Fig.1 Package outline

#### CURRENT RATINGS

Symbol	Parameter	Conditions	Max.	Units
<b>Double Side Cooled</b>				
$I_{T(AV)}$	Mean on-state current	Half wave resistive load, $T_{case} = 80^\circ\text{C}$	1000	A
$I_{T(RMS)}$	RMS value	$T_{case} = 80^\circ\text{C}$	1570	A

# PT60QHx45

## SURGE RATINGS

Symbol	Parameter	Conditions	Max.	Units
$I_{TSM}$	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	17.8	kA
$I^2t$	$I^2t$ for fusing	$V_R = 50\% V_{RRM}$ - 1/4 sine	$15.8 \times 10^6$	A <sup>2</sup> s
$I_{TSM}$	Surge (non-repetitive) on-state current	10ms half sine; $T_{case} = 125^{\circ}C$	22.5	kA
$I^2t$	$I^2t$ for fusing	$V_R = 0$	$2.52 \times 10^6$	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	-	0.013	$^{\circ}C/W$
$R_{th(c-h)}$	Thermal resistance - case to heatsink	Clamping force 19.5kN with mounting compound	-	0.003	$^{\circ}C/W$
$T_{vj}$	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		18	22	kN

## DYNAMIC CHARACTERISTICS

Symbol	Parameter	Conditions	Typ.	Max.	Units
$I_{RRM}/I_{DRM}$	Peak reverse and off-state current	At $V_{RRM}/V_{DRM}$ , $T_{case} = 125^{\circ}C$	-	100	mA
dV/dt	Maximum linear rate of rise of off-state voltage	To 67% $V_{DRM}$ , $T_j = 125^{\circ}C$ , $R_{gk} \leq 1.5\Omega$	-	175	V/ $\mu$ s
dI/dt	Rate of rise of on-state current	From 67% $V_{DRM}$ to 40kA Gate source 60A $t_r = 1.5\mu$ s to 1A, $T_j = 25^{\circ}C$	-	10000	A/ $\mu$ s
$V_{T(TO)}$	Threshold voltage	At $T_{vj} = 125^{\circ}C$	-	1.5	V
$r_T$	On-state slope resistance	At $T_{vj} = 125^{\circ}C$	-	0.67	m $\Omega$

## GATE TRIGGER CHARACTERISTICS AND RATINGS

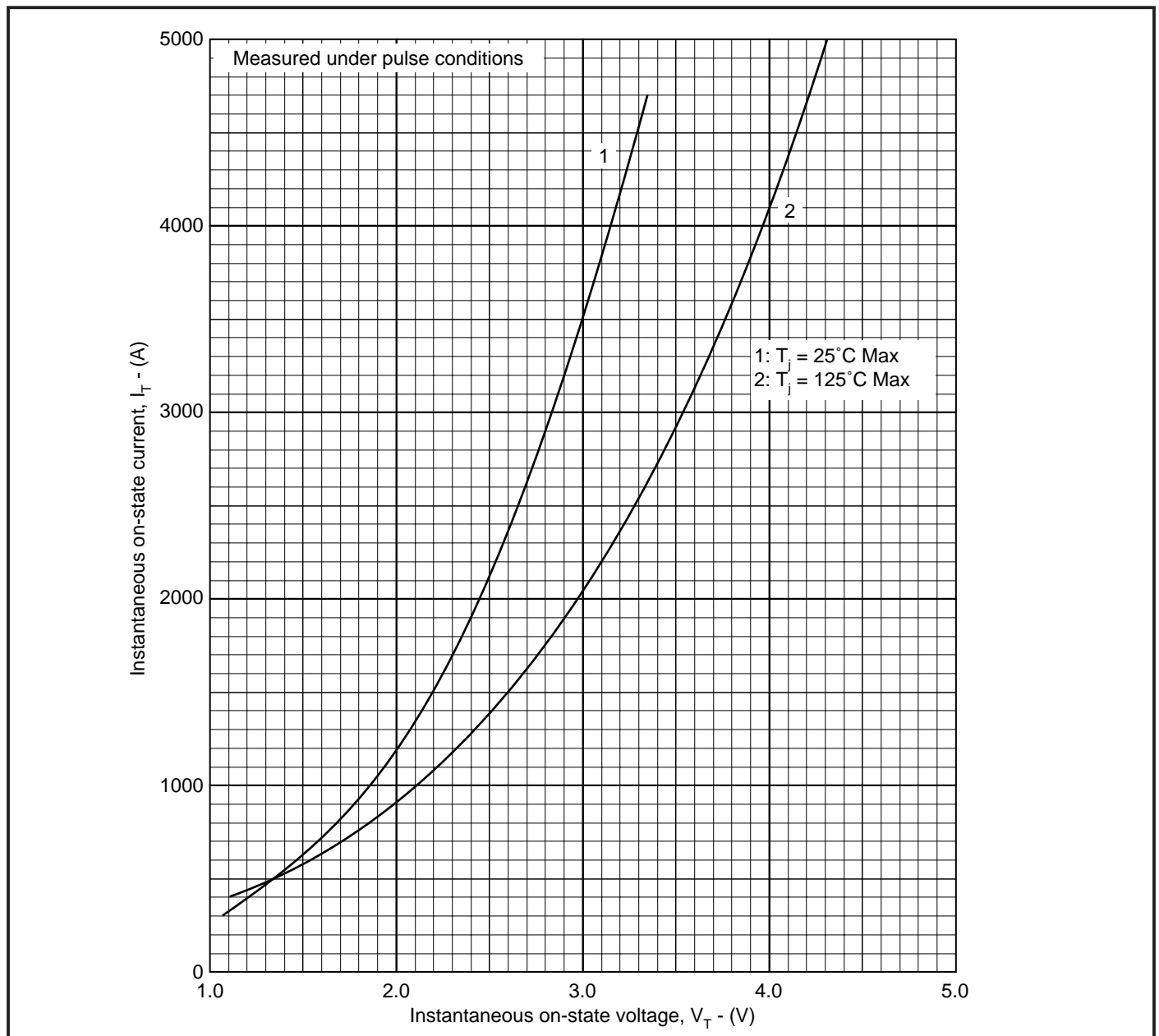
Symbol	Parameter	Conditions	Typ.	Max.	Units
$V_{GT}$	Gate trigger voltage	$V_{DRM} = 5V$ , $T_{case} = 25^{\circ}C$	-	1.0	V
$I_{GT}$	Gate trigger current	$V_{DRM} = 5V$ , $T_{case} = 25^{\circ}C$	-	3	A

**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**

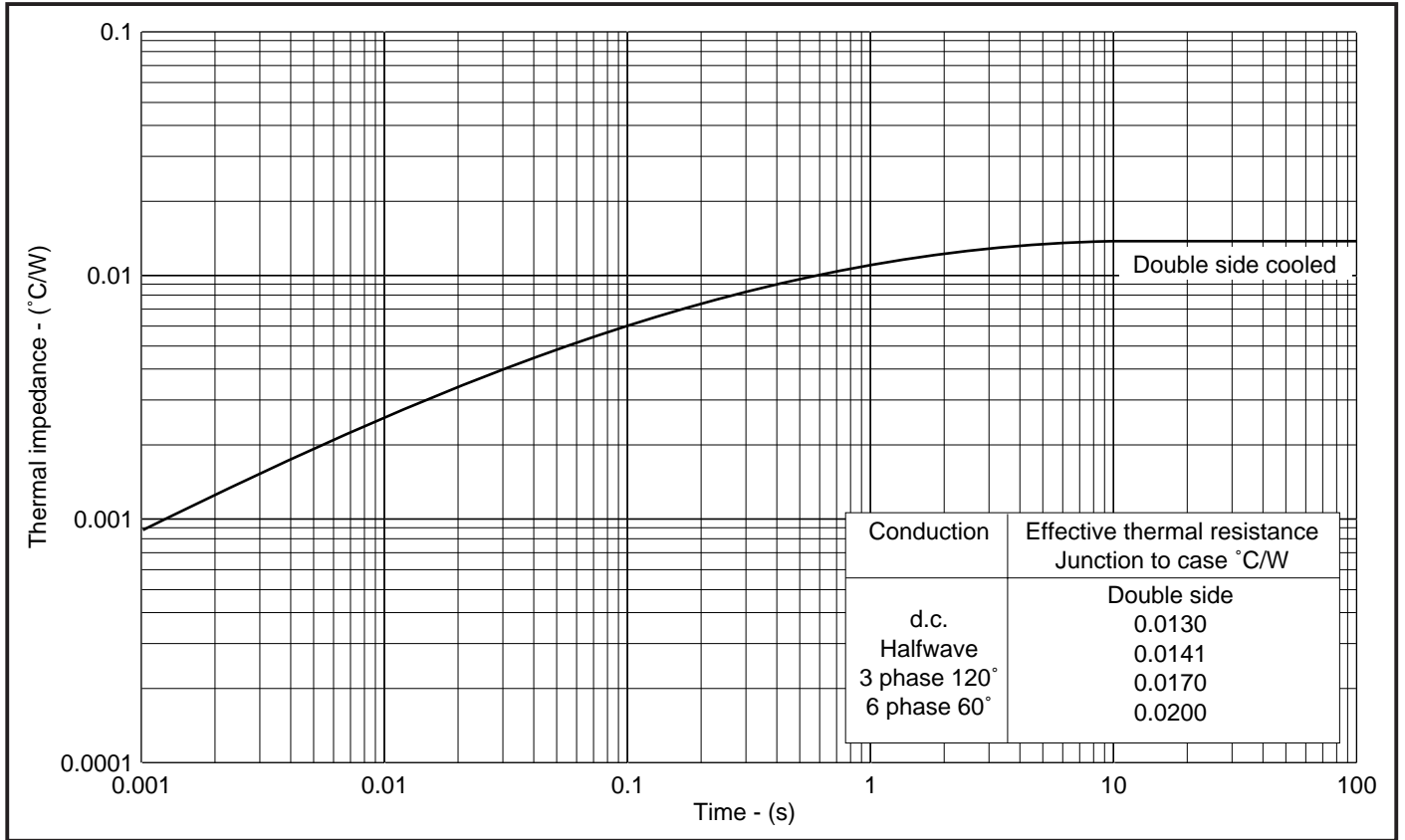
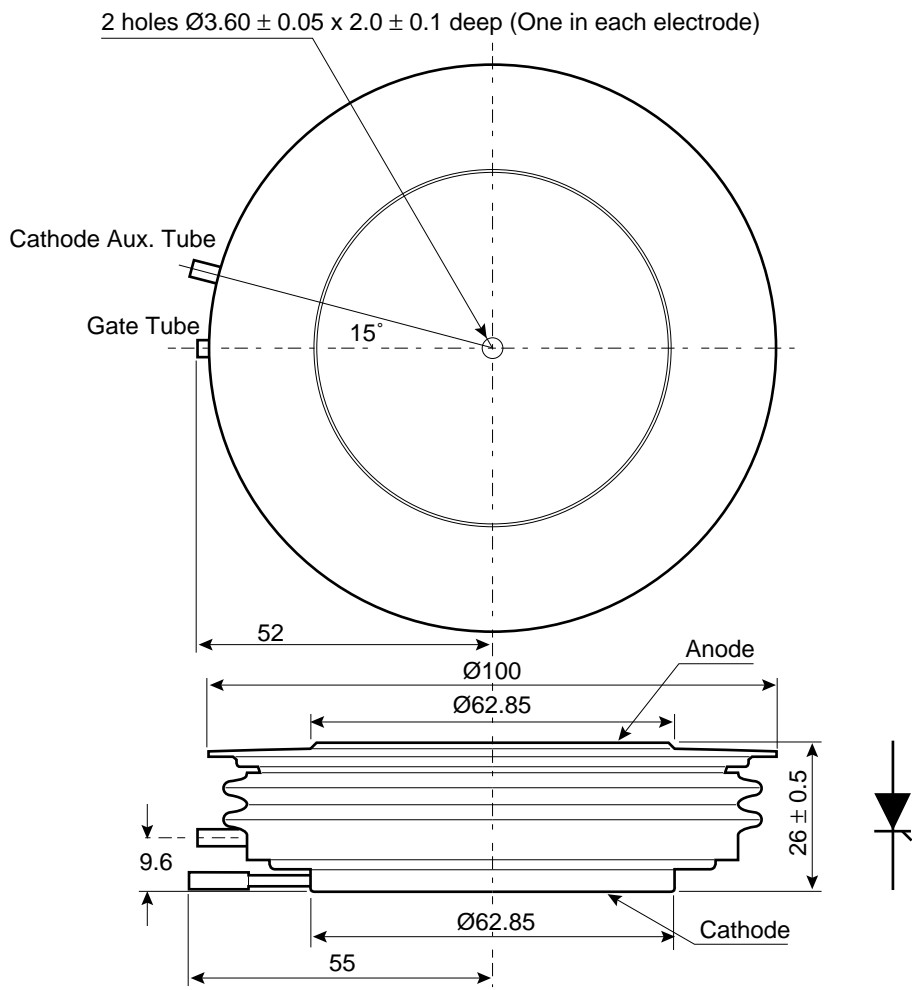


Fig.3 Maximum (limit) transient thermal impedance - junction to case

**Package Details**

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



Nominal weight: 820g  
Clamping force: 20kN  $\pm 10\%$

**Package outline type code: H**

## 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.



<http://www.dynexsemi.com>

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**Target Information:** This is the most tentative form of information and represents a very preliminary specification. No actual design work on the product has been started.

**Preliminary Information:** The product is in design and development. The datasheet represents the product as it is understood but details may change.

**Advance Information:** The product design is complete and final characterisation for volume production is well in hand.

**No Annotation:** The product parameters are fixed and the product is available to datasheet specification.

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