

FEATURES

- Low reverse recovery charge
- High switching speed
- Low forward voltage drop
- Outstanding thermal cycling capability
- All-FRD configuration
- High tolerance of non-uniform clamping pressure

APPLICATIONS

- High voltage DC transmission
- Flexible AC transmission systems
- High reliability inverters
- Motor controllers

ORDERING INFORMATION

Order As:

DPF2100P45A0052

Note: When ordering, please use the complete part number

KEY PARAMETERS

V_{RRM}		4500V
V_F	(typ)	2.4V
I_F	(max)	2100A
I_{FM}	(max)	4200A

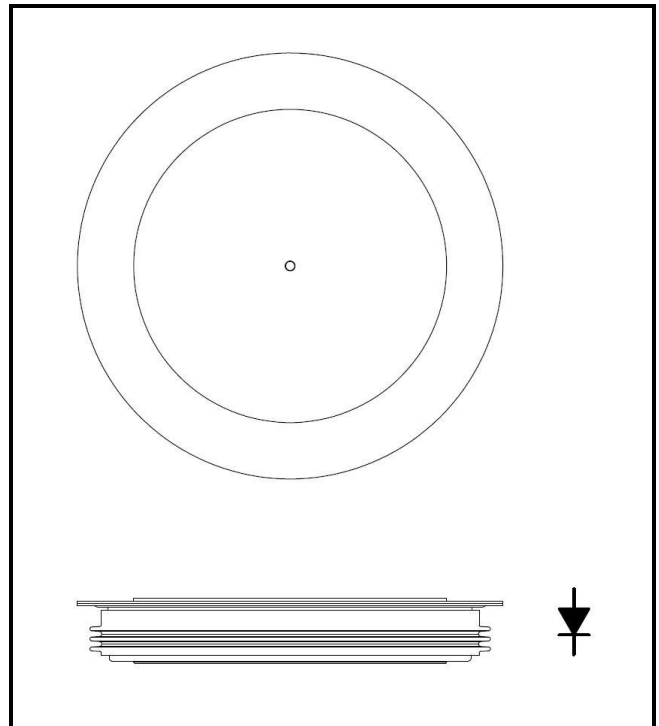
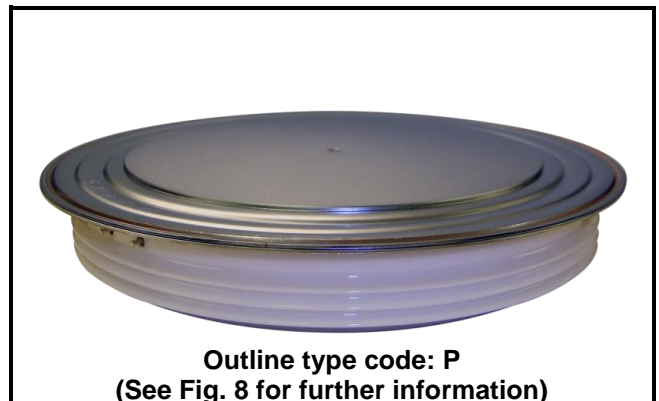


Fig.1 Circuit configuration



Outline type code: P
(See Fig. 8 for further information)

Fig. 2 Package

ABSOLUTE MAXIMUM RATINGS

Stresses above those listed under 'Absolute Maximum Ratings' 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. Exposure to Absolute Maximum Ratings may affect device reliability.

$T_{\text{case}} = 25^{\circ}\text{C}$ unless stated otherwise

Symbol	Parameter	Test Conditions	Max.	Units
V_{RRM}	Repetitive peak reverse voltage		4500	V
I_{F}	Forward current	$T_{\text{case}} = 105^{\circ}\text{C}$	2100	A
I_{FM}	Max. forward current	1ms, $T_{\text{j}} = 125^{\circ}\text{C}$	4200	A
P_{max}	Max. power dissipation	$T_{\text{case}} = 25^{\circ}\text{C}$, $T_{\text{j}} = 125^{\circ}\text{C}$	22.7	kW
I_{FSM}	Surge (non-repetitive) on-state current	10ms half-sine, $T_{\text{case}}=125^{\circ}\text{C}$, $V_{\text{R}}=0\text{V}$	40.8	kA

THERMAL AND MECHANICAL RATINGS

Symbol	Parameter	Test Conditions	Min.	Max.	Units
$R_{\text{th(j-c)}}^*$	Thermal resistance – junction to case (cathode side)	DC	-	0.0044	$^{\circ}\text{C/W}$
$R_{\text{th(c-h)}}^*$	Thermal resistance – case to heatsink (cathode side)	Clamping force 70kN (with mounting compound)	-	0.0018	$^{\circ}\text{C/W}$
T_{vj}	Virtual junction temperature	-	-	125	$^{\circ}\text{C}$
T_{stg}	Storage temperature range	-	-40	125	$^{\circ}\text{C}$
F_{m}	Clamping force	-	65	75	kN

Note:

* Heat transfer occurs primarily through the cathode side of the device.

ELECTRICAL CHARACTERISTICS
T_{case} = 25°C unless stated otherwise.

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
I _{RM}	Collector cut-off current	V _R = V _{RRM}			5	mA
		V _R = V _{RRM} , T _{case} = 125°C		30	90	mA
V _F	Diode forward voltage	I _F = 2100A, T _j = 25°C		2.4		V
		I _F = 2100A, T _j = 125°C		2.1		V

ELECTRICAL CHARACTERISTICS
T_{case} = 25°C unless stated otherwise

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Units
Q _{rr}	Diode reverse recovery charge	I _F = 2100A V _R = 2800V dI _F /dt = 5000A/μs Tested with IGBT device Dynex DPI2100P45A5200		2500		μC
I _{rr}	Diode reverse recovery current			2300		A
E _{rec}	Diode reverse recovery energy				4300	

T_{case} = 125°C unless stated otherwise

Symbol	Parameter	Test Conditions	Min	Typ.	Max	Units
Q _{rr}	Diode reverse recovery charge	I _F = 2100A V _R = 2800V dI _F /dt = 5000A/μs Tested with IGBT device Dynex DPI2100P45A5200		4900		μC
I _{rr}	Diode reverse recovery current			2900		A
E _{rec}	Diode reverse recovery energy				8800	

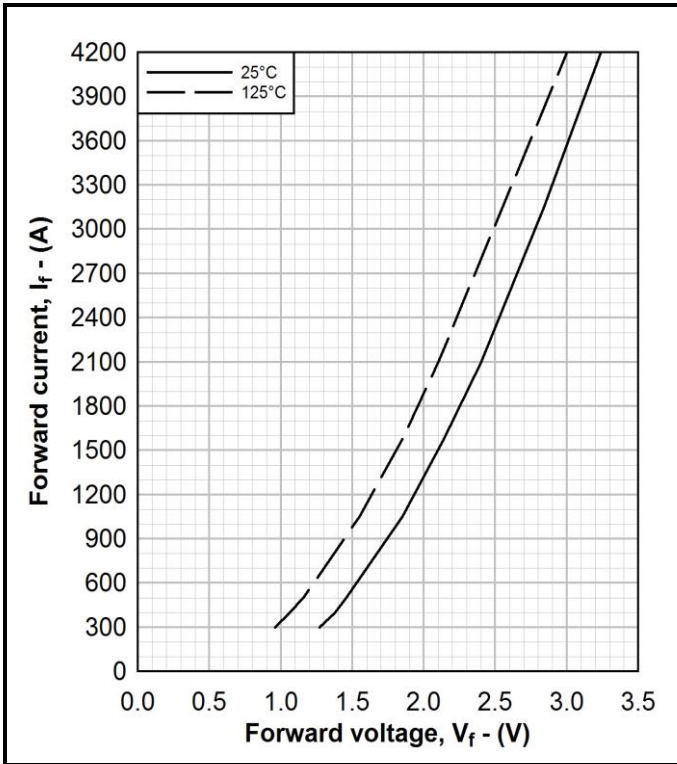


Fig. 3 Diode typical forward characteristics

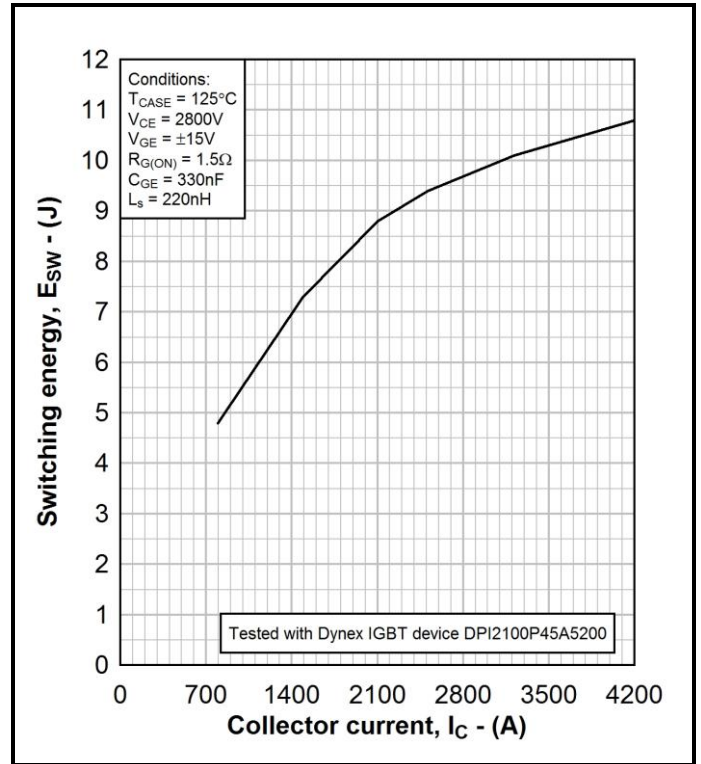


Fig. 4 Typical switching energy vs. collector current

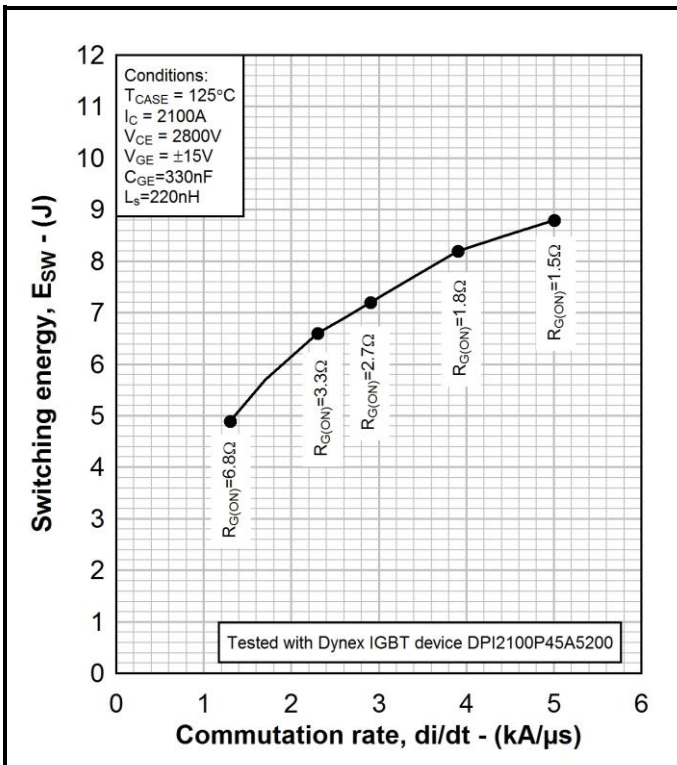


Fig. 5 Typical switching energy vs. gate resistance

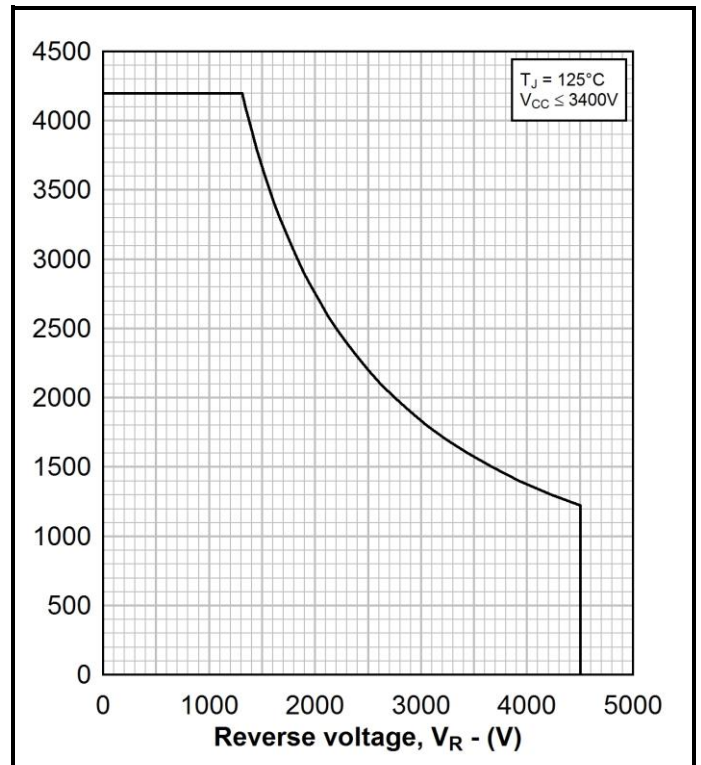


Fig. 6 Diode reverse bias safe operating area

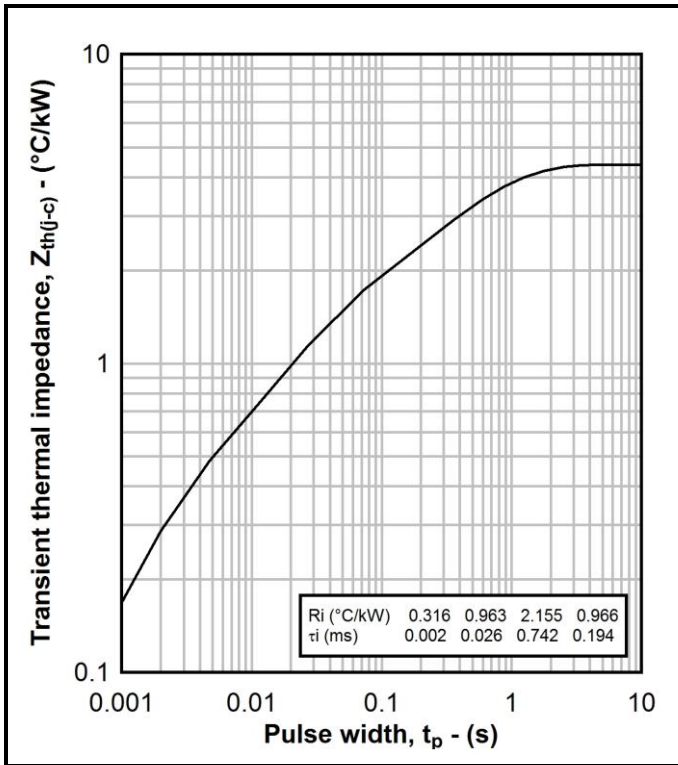


Fig. 7 Transient thermal impedance

PACKAGE DETAILS

For further package information, please visit our website or contact Customer Services.
All dimensions in mm, unless stated otherwise.

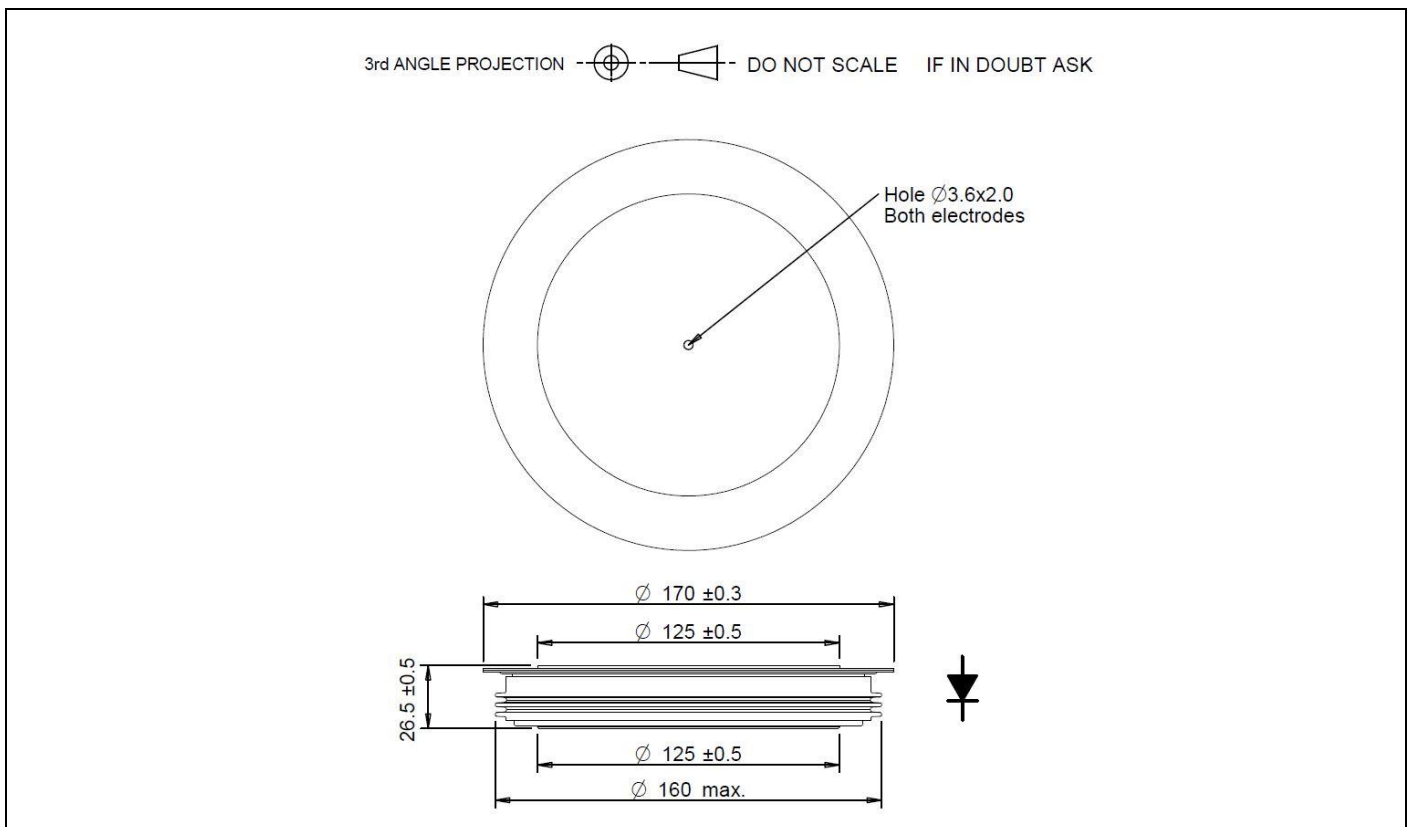


Fig. 7 Package outline

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