

FEATURES

- Dual Device Module
- Electrically Isolated Package
- Pressure Contact Construction
- International Standard Footprint
- Alumina (Non-toxic) Isolation Medium

APPLICATIONS

- Power Supplies
- Rectifiers
- Battery Chargers

VOLTAGE RATINGS

Type Number	Repetitive Peak Voltages V_{RRM} V	Conditions
MP04XX780-45	4500	$T_{vj} = -40^{\circ}$ to 150°C , $V_{RSM} = V_{RRM} + 100\text{V}$
MP04XX780-44	4400	
MP04XX780-42	4200	
MP04XX780-40	4000	

Lower voltage grades available

ORDERING INFORMATION

Order As:

MP04HB780-45 or **MP04HB780-44** or **MP04HB780-42** or **MP04HB780-40**

MP04G780-45 or **MP04G780-44** or **MP04G780-42** or **MP04G780-40**

MP04GN780-45 or **MP04GN780-44** or **MP04GN780-42** or **MP04GN780-40**

Note: When ordering, please use the complete part number. Please quote full part number in all correspondence.

KEY PARAMETERS

V_{RRM}	4500V
$I_{F(AV)}$	782A
I_{FSM} (per arm)	15000A
$I_{F(RMS)}$	1228A
V_{isol}	3000V

Code	Circuit
HB	
G	
GN	

Fig.1 Circuit diagrams

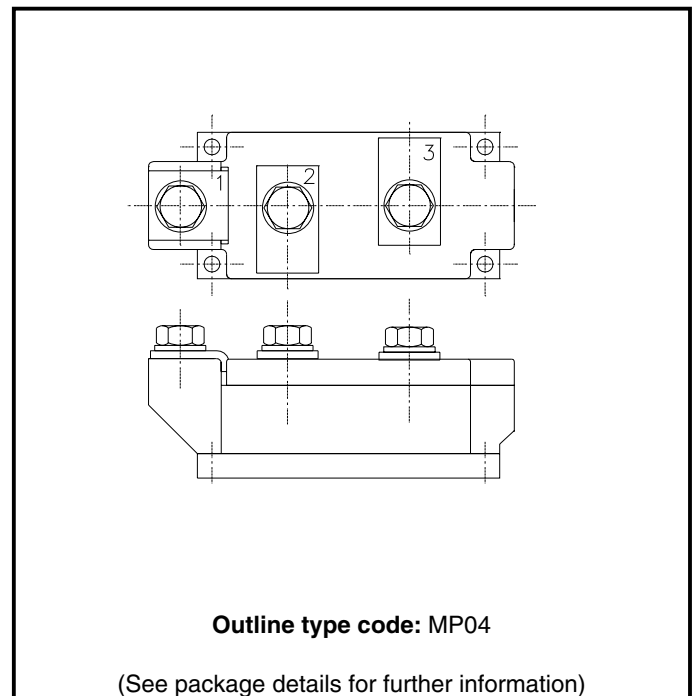


Fig. 2 Electrical connections - (not to scale)

ABSOLUTE MAXIMUM RATINGS - PER ARM

Stresses above those listed under 'Absolute Maximum Ratings' may cause permanent damage to the device. This is a stress rating only and functional operation of the device at these or any other conditions above those indicated in the operational sections of this specification is not implied. Exposure to Absolute Maximum Ratings for extended periods may affect device reliability.

Symbol	Parameter	Conditions	Max.	Units	
$I_{F(AV)}$	Mean forward current	Half wave resistive load	$T_{case} = 75^{\circ}C$	782	A
			$T_{case} = 85^{\circ}C$	712	A
			$T_{case} = 100^{\circ}C$	596	A
$I_{F(RMS)}$	RMS value	$T_{case} = 75^{\circ}C$	1228	A	
		$T_{case} = 85^{\circ}C$	1118	A	
		$T_{case} = 100^{\circ}C$	937	A	
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_j = 150^{\circ}C$	15	kA	
I^2t	I^2t for fusing	$V_R = 0$	1.125×10^6	A^2s	
I_{FSM}	Surge (non-repetitive) forward current	10ms half sine; $T_j = 150^{\circ}C$	12	kA	
I^2t	I^2t for fusing	$V_R = 50\% V_{RRM}$	0.72×10^6	A^2s	
V_{isol}	Isolation voltage	Commoned terminals to base plate AC RMS, 1 min, 50Hz	3000	V	

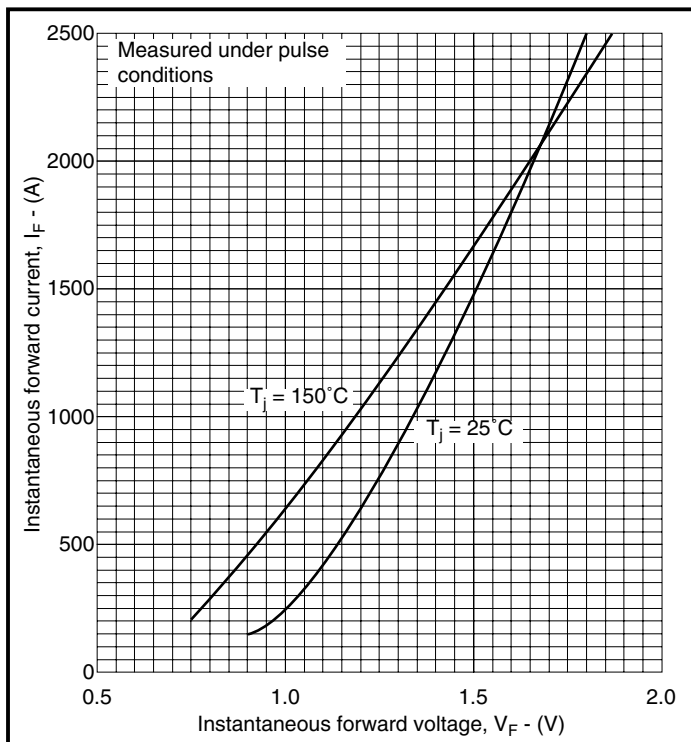
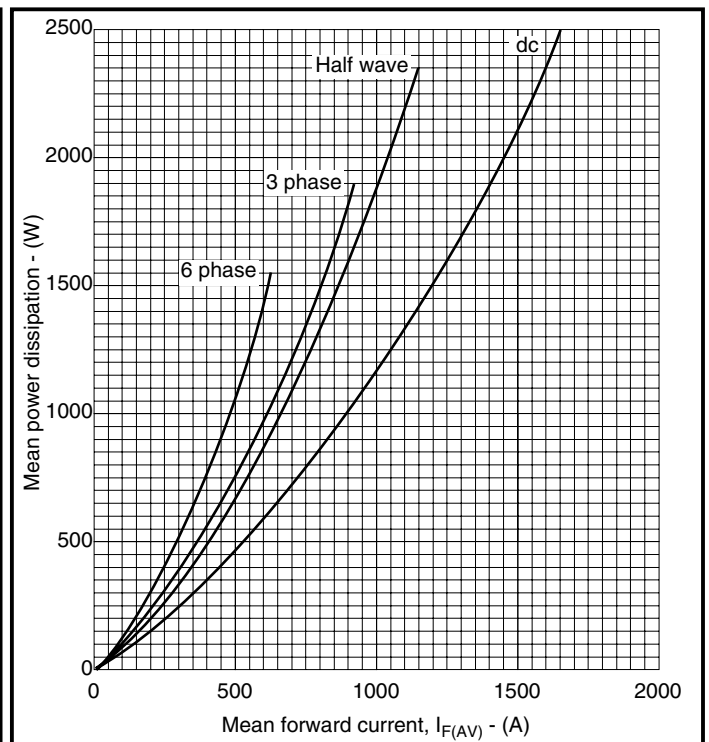
THERMAL AND MECHANICAL DATA

Symbol	Parameter	Conditions	Min.	Max.	Units
$R_{th(j-c)}$	Thermal resistance - junction to case (per diode)	dc	-	0.056	$^{\circ}C/W$
		Halfwave	-	0.060	$^{\circ}C/W$
		3 Phase	-	0.066	$^{\circ}C/W$
T_{vj}	Virtual junction temperature	Reverse (blocking)	-	150	$^{\circ}C$
T_{stg}	Storage temperature range	-	-40	150	$^{\circ}C$
-	Screw torque	Mounting	6 (53)	-	Nm (lb.ins)
		Electrical connections	-	12 (106)	Nm (lb.ins)
-	Weight (nominal)	-	-	1580	g

CHARACTERISTICS

Symbol	Parameter	Conditions	Min.	Max.	Units
I_{RRM}	Peak reverse current	At V_{RRM} , $T_{case} = 150^{\circ}C$	-	50	mA
Q_S	Total stored charge	$I_F = 1000A$, $dI_{RR}/dt = 3A/\mu s$	-	2000	μC
I_{RR}	Peak recovery current	$T_{case} = 150^{\circ}C$, $V_R = 100V$	-	85	A
V_{TO}	Threshold voltage. See Note 1.	At $T_{vj} = 150^{\circ}C$	-	0.75	V
r_T	Slope resistance. See Note 1.	At $T_{vj} = 150^{\circ}C$	-	0.44	m Ω

Note 1: The data given in this datasheet with regard to forward voltage drop is the for the calculation of the power dissipation in the semiconductor elements only. Forward voltage drops measured at the power terminals will be in excess of these figures due to the impedance of the busbars from the terminals to the semiconductor.

CURVES

Fig.3 Maximum (limit) forward characteristics

Fig.4 Power dissipation curves

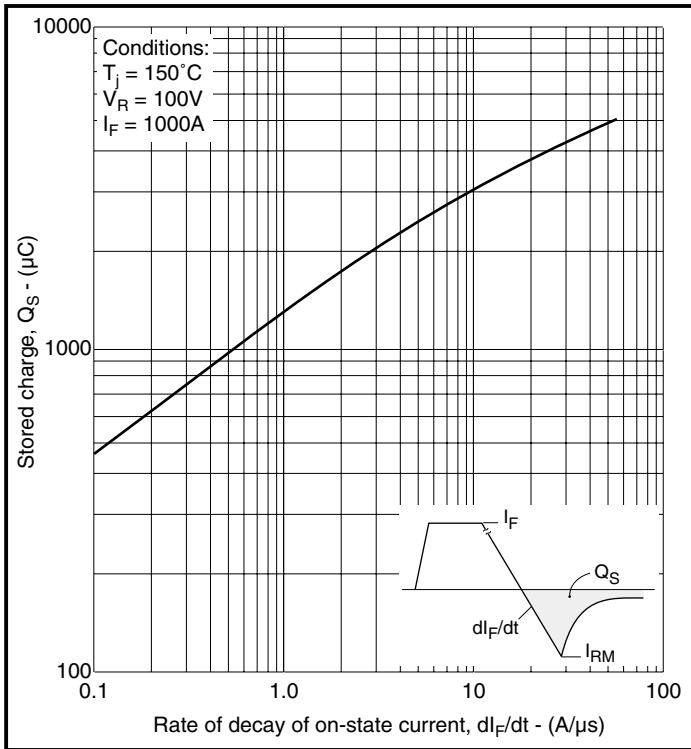


Fig.5 Maximum stored charge

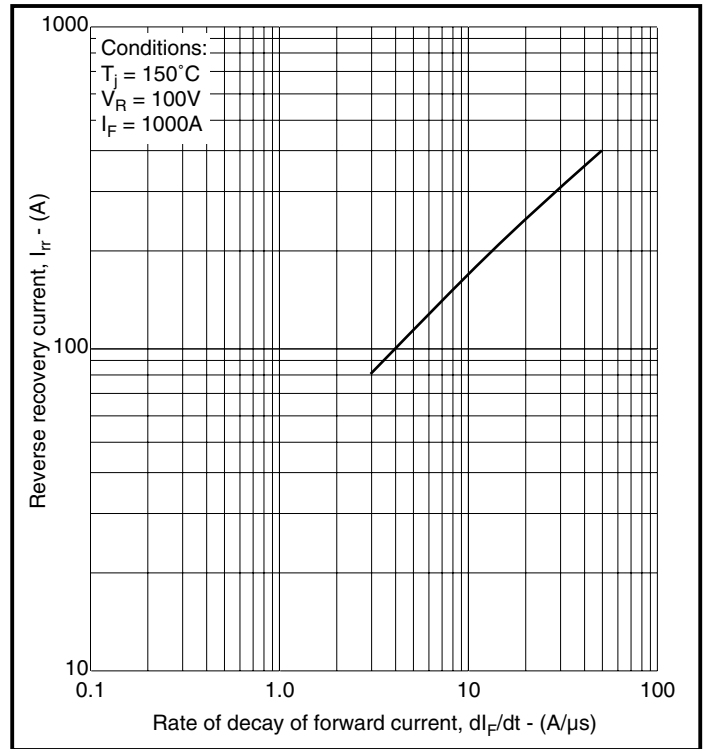


Fig.6 Maximum reverse recovery current

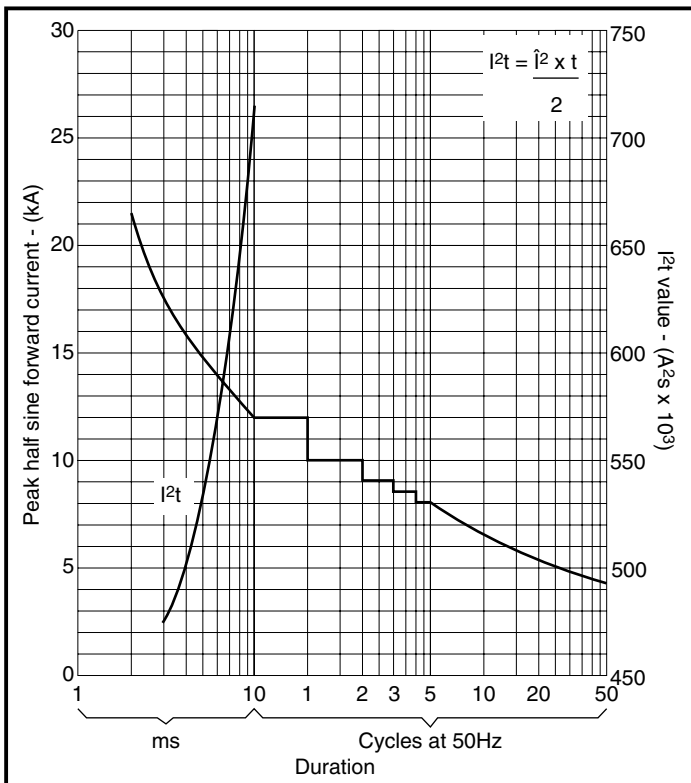


Fig.7 Surge (non-repetitive) forward current vs time (with 50% V_{RRM} @ $T_c = 150^\circ\text{C}$)

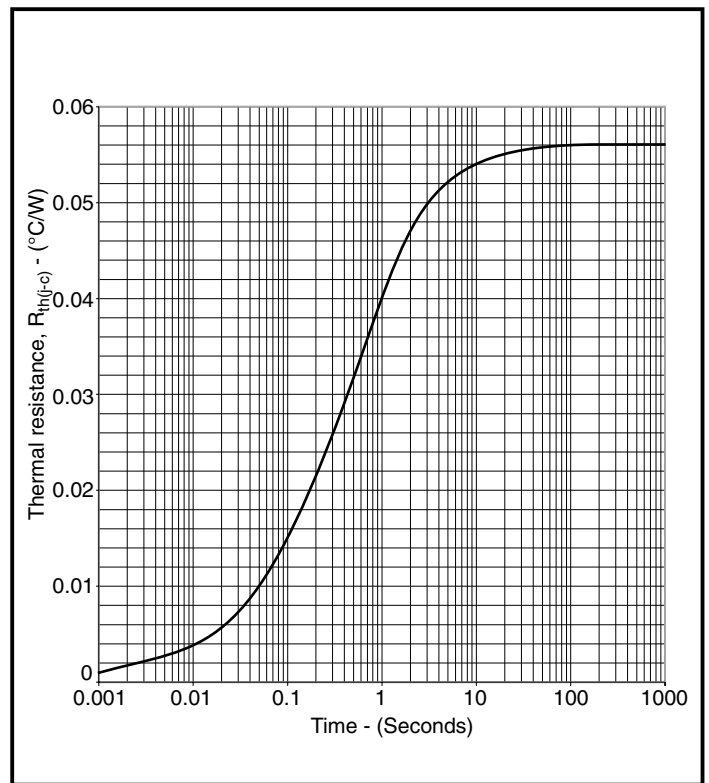


Fig.8 Transient thermal impedance - dc

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>

e-mail: power_solutions@dynexsemi.com

HEADQUARTERS OPERATIONS
DYNEX SEMICONDUCTOR LTD
Doddington Road, Lincoln.
Lincolnshire. LN6 3LF. United Kingdom.
Tel: +44-(0)1522-500500
Fax: +44-(0)1522-500550

CUSTOMER SERVICE
Tel: +44 (0)1522 502753 / 502901. Fax: +44 (0)1522 500020

SALES OFFICES
Benelux, Italy & Switzerland: Tel: +33 (0)1 64 66 42 17. Fax: +33 (0)1 64 66 42 19.
France: Tel: +33 (0)2 47 55 75 52. Fax: +33 (0)2 47 55 75 59.
Germany, Northern Europe, Spain & Rest Of World: Tel: +44 (0)1522 502753 / 502901.
Fax: +44 (0)1522 500020
North America: Tel: (440) 259-2060. Fax: (440) 259-2059. Tel: (949) 733-3005. Fax: (949) 733-2986.

These offices are supported by Representatives and Distributors in many countries world-wide.
© Dynex Semiconductor 2003 TECHNICAL DOCUMENTATION – NOT FOR RESALE. PRODUCED IN UNITED KINGDOM

This publication is issued to provide information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose nor form part of any order or contract nor to be regarded as a representation relating to the products or services concerned. No warranty or guarantee express or implied is made regarding the capability, performance or suitability of any product or service. The Company reserves the right to alter without prior notice the specification, design or price of any product or service. Information concerning possible methods of use is provided as a guide only and does not constitute any guarantee that such methods of use will be satisfactory in a specific piece of equipment. It is the user's responsibility to fully determine the performance and suitability of any equipment using such information and to ensure that any publication or data used is up to date and has not been superseded. These products are not suitable for use in any medical products whose failure to perform may result in significant injury or death to the user. All products and materials are sold and services provided subject to the Company's conditions of sale, which are available on request.

All brand names and product names used in this publication are trademarks, registered trademarks or trade names of their respective owners.