

## Standard Rectifier

$V_{RRM} = 2 \times 1200 \text{ V}$

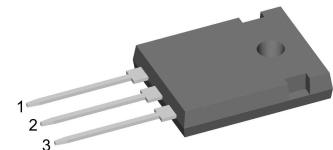
$I_{FAV} = 10 \text{ A}$

$V_F = 1.18 \text{ V}$

### Phase leg

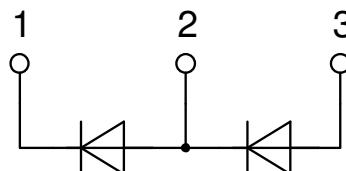
#### Part number

DMA10P1200HR



Backside: isolated

E72873



#### Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

#### Applications:

- Diode for main rectification
- For single and three phase bridge configurations

#### Package: ISO247

- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

#### Terms & Conditions of usage:

The data contained in this product data sheet is exclusively intended for technically trained staff. The user will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to his application. The specifications of our components may not be considered as an assurance of component characteristics. The information in the valid application- and assembly notes must be considered. Should you require product information in excess of the data given in this product data sheet or which concerns the specific application of your product, please contact your local sales office.

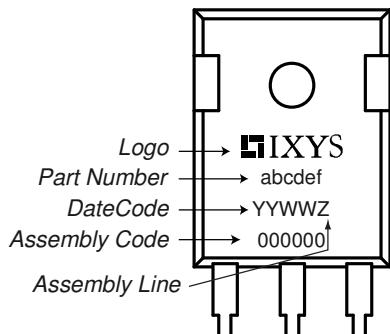
Due to technical requirements our product may contain dangerous substances. For information on the types in question please contact your local sales office. Should you intend to use the product in aviation, in health or life endangering or life support applications, please notify. For any such application we urgently recommend

- to perform joint risk and quality assessments;
- the conclusion of quality agreements;
- to establish joint measures of an ongoing product survey, and that we may make delivery dependent on the realization of any such measures.

## Rectifier

Symbol	Definition	Conditions	Ratings			
			min.	typ.	max.	
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^\circ\text{C}$			1300	V
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^\circ\text{C}$			1200	V
$I_R$	reverse current	$V_R = 1200 \text{ V}$ $V_R = 1200 \text{ V}$	$T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 150^\circ\text{C}$		10 0.2	$\mu\text{A}$ mA
$V_F$	forward voltage drop	$I_F = 10 \text{ A}$	$T_{VJ} = 25^\circ\text{C}$		1.23	V
		$I_F = 20 \text{ A}$			1.46	V
		$I_F = 10 \text{ A}$	$T_{VJ} = 150^\circ\text{C}$		1.18	V
		$I_F = 20 \text{ A}$			1.49	V
$I_{FAV}$	average forward current	$T_C = 145^\circ\text{C}$ rectangular	$T_{VJ} = 175^\circ\text{C}$		10	A
$V_{F0}$ $r_F$	threshold voltage slope resistance } for power loss calculation only		$T_{VJ} = 175^\circ\text{C}$		0.81 34	V $\text{m}\Omega$
$R_{thJC}$	thermal resistance junction to case				2	K/W
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$P_{tot}$	total power dissipation		$T_C = 25^\circ\text{C}$		75	W
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$		120	A
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$V_R = 0 \text{ V}$		130	A
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$	$T_{VJ} = 150^\circ\text{C}$		100	A
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$V_R = 0 \text{ V}$		110	A
$I^2t$	value for fusing	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$	$T_{VJ} = 45^\circ\text{C}$		72	$\text{A}^2\text{s}$
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$V_R = 0 \text{ V}$		70	$\text{A}^2\text{s}$
		$t = 10 \text{ ms}; (50 \text{ Hz}), \text{sine}$	$T_{VJ} = 150^\circ\text{C}$		50	$\text{A}^2\text{s}$
		$t = 8,3 \text{ ms}; (60 \text{ Hz}), \text{sine}$	$V_R = 0 \text{ V}$		50	$\text{A}^2\text{s}$
$C_J$	junction capacitance	$V_R = 400 \text{ V}; f = 1 \text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$	4		pF

Package ISO247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{VJ}$	virtual junction temperature		-55		175	°C
$T_{op}$	operation temperature		-55		150	°C
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				6		g
$M_d$	mounting torque		0.8		1.2	Nm
$F_c$	mounting force with clip		20		120	N
$d_{Spp/App}$	creepage distance on surface / striking distance through air		terminal to terminal	2.7		mm
$d_{Spb/Apb}$			terminal to backside	4.1		mm
$V_{ISOL}$	isolation voltage	$t = 1$ second $t = 1$ minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA		3600 3000	V V

**Product Marking****Part description**

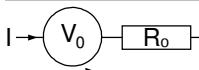
D = Diode  
 M = Standard Rectifier  
 A = (up to 1800V)  
 10 = Current Rating [A]  
 P = Phase leg  
 1200 = Reverse Voltage [V]  
 HR = ISO247 (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA10P1200HR	DMA10P1200HR	Tube	30	517334

Similar Part	Package	Voltage class
DMA10P1600HR	ISO247 (3)	1600

**Equivalent Circuits for Simulation**

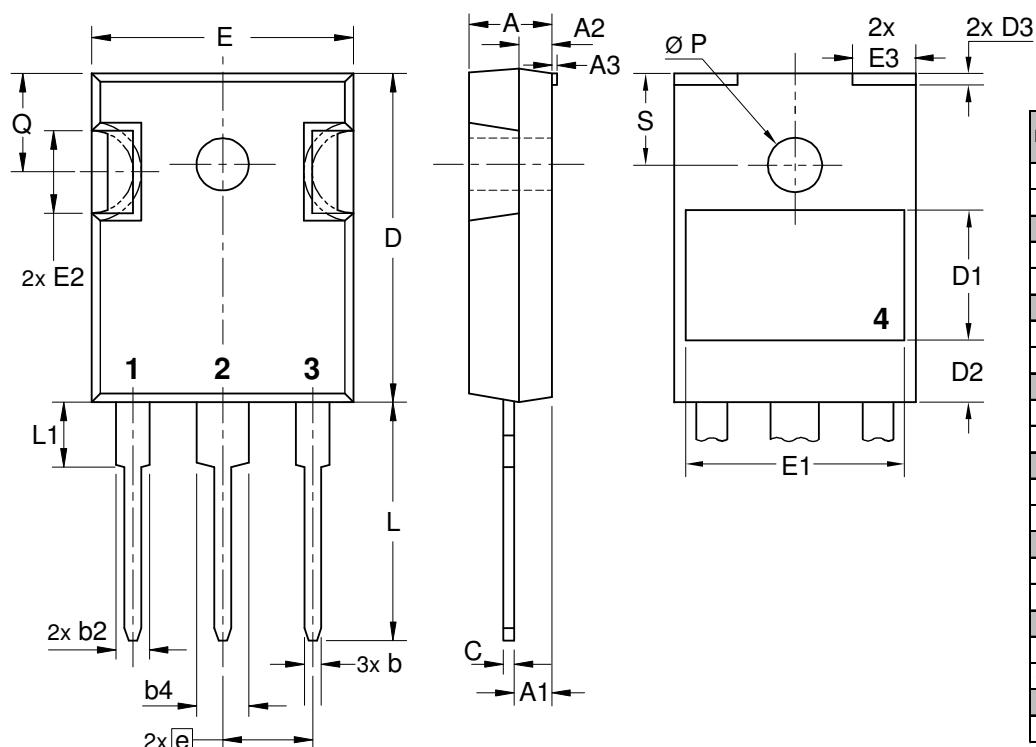
\* on die level

 $T_{VJ} = 175$  °C

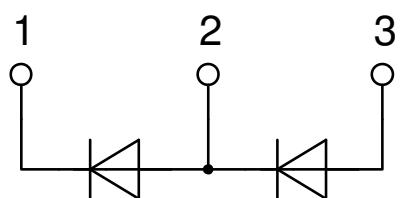
Rectifier

$V_{0\max}$  threshold voltage 0.81 V  
 $R_{0\max}$  slope resistance \* 31 mΩ

## Outlines ISO247



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
A3	typ. 0.05		typ. 0.002	
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.844
D1	typ. 8.90		typ. 0.350	
D2	typ. 2.90		typ. 0.114	
D3	typ. 1.00		typ. 0.039	
E	15.49	16.24	0.610	0.639
E1	typ. 13.45		typ. 0.530	
E2	4.31	5.48	0.170	0.216
E3	typ. 4.00		typ. 0.157	
e	5.46	BSC	0.215	BSC
L	19.80	20.30	0.780	0.799
L1	-	4.49	-	0.177
Ø P	3.55	3.65	0.140	0.144
Q	5.38	6.19	0.212	0.244
S	6.14	BSC	0.242	BSC



## Rectifier

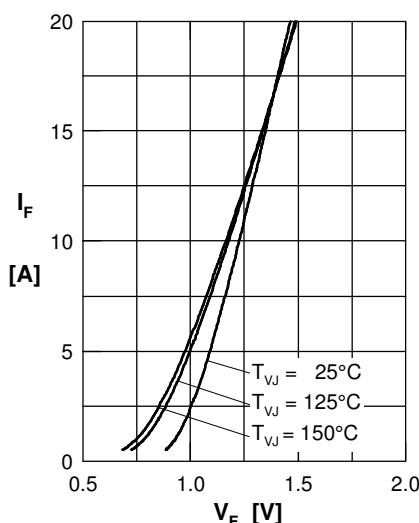


Fig. 1 Forward current versus voltage drop per diode

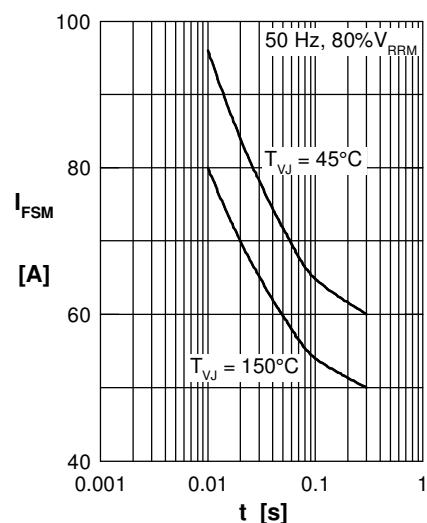


Fig. 2 Surge overload current

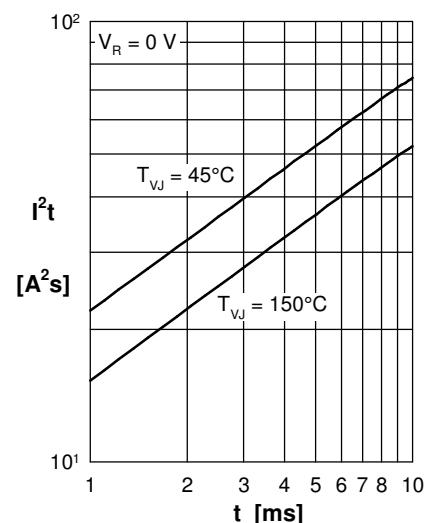
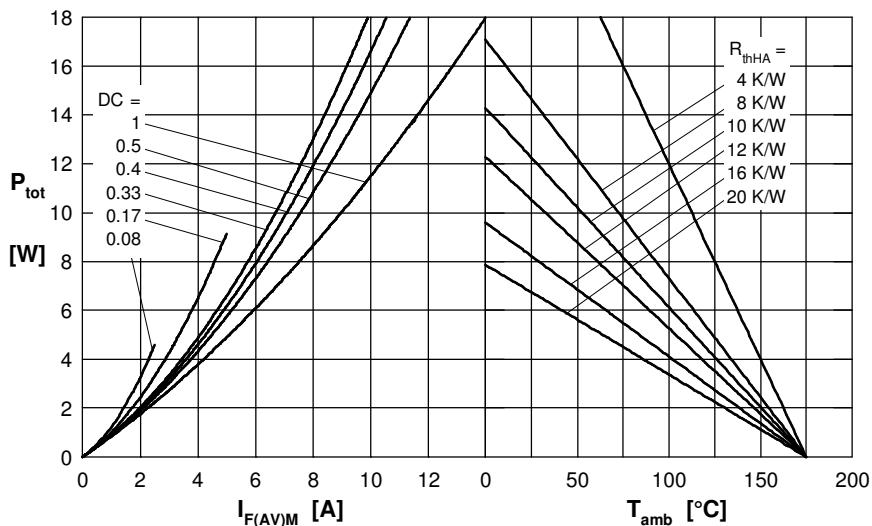
Fig. 3  $I^2t$  versus time per diode

Fig. 4 Power dissipation vs. direct output current and ambient temperature

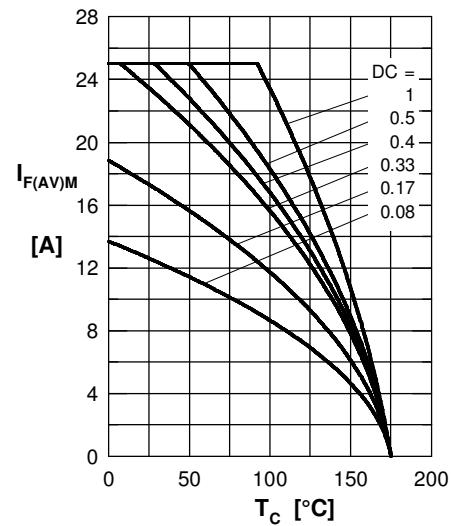


Fig. 5 Max. forward current vs. case temperature

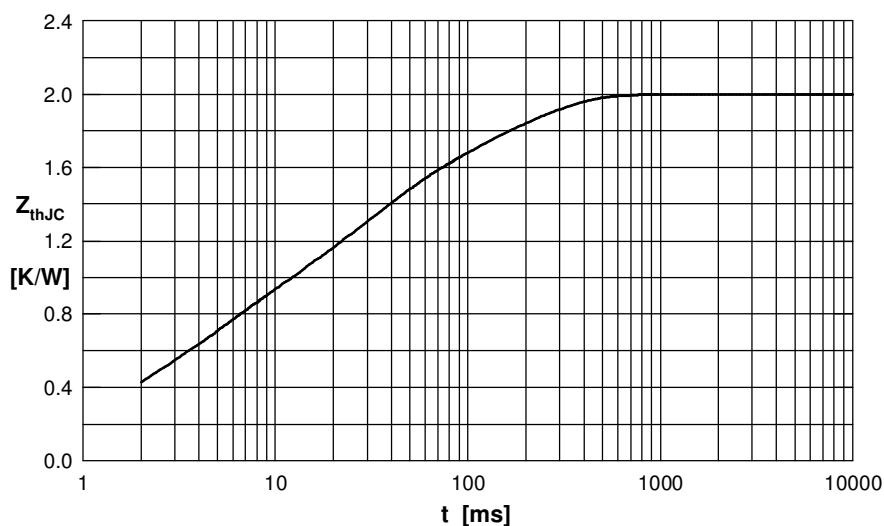


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.06	0.0004
2	0.23	0.0020
3	0.40	0.0040
4	0.71	0.0240
5	0.60	0.1500