

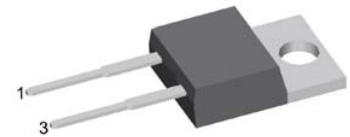
## Standard Rectifier

$V_{RRM}$	=	1600 V
$I_{FAV}$	=	10 A
$V_F$	=	1.19 V

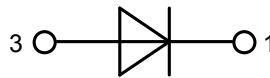
Single Diode

Part number

DMA10I1600PA



Backside: cathode



### 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:

- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

PM \_\_\_\_\_

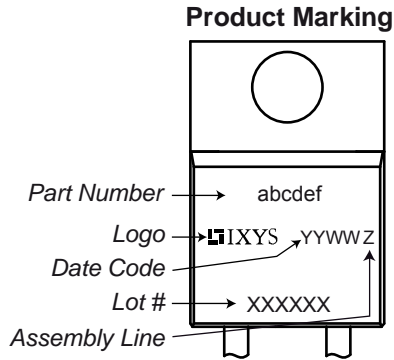
RD \_\_\_\_\_

QA \_\_\_\_\_

GM \_\_\_\_\_

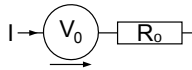
Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
$V_{RSM}$	max. non-repetitive reverse blocking voltage			$T_{VJ} = 25^{\circ}\text{C}$		1700	V
$V_{RRM}$	max. repetitive reverse blocking voltage			$T_{VJ} = 25^{\circ}\text{C}$		1600	V
$I_R$	reverse current, drain current	$V_R = 1600\text{ V}$		$T_{VJ} = 25^{\circ}\text{C}$		20	$\mu\text{A}$
		$V_R = 1600\text{ V}$		$T_{VJ} = 150^{\circ}\text{C}$		1.5	mA
$V_F$	forward voltage drop	$I_F = 10\text{ A}$		$T_{VJ} = 25^{\circ}\text{C}$		1.24	V
							1.51
		$I_F = 20\text{ A}$		$T_{VJ} = 150^{\circ}\text{C}$		1.19	V
							1.54
$I_{FAV}$	average forward current	$T_C = 150^{\circ}\text{C}$		$T_{VJ} = 175^{\circ}\text{C}$		10	A
$I$		rectangular	$d = 0.5$				A
$V_{FO}$	threshold voltage	} for power loss calculation only		$T_{VJ} = 175^{\circ}\text{C}$		0.83	V
$r_F$	slope resistance					37	m $\Omega$
$R_{thJC}$	thermal resistance junction to case					1.50	K/W
$R_{thCH}$	thermal resistance case to heatsink				0.50		K/W
$P_{tot}$	total power dissipation			$T_C = 25^{\circ}\text{C}$		100	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
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 175^{\circ}\text{C}$		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	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		70	A <sup>2</sup> s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$		$T_{VJ} = 175^{\circ}\text{C}$		50	A <sup>2</sup> s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$		$V_R = 0\text{ V}$		50	A <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$		4	pF

Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			22	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{vj}$	virtual junction temperature		-55		175	°C
<b>Weight</b>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N


**Part number**

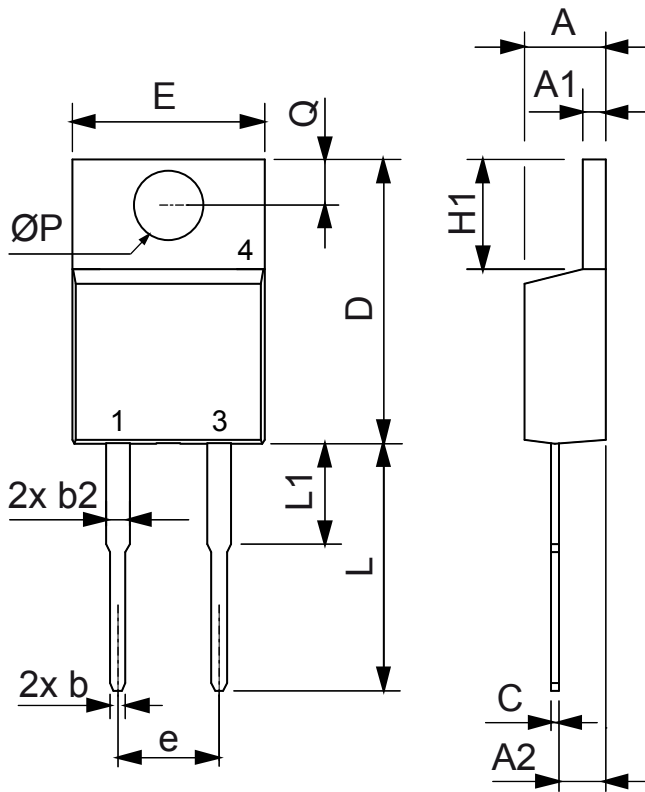
D = Diode  
 M = Standard Rectifier  
 A = (up to 1800 V)  
 10 = Current Rating [A]  
 I = Single Diode  
 1600 = Reverse Voltage [V]  
 PA = TO-220AC (2)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA10I1600PA	DMA10I1600PA	Tube	50	508780

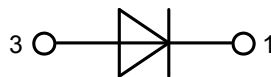
**Equivalent Circuits for Simulation**
 $T_{vj} = 175^{\circ}\text{C}$ 

**Rectifier**

$V_{0\max}$	threshold voltage	0.83	V
$R_{0\max}$	slope resistance	34	mΩ

**Outlines TO-220**



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	5.08	BSC	0.200	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125



Rectifier

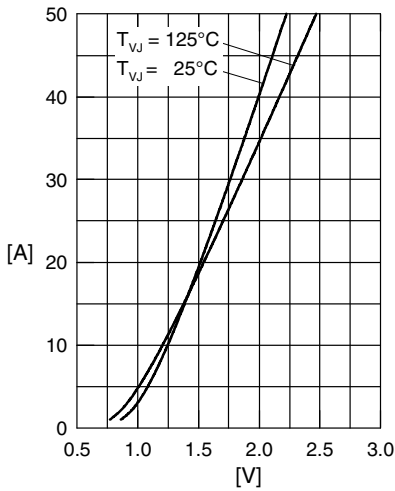


Fig. 1 Forward current versus voltage drop per diode

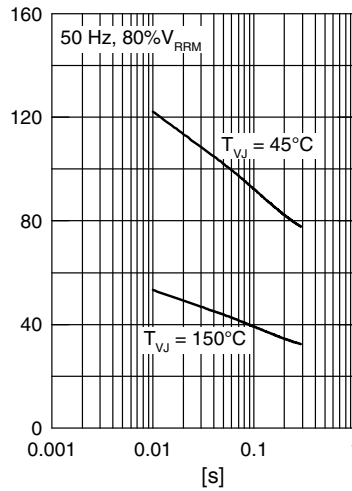


Fig. 2 Surge overload current

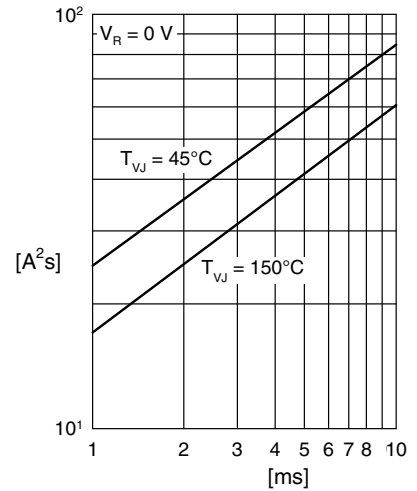


Fig. 3  $I^2t$  versus time per diode

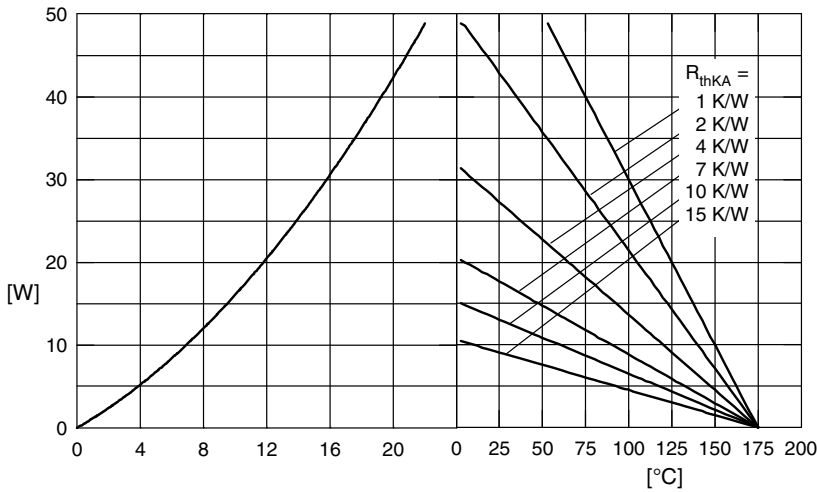


Fig. 4 Power dissipation vs. direct output current & ambient temperature, sine 180°

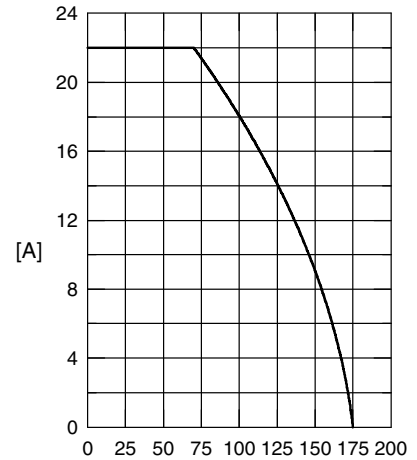


Fig. 5 Max. forward current versus case temperature, sine 180°

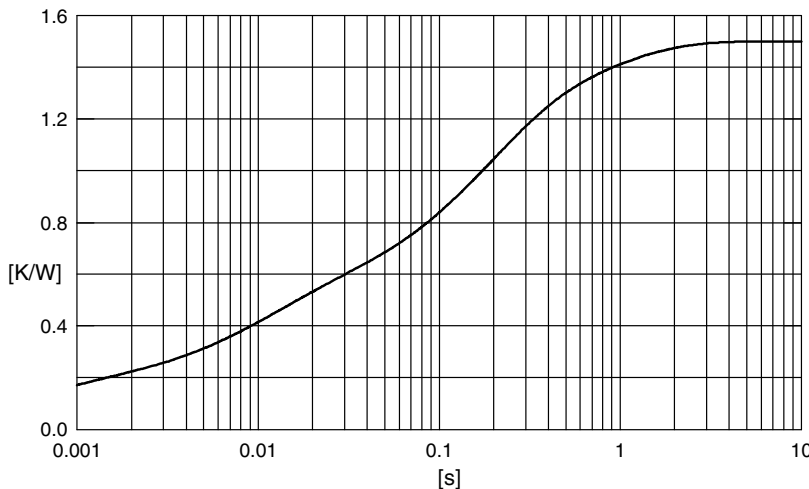


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.155	0.0005
2	0.332	0.0095
3	0.713	0.17
4	0.3	0.8