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DMA10P1600HR

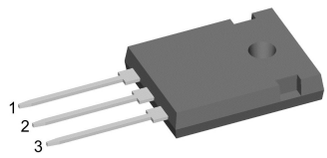
Standard Rectifier

V_{RRM} = 2x 1600 V
I_{FAV} = 10 A
V_F = 1.18 V

Phase leg

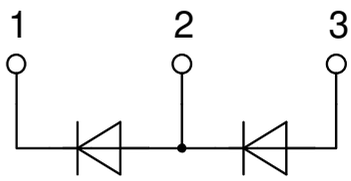
Part number

DMA10P1600HR



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

Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at www.littelfuse.com/disclaimer-electronics.

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Rectifier

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1700	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1600	V
I_R	*reverse current*	V_R = 1600 V	T_{VJ} = 25°C			10	µA
		V_R = 1600 V	T_{VJ} = 150°C			0.2	mA
V_F	*forward voltage drop*	I_F = 10 A	T_{VJ} = 25°C			1.23	V
		I_F = 20 A				1.46	V
		I_F = 10 A	T_{VJ} = 150°C			1.18	V
		I_F = 20 A				1.49	V
I_{FAV}	*average forward current*	T_C = 145°C rectangular	T_{VJ} = 175°C			10	A
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.81	V
r_F	*slope resistance* }					34	mΩ
R_{thJC}	*thermal resistance junction to case*					2	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			75	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			120	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			130	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			100	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			110	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			72	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			70	A^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			50	A^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			50	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		4		pF

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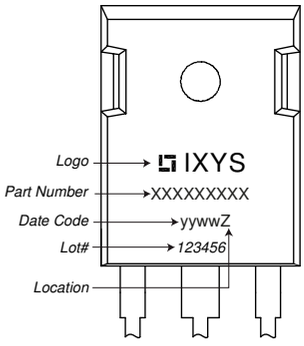
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DMA10P1600HR

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
Weight					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	50/60 Hz, RMS; I_{ISOL} ≤ 1 mA	3600			V
		t = 1 minute		3000			V

Product Marking



Part description

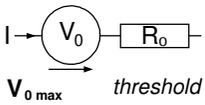
D = Diode
M = Standard Rectifier
A = (up to 1800V)
10 = Current Rating [A]
P = Phase leg
1600 = Reverse Voltage [V]
HR = ISO247 (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA10P1600HR	DMA10P1600HR	Tube	30	522535

Similar Part	Package	Voltage class
DMA10P1200HR	ISO247 (3)	1200

Equivalent Circuits for Simulation

** on die level* T_{VJ} = 175°C



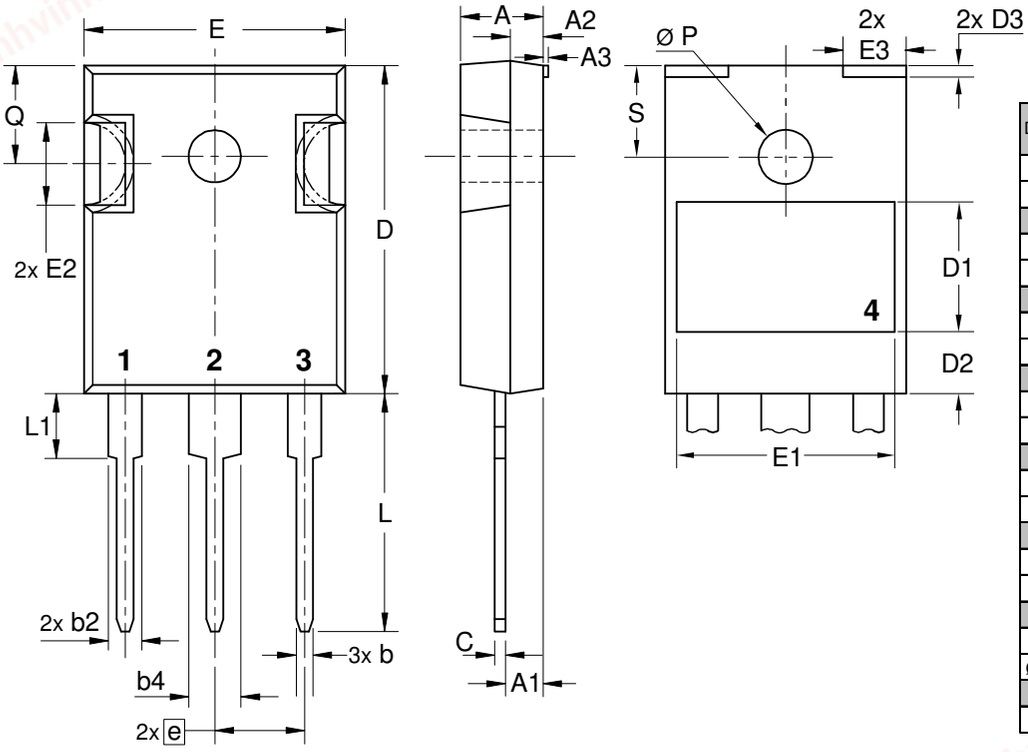
Rectifier

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

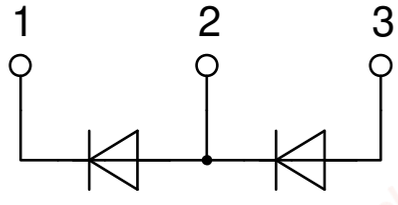
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Outlines ISO247



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	



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Rectifier

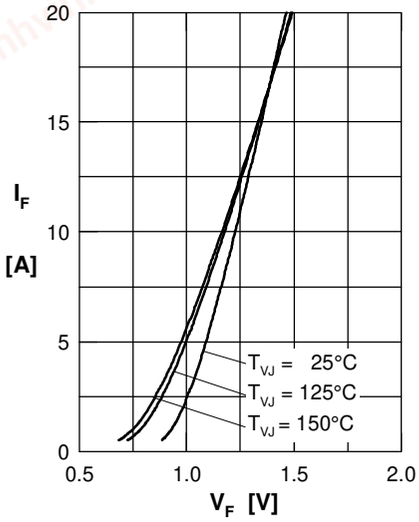


Fig. 1 Forward current versus voltage drop per diode

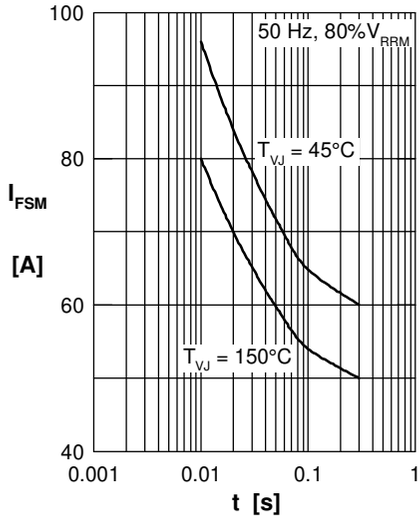


Fig. 2 Surge overload current

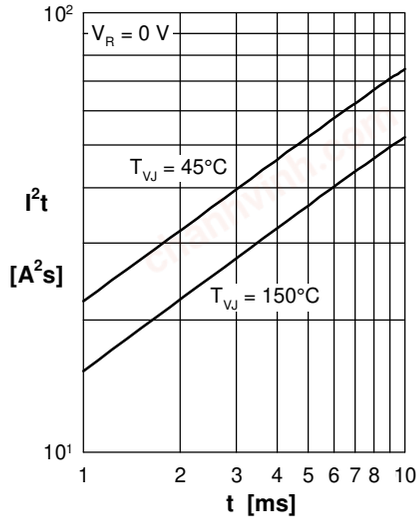


Fig. 3 I^2t versus time per diode

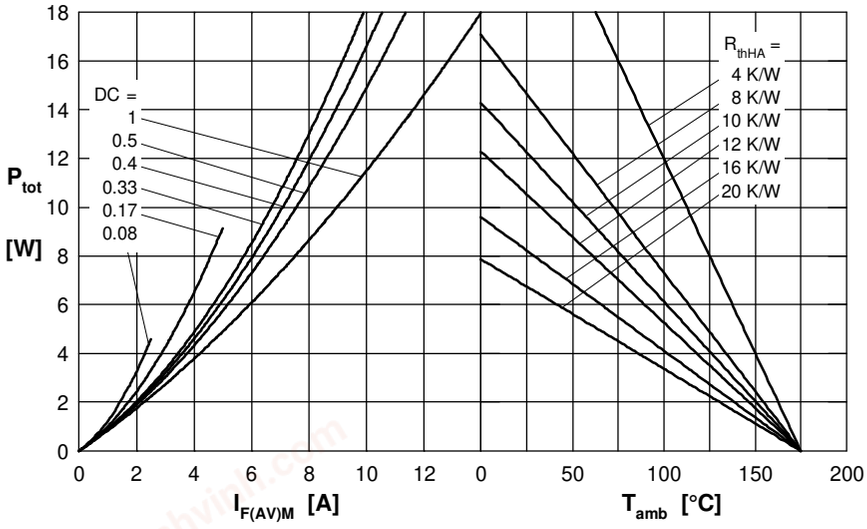


Fig. 4 Power dissipation vs. direct output current and ambient temperature

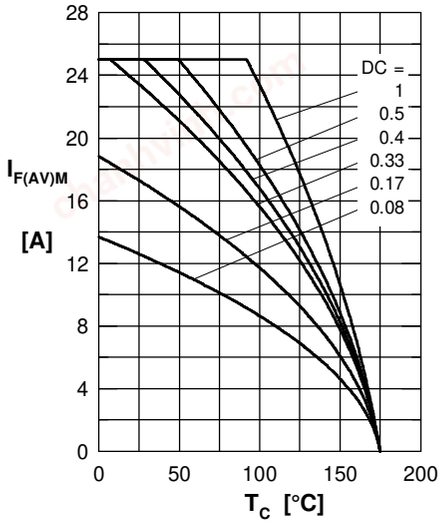


Fig. 5 Max. forward current vs. case temperature

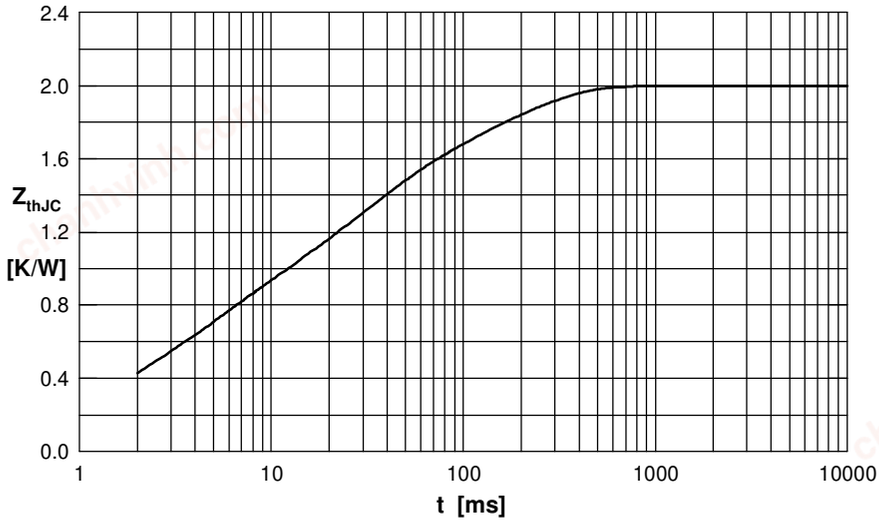


Fig. 6 Transient thermal impedance junction to case

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

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