

Standard Rectifier

3~ Rectifier	
V_{RRM}	= 1600 V
I_{DAV}	= 240 A
I_{FSM}	= 1300 A

Half 3~ Bridge, Common Anode

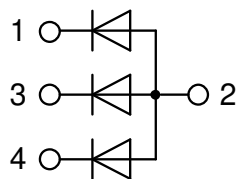
Part number

DMA240YA1600NA



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: SOT-227B (minibloc)

- Isolation Voltage: 3000 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Base plate: Copper internally DCB isolated
- 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.

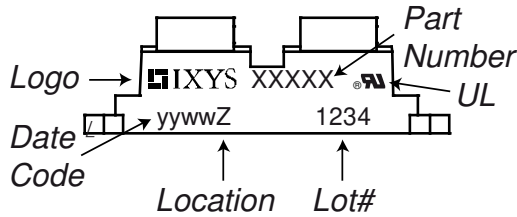


Rectifier				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage					1700	V
V_{RRM}	max. repetitive reverse blocking voltage					1600	V
I_R	reverse current	$V_R = 1600$ V		$T_{VJ} = 25^\circ\text{C}$		50	μA
		$V_R = 1600$ V		$T_{VJ} = 150^\circ\text{C}$		1.5	mA
V_F	forward voltage drop	$I_F = 80$ A		$T_{VJ} = 25^\circ\text{C}$		1.23	V
		$I_F = 240$ A				1.72	V
		$I_F = 80$ A		$T_{VJ} = 125^\circ\text{C}$		1.19	V
		$I_F = 240$ A				1.80	V
I_{DAV}	bridge output current	$T_C = 100^\circ\text{C}$	rectangular	$T_{VJ} = 150^\circ\text{C}$		240	A
			d = $\frac{1}{3}$				
V_{FO}	threshold voltage			$T_{VJ} = 150^\circ\text{C}$		0.86	V
r_F	slope resistance					4	m Ω
		} for power loss calculation only					
R_{thJC}	thermal resistance junction to case					0.35	K/W
R_{thCH}	thermal resistance case to heatsink				0.1		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		355	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		1.30	kA
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		1.41	kA
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		1.11	kA
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		1.20	kA
I^2t	value for fusing	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		8.45	kA ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		8.21	kA ² s
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		6.11	kA ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		5.94	kA ² s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz		$T_{VJ} = 25^\circ\text{C}$		48	pF



Package SOT-227B (minibloc)		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			150	A
T_{VJ}	virtual junction temperature		-40		150	°C
T_{op}	operation temperature		-40		125	°C
T_{stg}	storage temperature		-40		150	°C
Weight				30		g
M_D	mounting torque		1.1		1.5	Nm
M_T	terminal torque		1.1		1.5	Nm
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	10.5	3.2		mm
$d_{Spb/Apb}$		terminal to backside	8.6	6.8		mm
V_{ISOL}	isolation voltage	t = 1 second		3000		V
		t = 1 minute	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	2500		V

Product Marking



Part description

- D = Diode
- M = Standard Rectifier
- A = (up to 1800V)
- 240 = Current Rating [A]
- YA = Half 3~ Bridge, Common Anode
- 1600 = Reverse Voltage [V]
- NA = SOT-227B (minibloc)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA240YA1600NA	DMA240YA1600NA	Tube	10	523282

Similar Part	Package	Voltage class
DMA240YC1600NA	SOT-227B (minibloc)	1600

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 150^{\circ}C$



Rectifier

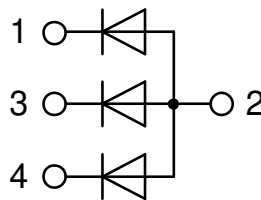
$V_{0\ max}$	threshold voltage	0.86	V
$R_{0\ max}$	slope resistance *	2.1	mΩ



Outlines SOT-227B (minibloc)



Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	0.029	0.033
M	12.50	13.10	0.492	0.516
N	25.15	25.42	0.990	1.001
O	1.95	2.13	0.077	0.084
P	4.95	6.20	0.195	0.244
Q	26.54	26.90	1.045	1.059
R	3.94	4.42	0.155	0.167
S	4.55	4.85	0.179	0.191
T	24.59	25.25	0.968	0.994
U	-0.05	0.10	-0.002	0.004
V	3.20	5.50	0.126	0.217
W	19.81	21.08	0.780	0.830
Z	2.50	2.70	0.098	0.106



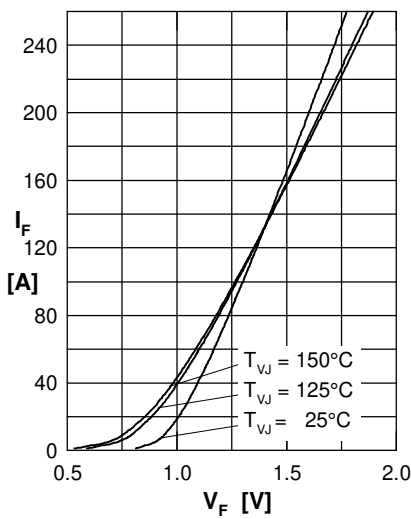
Rectifier


Fig. 1 Forward current versus voltage drop per diode

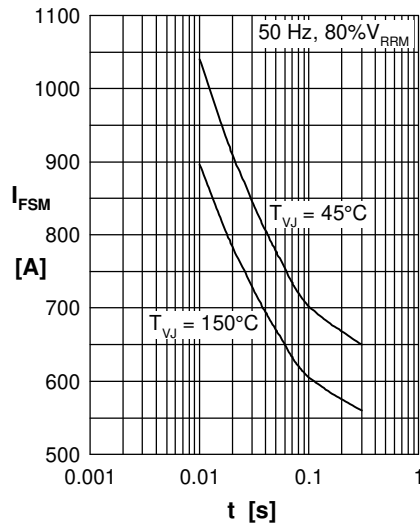


Fig. 2 Surge overload current vs. time per diode

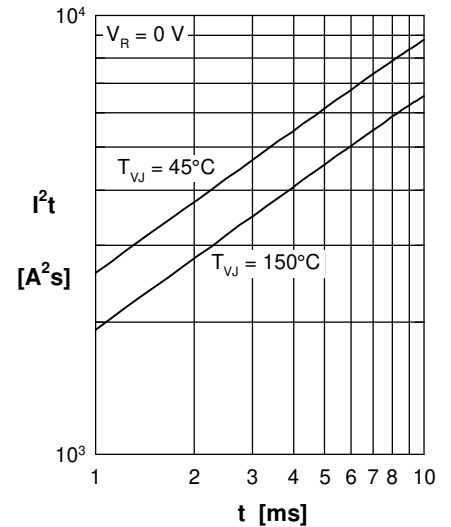
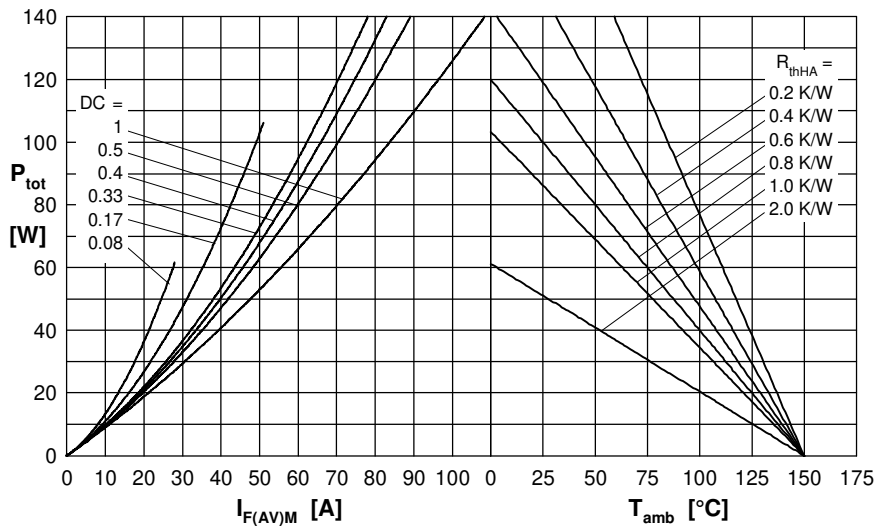

 Fig. 3 I^2t versus time per diode


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

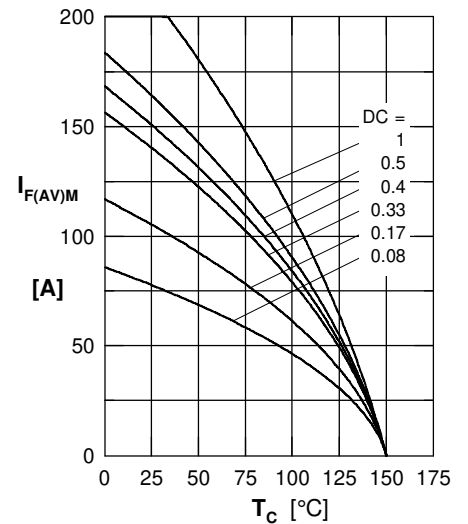


Fig. 5 Max. forward current vs. case temperature per diode

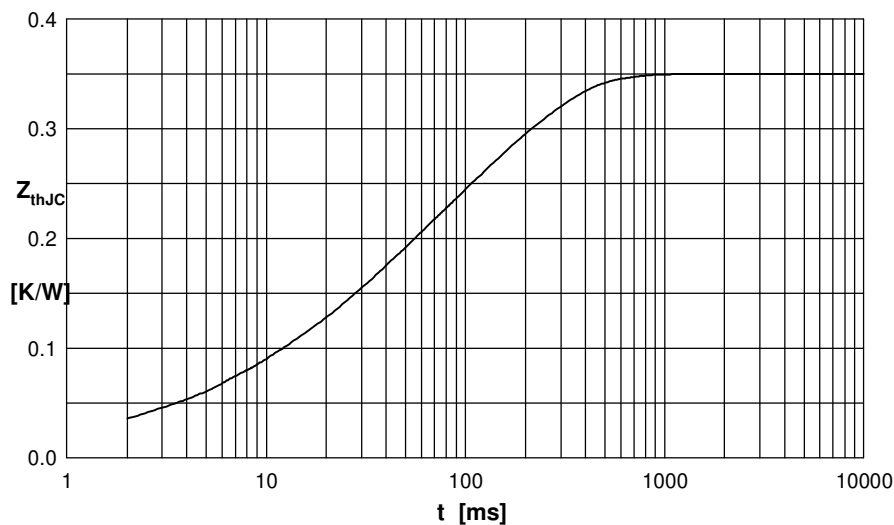


Fig. 6 Transient thermal impedance junction to case vs. time per diode

 Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.0200	0.01000
2	0.0120	0.00001
3	0.0280	0.00400
4	0.1000	0.03000
5	0.1900	0.16000