Standard Rectifier

3~ Rectifier		
V_{RRM} =	1600	V
I_{DAV} =	150	A
I_{FSM} =	800	A

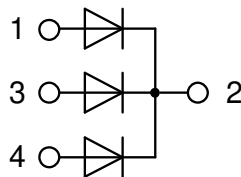Half 3~ Bridge, Common Cathode

Part number

DMA150YC1600NA
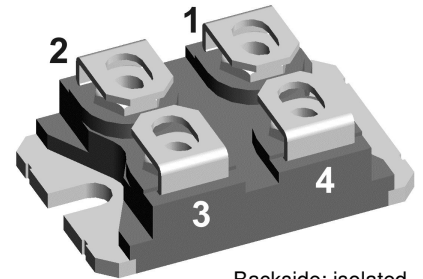
Backside: isolated

UL 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

Rectifier | | | | | Ratings | | |

Symbol	Definition	Conditions		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	$T_{VJ} = 25°C$			100	µA
		$V_R = 1600$ V	$T_{VJ} = 150°C$			1.5	mA
V_F	forward voltage drop	$I_F = 50$ A	$T_{VJ} = 25°C$			1.21	V
		$I_F = 150$ A				1.62	V
		$I_F = 50$ A	$T_{VJ} = 125°C$			1.16	V
		$I_F = 150$ A				1.69	V
I_{DAV}	bridge output current	$T_C = 95°C$ rectangular $d = ⅓$	$T_{VJ} = 150°C$			150	A
V_{F0}	threshold voltage		$T_{VJ} = 150°C$			0.87	V
r_F	slope resistance	} for power loss calculation only				5.6	mΩ
R_{thJC}	thermal resistance junction to case					0.6	K/W
R_{thCH}	thermal resistance case to heatsink				0.10		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			165	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			800	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			865	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			680	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			735	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			3.20	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			3.12	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			2.31	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			2.25	kA²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		25		pF

Package   SOT-227B (minibloc)

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	50/60 Hz, RMS; $I_{ISOL} \leq 1$ mA	3000			V
		t = 1 minute		2500			V

Ratings

Product Marking

Logo →   Assembly Line ↑   DateCode   Part No.   Assembly Code
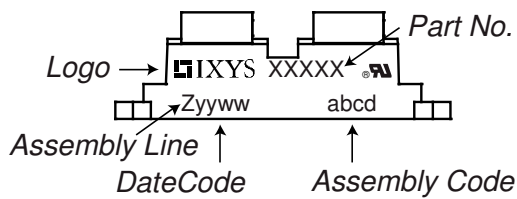
### Part description

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

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA150YC1600NA	DMA150YC1600NA	Tube	10	509174

Similar Part	Package	Voltage class
DMA150YA1600NA	SOT-227B (minibloc)	1600

Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 150$ °C
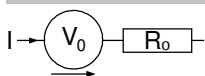
Rectifier

$V_{0\ max}$	threshold voltage	0.87	V
$R_{0\ max}$	slope resistance *	4.4	mΩ

Outlines   SOT-227B (minibloc)
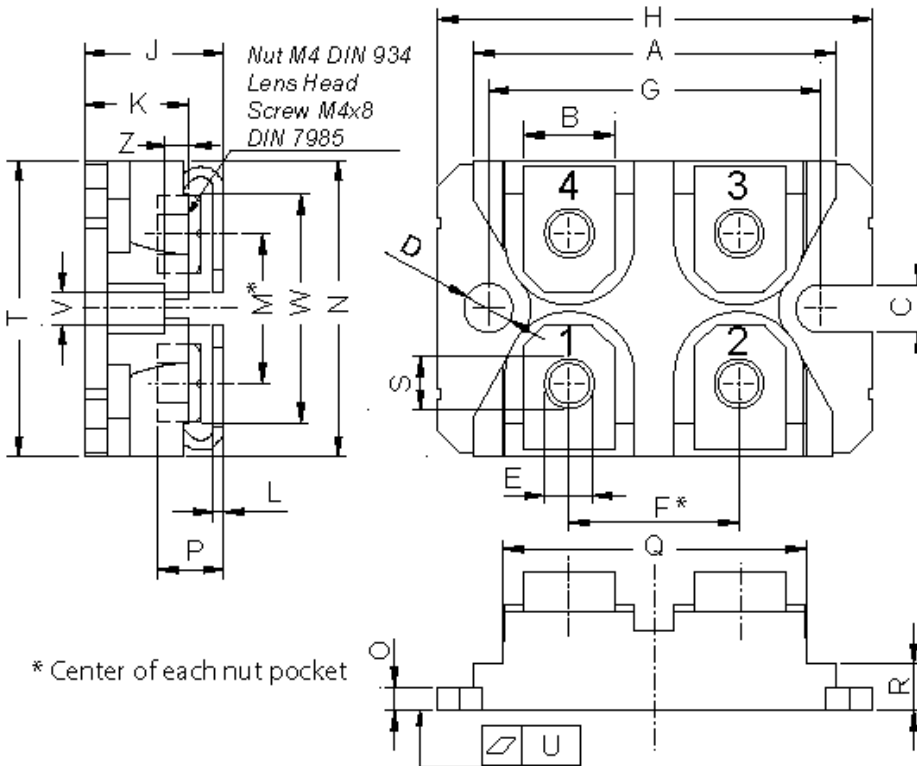
Dim.	Millimeter		Inches	
	min	max	min	max
A	31.50	31.88	1.240	1.255
B	7.80	8.20	0.307	0.323
C	4.09	4.29	0.161	0.169
D	4.09	4.29	0.161	0.169
E	4.09	4.29	0.161	0.169
F	14.91	15.11	0.587	0.595
G	30.12	30.30	1.186	1.193
H	37.80	38.23	1.488	1.505
J	11.68	12.22	0.460	0.481
K	8.92	9.60	0.351	0.378
L	0.74	0.84	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

Nut M4 DIN 934
Lens Head
Screw M4x8
DIN 7985
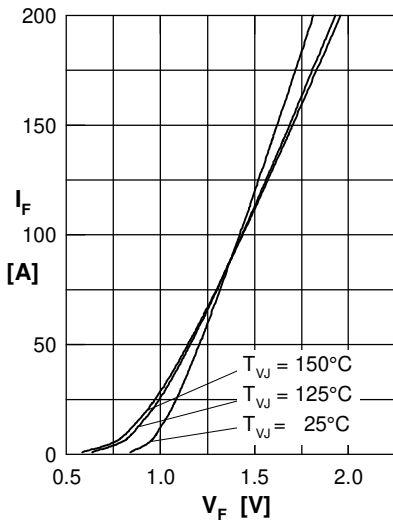
* Center of each nut pocket
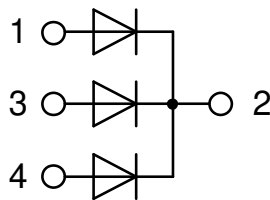
Rectifier

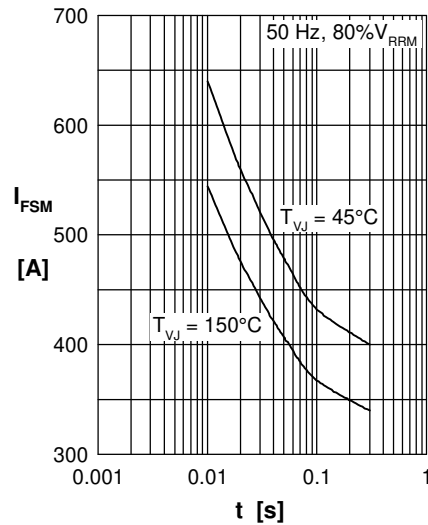Fig. 1 Forward current versus
voltage drop per diode

Fig. 2 Surge overload current
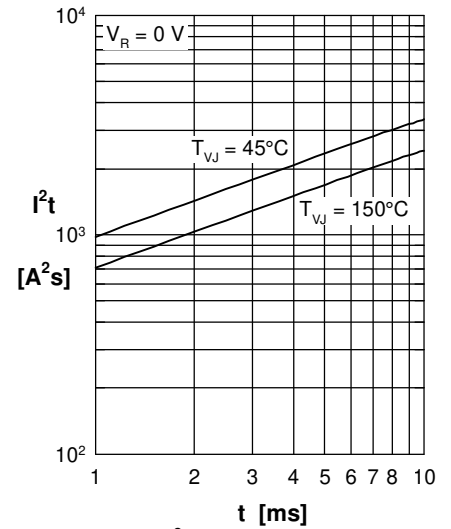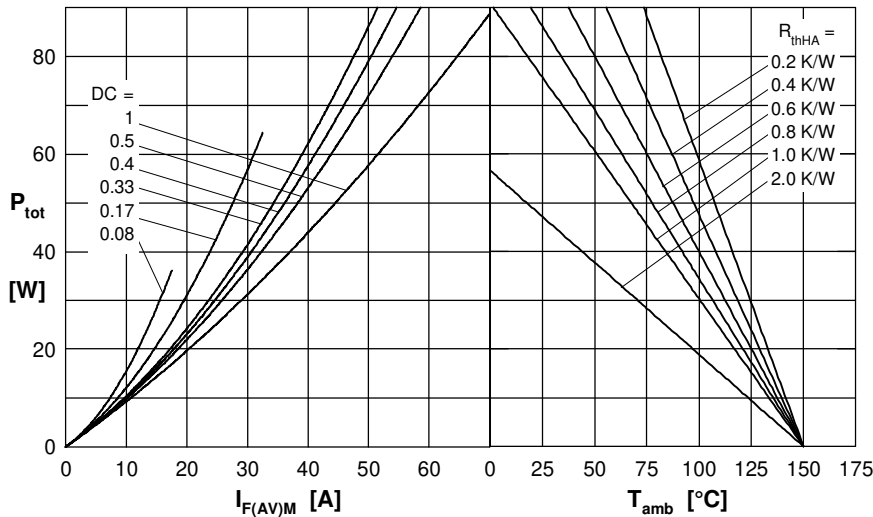vs. time per diode

Fig. 3 I^2t versus time per diode

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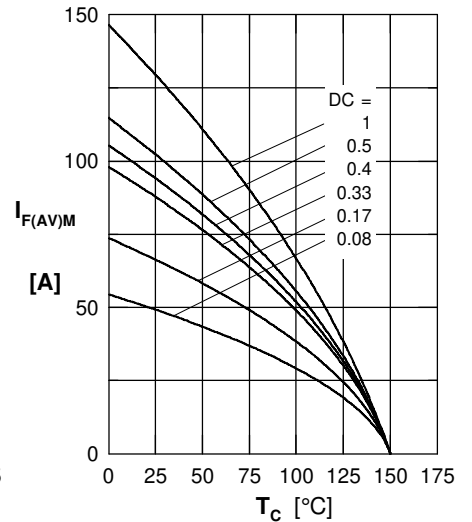and ambient temperature per diode

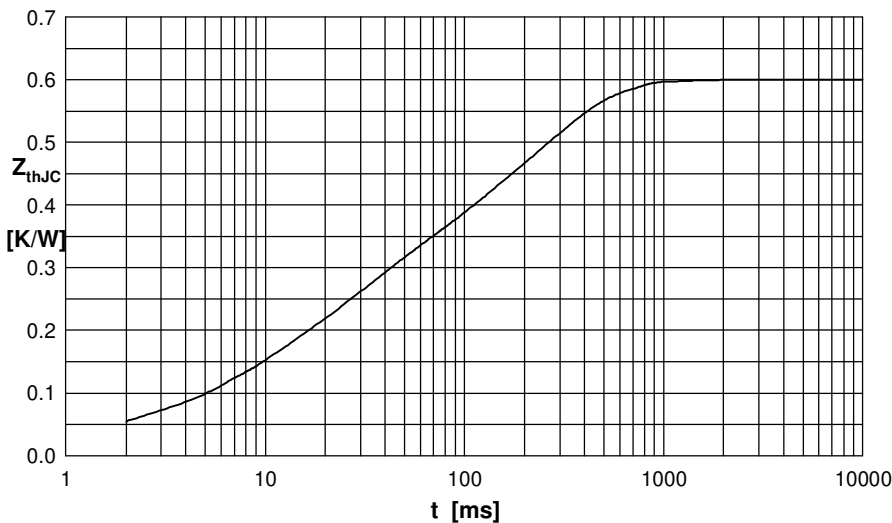Fig. 5 Max. forward current vs.
case temperature per diode

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	0.0240	0.01000
2	0.0160	0.00001
3	0.0500	0.00500
4	0.1800	0.02300
5	0.3300	0.22000

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20180425c