IXYS
A Littelfuse Technology

DMA50I1200HA

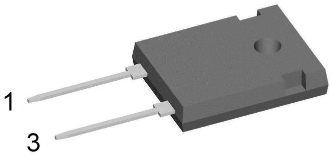
Standard Rectifier

V_{RRM} = 1200 V
I_{FAV} = 50 A
V_F = 1.26 V

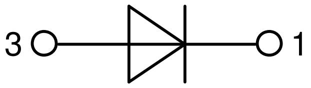
Single Diode

Part number

DMA50I1200HA



Backside: cathode



Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour
- High commutation robustness
- High surge capability

Applications:

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

Package: TO-247

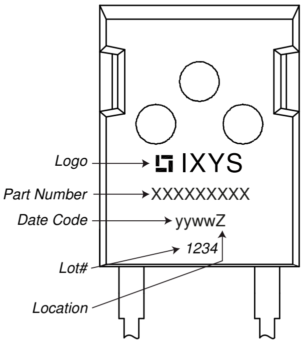
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice

Rectifier					Ratings		
Symbol	**Definition**	**Conditions**		**min.**	**typ.**	**max.**	**Unit**
V_{RSM}	*max. non-repetitive reverse blocking voltage*		T_{VJ} = 25°C			1300	V
V_{RRM}	*max. repetitive reverse blocking voltage*		T_{VJ} = 25°C			1200	V
I_R	*reverse current*	V_R = 1200 V	T_{VJ} = 25°C			40	µA
		V_R = 1200 V	T_{VJ} = 150°C			1.5	mA
V_F	*forward voltage drop*	I_F = 50 A	T_{VJ} = 25°C			1.30	V
		I_F = 100 A				1.61	V
		I_F = 50 A	T_{VJ} = 150°C			1.26	V
		I_F = 100 A				1.66	V
I_{FAV}	*average forward current*	T_C = 130°C 180° sine	T_{VJ} = 175°C			50	A
V_{F0}	*threshold voltage*	*for power loss calculation only*	T_{VJ} = 175°C			0.81	V
r_F	*slope resistance*					8.6	mΩ
R_{thJC}	*thermal resistance junction to case*					0.45	K/W
R_{thCH}	*thermal resistance case to heatsink*				0.3		K/W
P_{tot}	*total power dissipation*		T_C = 25°C			330	W
I_{FSM}	*max. forward surge current*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			650	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			700	A
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			555	A
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			595	A
I^2t	*value for fusing*	t = 10 ms; (50 Hz), sine	T_{VJ} = 45°C			2.12	kA^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			2.04	kA^2s
		t = 10 ms; (50 Hz), sine	T_{VJ} = 150°C			1.54	kA^2s
		t = 8,3 ms; (60 Hz), sine	V_R = 0 V			1.48	kA^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		19		pF

Package TO-247			**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

Product Marking



Part description

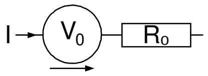
D = Diode
M = Standard Rectifier
A = (up to 1800V)
50 = Current Rating [A]
I = Single Diode
1200 = Reverse Voltage [V]
HA = TO-247AD (2)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA50I1200HA	DMA50I1200HA	Tube	30	522988

Similar Part	Package	Voltage class
DMA50I800HA	TO-247AD (2)	800
DMA50I1600HA	TO-247AD (2)	1600

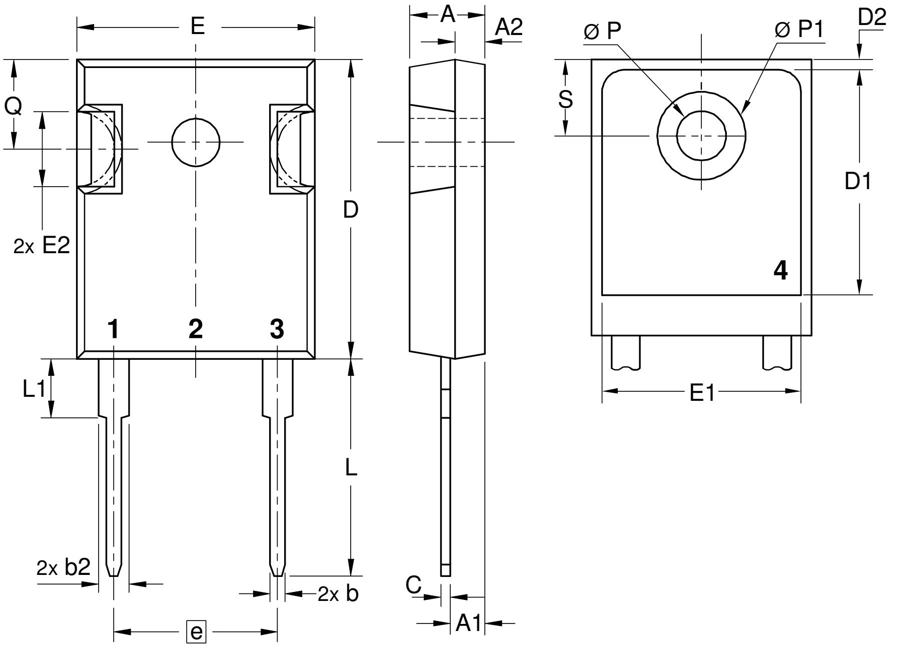
Equivalent Circuits for Simulation

** on die level* $T_{VJ} = 175°C$

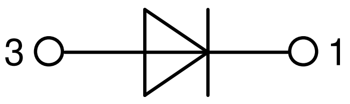


		Rectifier	
$V_{0\ max}$	*threshold voltage*	0.81	V
$R_{0\ max}$	*slope resistance **	6	mΩ

Outlines TO-247



Sym.	Inches min.	Inches max.	Millimeter min.	Millimeter max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.430 BSC		10.92 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39



Rectifier

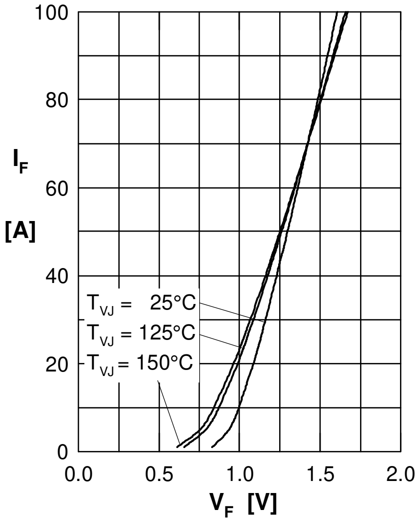


Fig. 1 Forward current versus voltage drop per diode

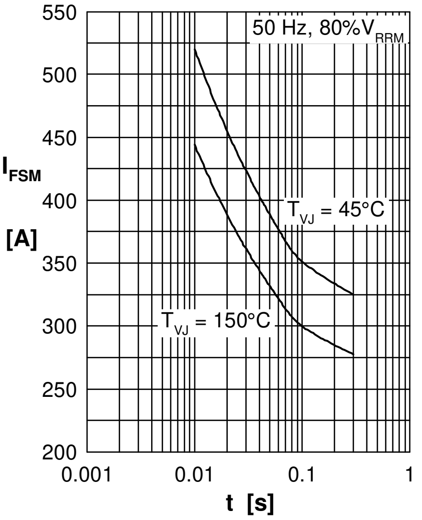


Fig. 2 Surge overload current versus time per diode

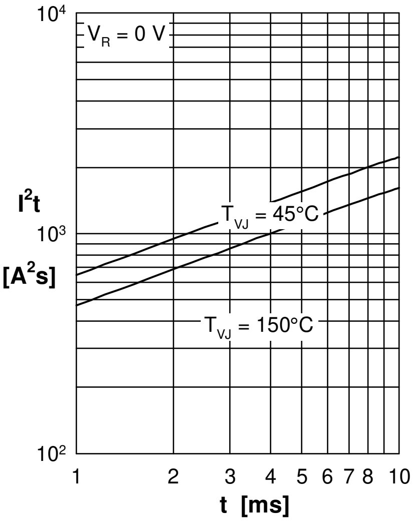


Fig. 3 I^2t versus time per diode

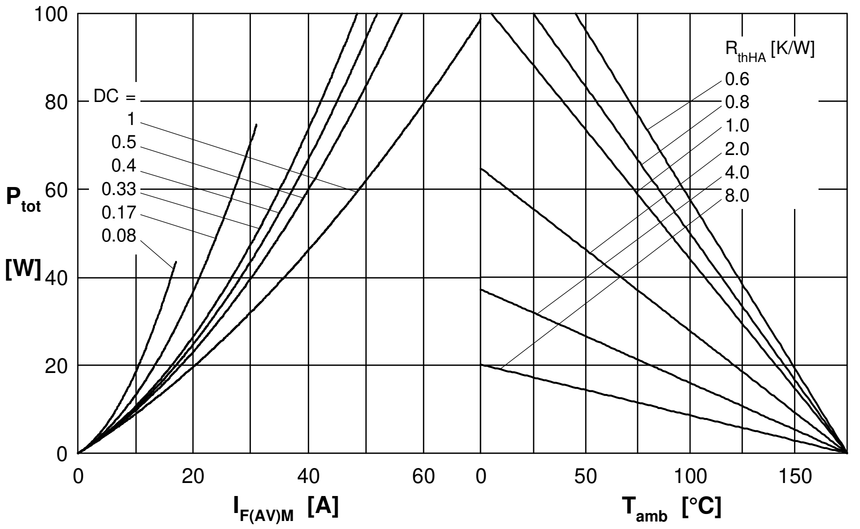


Fig. 4 Power dissipation versusdirect output current and ambient temperature per diode

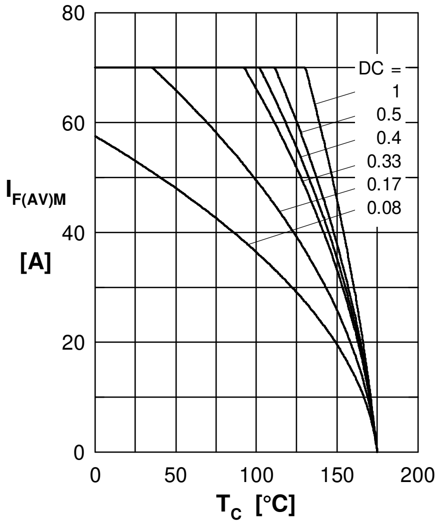


Fig. 5 Max. forward current versus case temperature per diode

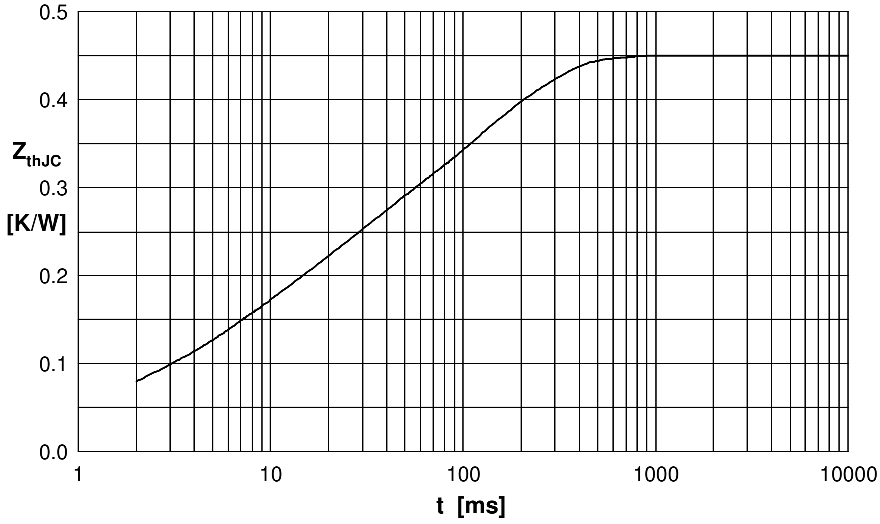


Fig. 6 Transient thermal impedance junction to case versus time per diode

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.033	0.0006
2	0.075	0.0038
3	0.124	0.0170
4	0.218	0.1400