

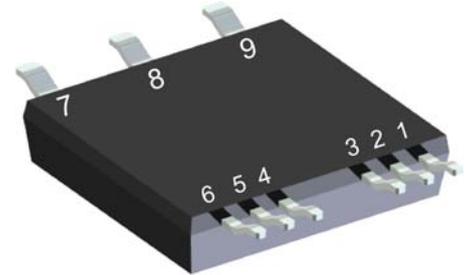
Standard Rectifier

3~ Rectifier	
V_{RRM}	= 1800 V
I_{DAV}	= 90 A
I_{FSM}	= 350 A

ISOPLUS™
Surface Mount Power Device
3~ Rectifier Bridge

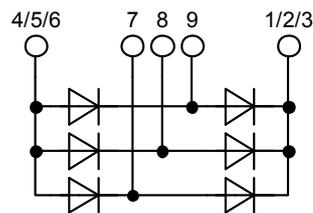
Part number

DMA90U1800LB



Backside: isolated

 E72873



Features / Advantages:

- Rectifier diode
- Isolated back surface
- Low coupling capacity between pins and heatsink
- Enlarged creepage towards heatsink
- Application friendly pinout
- Low inductive current path
- High reliability

Applications:

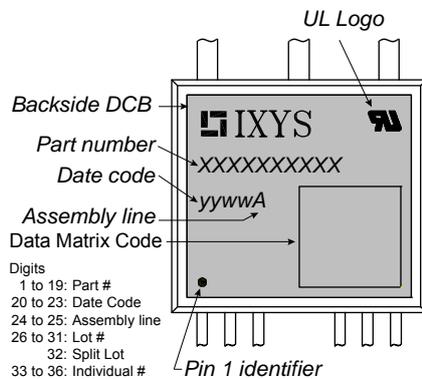
- Line rectifying 50/60 Hz
- Drives
- SMPS
- UPS

Package: SMPD

- Isolation Voltage: 3000 V~
- Industry convenient outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

Rectifier				Ratings		
Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$			1900	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$			1800	V
I_R	reverse current	$V_R = 1800\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$		40	μA
		$V_R = 1800\text{ V}$	$T_{VJ} = 150^{\circ}\text{C}$		1.5	mA
V_F	forward voltage drop	$I_F = 30\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$		1.26	V
					1.79	V
		$I_F = 90\text{ A}$	$T_{VJ} = 150^{\circ}\text{C}$		1.20	V
					1.93	V
I_{DAV}	bridge output current	$T_C = 110^{\circ}\text{C}$ rectangular $d = \frac{1}{3}$	$T_{VJ} = 175^{\circ}\text{C}$		90	A
V_{FO}	threshold voltage		$T_{VJ} = 175^{\circ}\text{C}$		0.81	V
r_F	slope resistance					
R_{thJC}	thermal resistance junction to case				1.1	K/W
R_{thCH}	thermal resistance case to heatsink			0.4		K/W
P_{tot}	total power dissipation		$T_C = 25^{\circ}\text{C}$		135	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$		350	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		380	A
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^{\circ}\text{C}$		300	A
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		320	A
I^2t	value for fusing	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 45^{\circ}\text{C}$		615	A ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		600	A ² s
		$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}$	$T_{VJ} = 150^{\circ}\text{C}$		450	A ² s
		$t = 8,3\text{ ms}; (60\text{ Hz}), \text{ sine}$	$V_R = 0\text{ V}$		425	A ² s
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		11	pF

Package SMPD		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			100	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				8.5		g
F_C	mounting force with clip		40		130	N
$d_{Spp/App}$	creepage distance on surface striking distance through air	terminal to terminal	1.6			mm
$d_{Spb/Apb}$		terminal to backside	4.0			mm
V_{ISOL}	isolation voltage	t = 1 second	3000			V
		t = 1 minute	2500			V



Part number

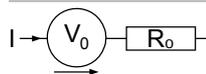
- D = Diode
- M = Standard Rectifier
- A = (up to 1800V)
- 90 = Current Rating [A]
- U = 3- Rectifier Bridge
- 1800 = Reverse Voltage [V]
- LB = SMPD-B

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA90U1800LB	DMA90U1800LB	Blister	45	511747
Alternative	DMA90U1800LB-TRR	DMA90U1800LB	Tape & Reel	200	511740

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175^\circ\text{C}$

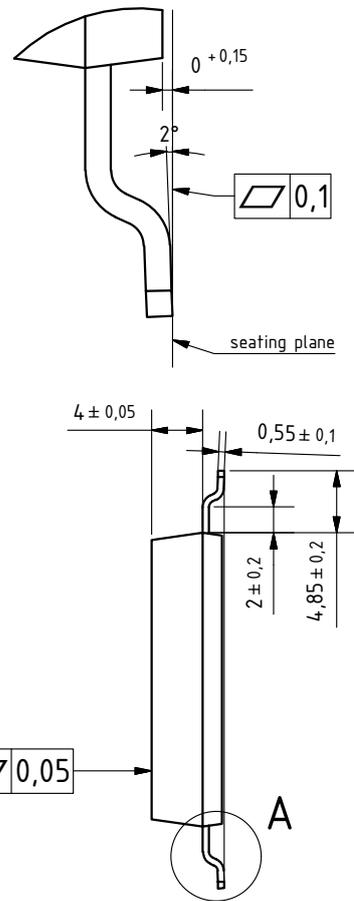
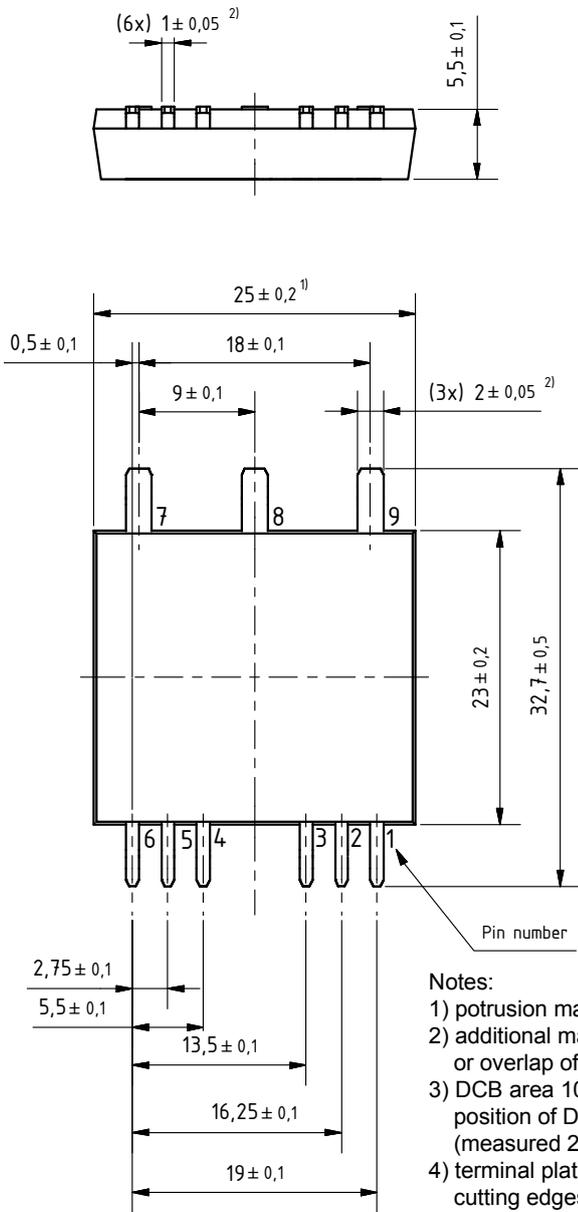


Rectifier

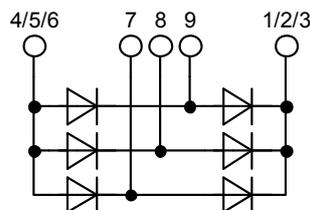
$V_{0\max}$	threshold voltage	0.81	V
$R_{0\max}$	slope resistance *	10.1	mΩ

Outlines SMPD

A (8 : 1)



- Notes:
- 1) protrusion may add 0.2 mm max. on each side
 - 2) additional max. 0.05 mm per side by punching misalignment or overlap of dam bar or bending compression
 - 3) DCB area 10 to 50 μm convex; position of DCB area in relation to plastic rim: $\pm 25 \mu\text{m}$ (measured 2 mm from Cu rim)
 - 4) terminal plating: 0.2 - 1 μm Ni + 10 - 25 μm Sn (gal v.) cutting edges may be partially free of plating



Rectifier

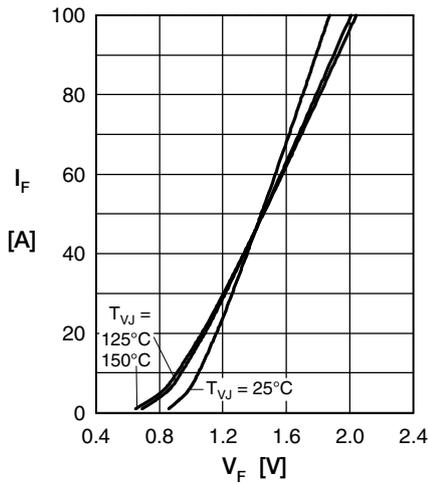


Fig. 1 Forward current vs. voltage drop per diode

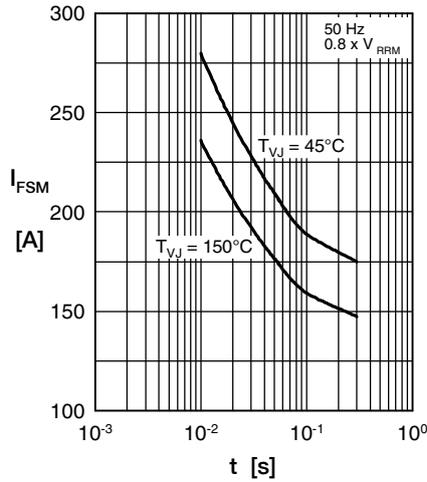


Fig. 2 Surge overload current vs. time per diode

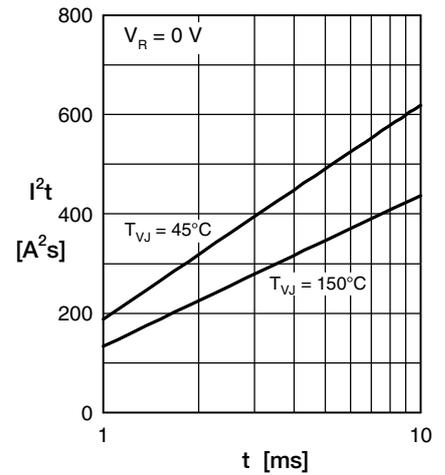


Fig. 3 I^2t vs. time per diode

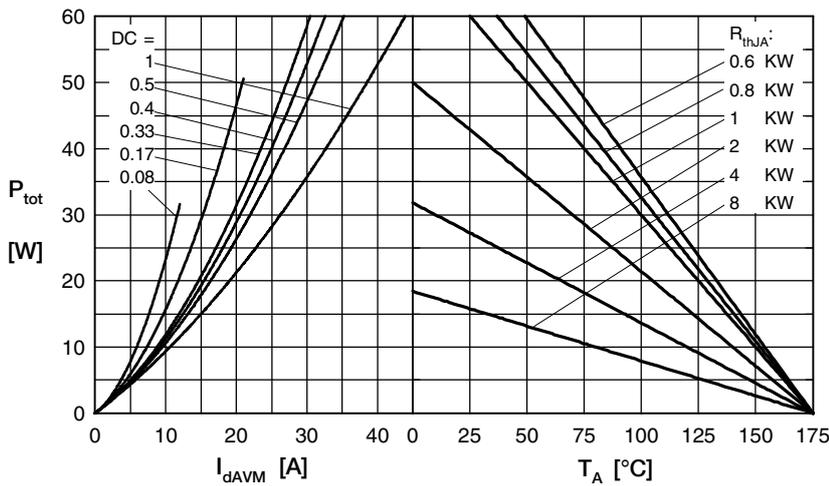


Fig. 4 Power dissipation vs. forward current and ambient temperature per diode

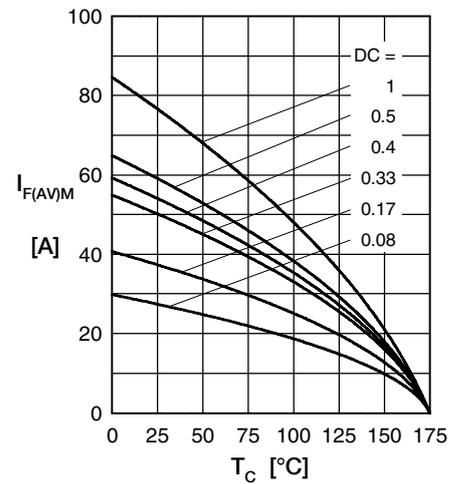


Fig. 5 Max. forward current vs. case temperature per diode

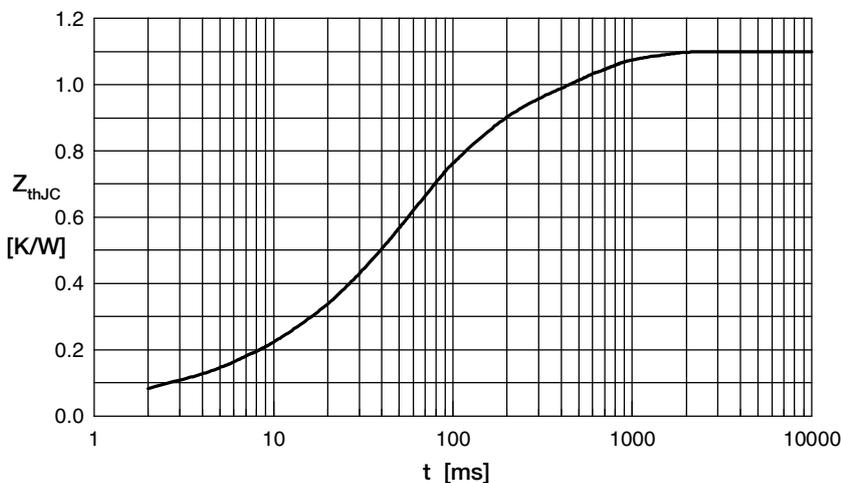


Fig. 6 Transient thermal impedance junction to case vs. time per diode

Constants for Z_{thJC} calculation:

i	R_{th} (K/W)	t_i (s)
1	0.030	0.0003
2	0.072	0.0045
3	0.092	0.0530
4	0.606	0.0520
5	0.300	0.4000

Mouser Electronics

Authorized Distributor

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