

Standard Rectifier

$$V_{RRM} = 1600 \text{ V}$$

$$I_{FAV} = 30 \text{ A}$$

$$V_F = 1.26 \text{ V}$$

Single Diode

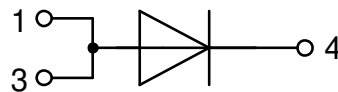
Part number

DMA30IM1600PZ

Marking on Product: DMA30IM1600PZ



Backside: cathode



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: TO-263 (D2Pak-HV)

- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- High creepage distance between terminals

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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		$T_{VJ} = 25^\circ\text{C}$		40	μA
		$V_R = 1600$ V		$T_{VJ} = 150^\circ\text{C}$		1.5	mA
V_F	forward voltage drop	$I_F = 30$ A		$T_{VJ} = 25^\circ\text{C}$		1.29	V
		$I_F = 60$ A				1.60	V
		$I_F = 30$ A		$T_{VJ} = 150^\circ\text{C}$		1.26	V
		$I_F = 60$ A				1.65	V
I_{FAV}	average forward current	$T_C = 140^\circ\text{C}$		$T_{VJ} = 175^\circ\text{C}$		30	A
		rectangular	d = 0.5				
V_{FO}	threshold voltage			$T_{VJ} = 175^\circ\text{C}$		0.82	V
r_F	slope resistance					14.1	m Ω
		} for power loss calculation only					
R_{thJC}	thermal resistance junction to case					0.7	K/W
R_{thCH}	thermal resistance case to heatsink				0.25		K/W
P_{tot}	total power dissipation			$T_C = 25^\circ\text{C}$		210	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		300	A
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		325	A
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		255	A
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		275	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine		$T_{VJ} = 45^\circ\text{C}$		450	A ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		440	A ² s
		t = 10 ms; (50 Hz), sine		$T_{VJ} = 150^\circ\text{C}$		325	A ² s
		t = 8,3 ms; (60 Hz), sine		$V_R = 0$ V		315	A ² s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz		$T_{VJ} = 25^\circ\text{C}$		10	pF



Package TO-263 (D2Pak-HV)			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal			35	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				1.5		g
F_C	mounting force with clip		20		60	N
$d_{Spp/App}$	creepage distance on surface / striking distance through air	terminal to terminal	4.2			mm
$d_{Spb/Apb}$		terminal to backside	4.7			mm

Product Marking



Part description

- D = Diode
- M = Standard Rectifier
- A = (up to 1800V)
- 30 = Current Rating [A]
- IM = Single Diode
- 1600 = Reverse Voltage [V]
- PZ = TO-263AB (D2Pak) (2HV)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DMA30IM1600PZ-TRL	DMA30IM1600PZ	Tape & Reel	800	515813
Alternative	DMA30IM1600PZ-TUB	DMA30IM1600PZ	Tube	50	525354

Equivalent Circuits for Simulation

* on die level

$T_{VJ} = 175\text{ °C}$



Rectifier

$V_{0\ max}$	threshold voltage	0.82	V
$R_{0\ max}$	slope resistance *	10.9	mΩ



Outlines TO-263 (D2Pak-HV)



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.3		0.091	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2,54 BSC		0,100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

All dimensions conform with and/or within JEDEC standard.



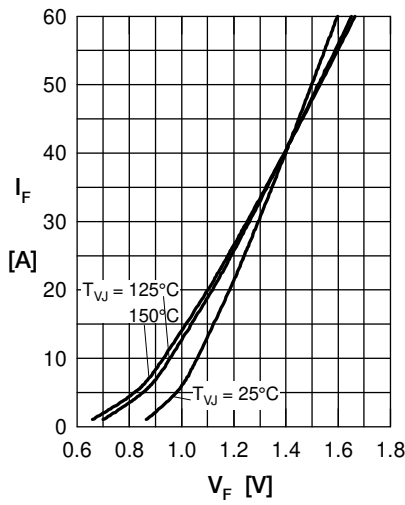
Rectifier


Fig. 1 Forward current versus voltage drop per diode

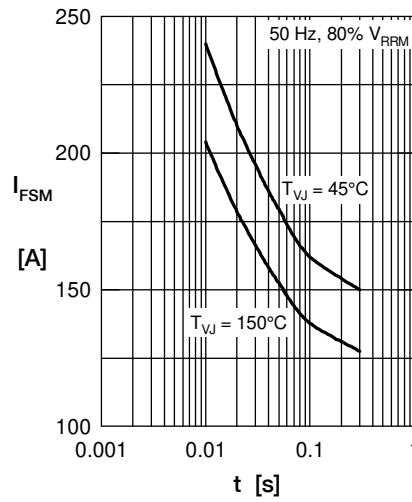


Fig. 2 Surge overload current

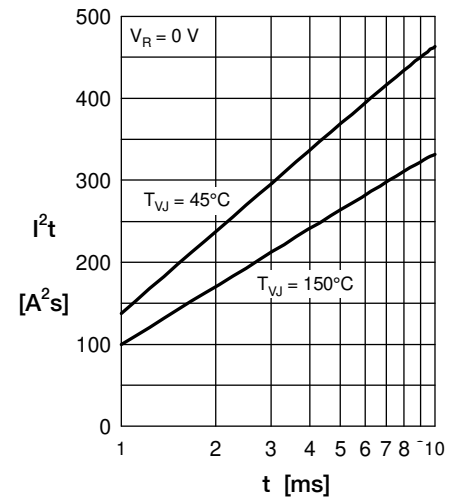
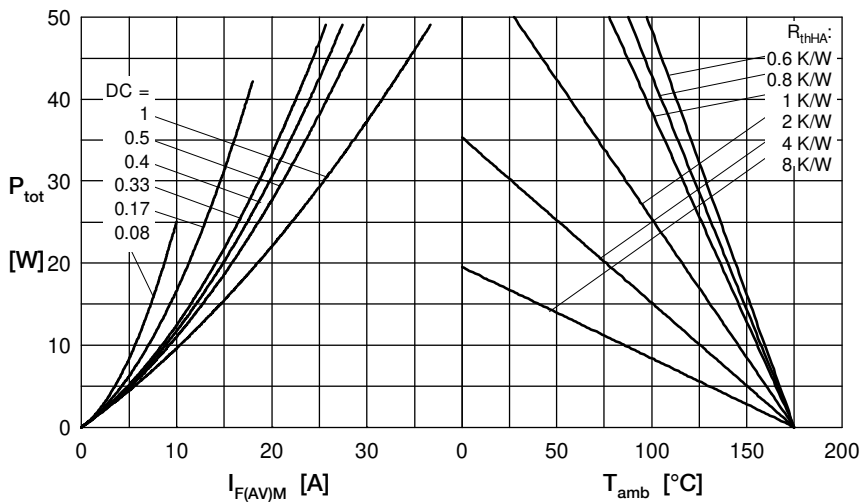

 Fig. 3 I^2t versus time per diode


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

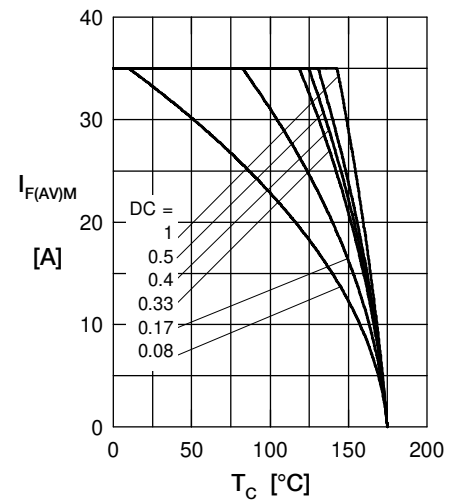


Fig. 5 Max. forward current vs. case temperature

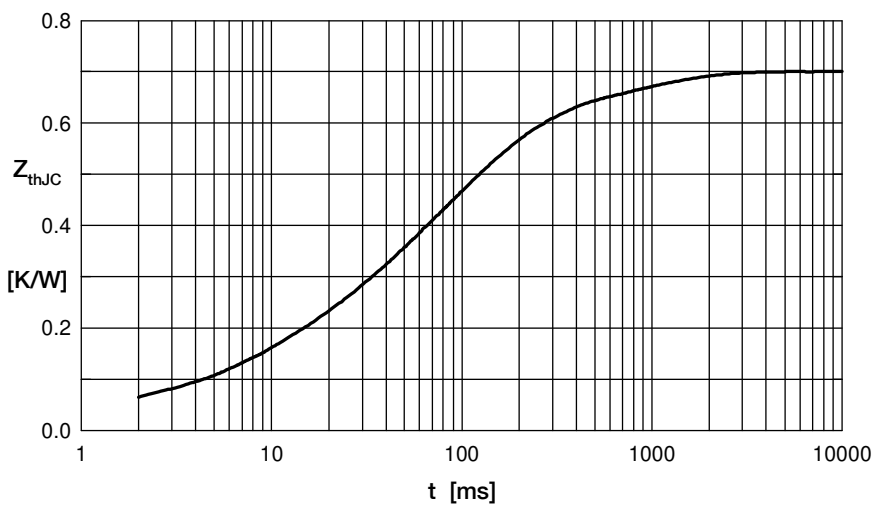


Fig. 6 Transient thermal impedance junction to case

 Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.03	0.0003
2	0.072	0.0065
3	0.131	0.027
4	0.367	0.105
5	0.1	0.8