

## High Efficiency Standard Rectifier

$$V_{RRM} = 1200V$$

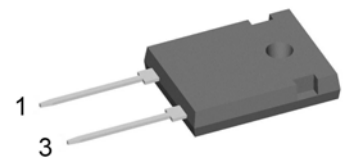
$$I_{FAV} = 60A$$

$$V_F = 1.1V$$

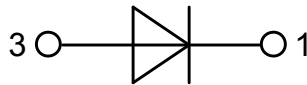
Single Diode

Part number

DLA60I1200HA



Backside: cathode



### Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

### Applications:

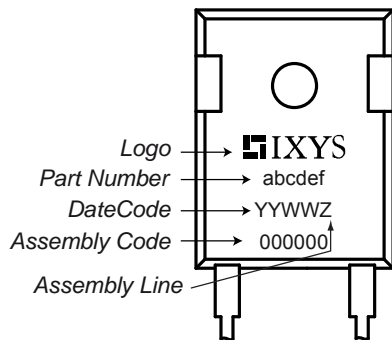
- Diode for main rectification
- For single and three phase bridge configurations

### Package: TO-247

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

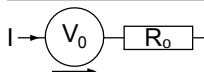
Rectifier				Ratings				
Symbol	Definition	Conditions		min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage					1300	V	
$V_{RRM}$	max. repetitive reverse blocking voltage					1200	V	
$I_R$	reverse current, drain current	$V_R = 1200\text{ V}$	$T_{VJ} = 25^\circ\text{C}$			30	$\mu\text{A}$	
		$V_R = 1200\text{ V}$	$T_{VJ} = 150^\circ\text{C}$			0.3	mA	
$V_F$	forward voltage drop	$I_F = 60\text{ A}$	$T_{VJ} = 25^\circ\text{C}$			1.19	V	
						1.42	V	
		$I_F = 120\text{ A}$	$T_{VJ} = 150^\circ\text{C}$			1.10	V	
						1.41	V	
$I_{FAV}$	average forward current	$T_C = 150^\circ\text{C}$ rectangular	$T_{VJ} = 175^\circ\text{C}$			60	A	
								d = 0.5
$V_{FO}$	threshold voltage					0.78	V	
$r_F$	slope resistance					5.1	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case					0.3	K/W	
$R_{thCH}$	thermal resistance case to heatsink				0.25		K/W	
$P_{tot}$	total power dissipation			$T_C = 25^\circ\text{C}$		500	W	
$I_{FSM}$	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			850	A	
								t = 8,3 ms; (60 Hz), sine
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$				725	A
$I^2t$	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$			3.62	kA <sup>2</sup> s	
								t = 8,3 ms; (60 Hz), sine
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150^\circ\text{C}$				2.63	kA <sup>2</sup> s
$C_J$	junction capacitance	$V_R = 400\text{ V}$	f = 1 MHz	$T_{VJ} = 25^\circ\text{C}$		33	pF	

Package TO-247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{VJ}$	virtual junction temperature		-55		175	°C
<b>Weight</b>				6		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

**Product Marking**

**Part number**

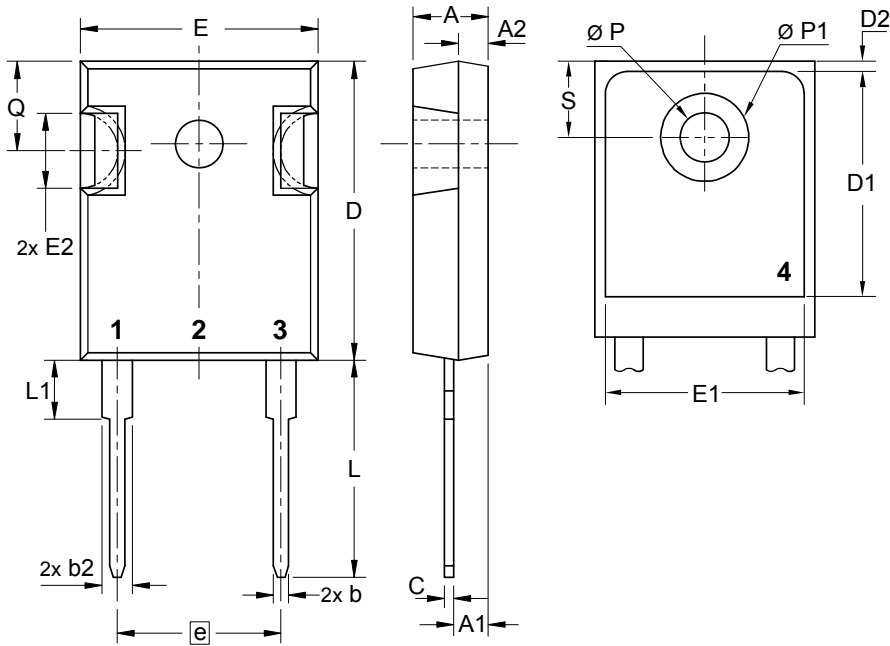
D = Diode  
 L = High Efficiency Standard Rectifier  
 A = (up to 1200V)  
 60 = Current Rating [A]  
 I = Single Diode  
 1200 = Reverse Voltage [V]  
 HA = TO-247AD (2)

Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DLA60I1200HA	DLA60I1200HA	Tube	30	508170

**Equivalent Circuits for Simulation**
*\* on die level*
 $T_{VJ} = 175^{\circ}\text{C}$ 

**Rectifier**

$V_{0\max}$	threshold voltage	0.78	V
$R_{0\max}$	slope resistance *	2.5	mΩ

## Outlines TO-247



Sym.	Inches		Millimeter	
	min.	max.	min.	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

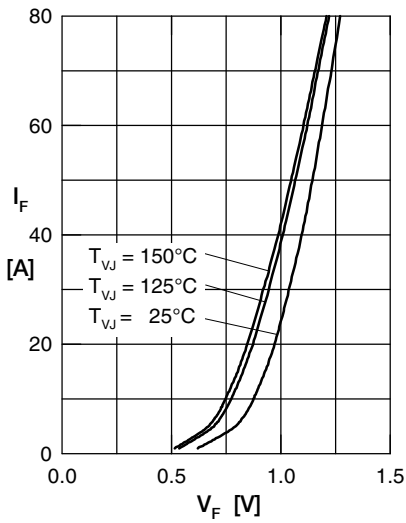


Fig. 1 Forward current versus voltage drop per diode

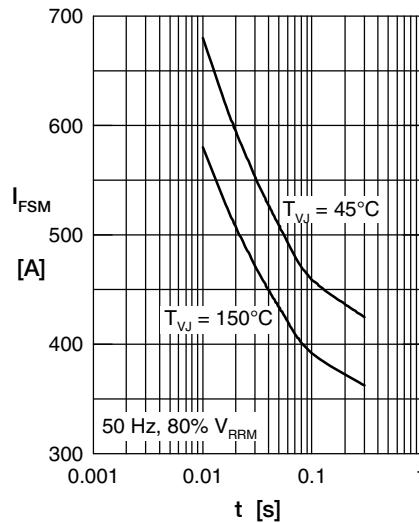


Fig. 2 Surge overload current

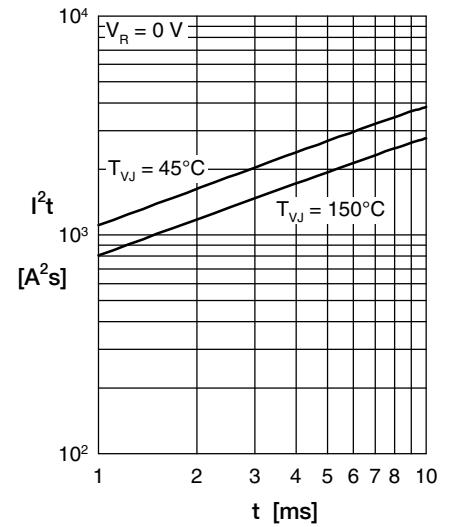


Fig. 3  $I^2t$  versus time per diode

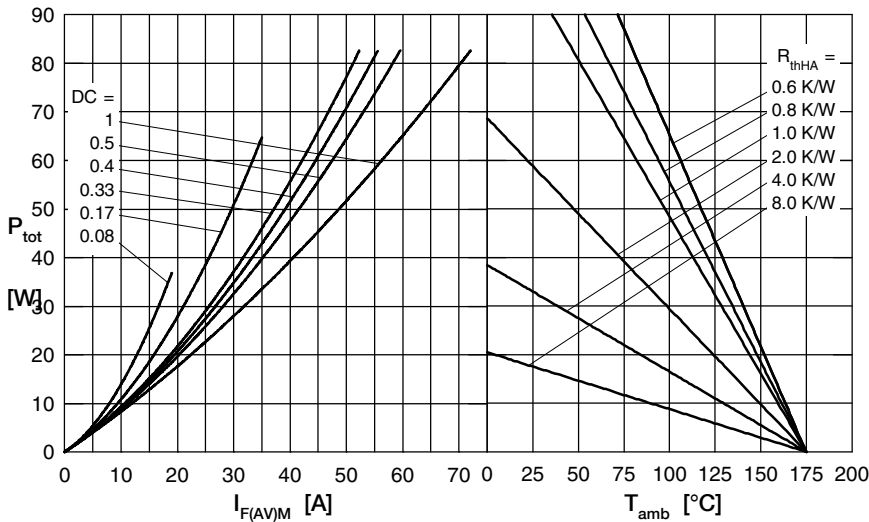


Fig. 4 Power dissipation vs. direct output current and ambient temperature

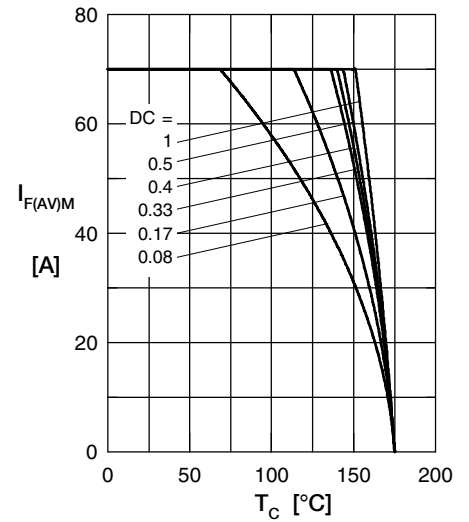


Fig. 5 Max. forward current vs. case temperature

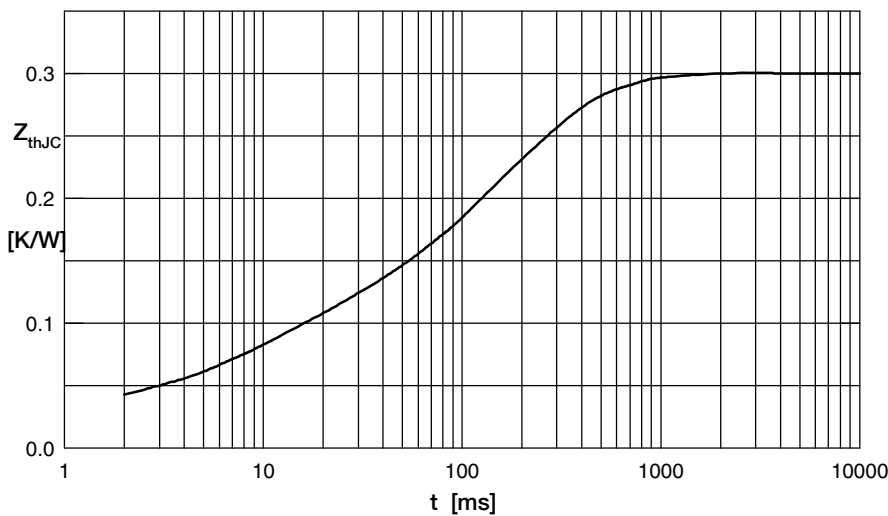


Fig. 6 Transient thermal impedance junction to case

Constants for  $Z_{thJC}$  calculation:

i	$R_{thi}$ (K/W)	$t_i$ (s)
1	0.044	0.007
2	0.027	0.0001
3	0.029	0.02
4	0.05	0.37
5	0.15	0.15