Standard Rectifier

|		
V_{RRM}	**=**	**800 V**
I_{FAV}	**=**	**45 A**
V_F	**=**	**1.23 V**

Single Diode

Part number

DSI45-08A

1
3

Backside: cathode

3 ○——◁|——○ 1
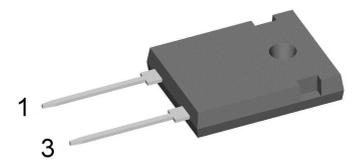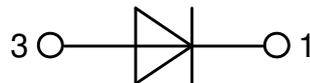
Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

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

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Rectifier

				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25°C$				900	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25°C$				800	V
I_R	reverse current	$V_R = 800\ V$	$T_{VJ} = 25°C$			40	μA
		$V_R = 800\ V$	$T_{VJ} = 150°C$			1.5	mA
V_F	forward voltage drop	$I_F = 45\ A$	$T_{VJ} = 25°C$			1.26	V
		$I_F = 90\ A$				1.57	V
		$I_F = 45\ A$	$T_{VJ} = 150°C$			1.23	V
		$I_F = 90\ A$				1.66	V
I_{FAV}	average forward current	$T_C = 130°C$	$T_{VJ} = 175°C$			45	A
		180° sine					
V_{F0}	threshold voltage ⎫		$T_{VJ} = 175°C$			0.81	V
r_F	slope resistance ⎬ for power loss calculation only					9.1	mΩ
R_{thJC}	thermal resistance junction to case					0.55	K/W
R_{thCH}	thermal resistance case to heatsink				0.3		K/W
P_{tot}	total power dissipation	$T_C = 25°C$				270	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			480	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\ V$			520	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			410	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\ V$			440	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			1.15	kA²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\ V$			1.13	kA²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			840	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0\ V$			805	A²s
C_J	junction capacitance	$V_R = 400\ V;\ f = 1\ MHz$	$T_{VJ} = 25°C$		18		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		-40		175	°C
T_{op}	operation temperature		-40		150	°C
T_{stg}	storage temperature		-40		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

Logo → ⊓ IXYS
Part Number → XXXXXXXXX
Date Code → yywwZ
Lot# → 1234
Location
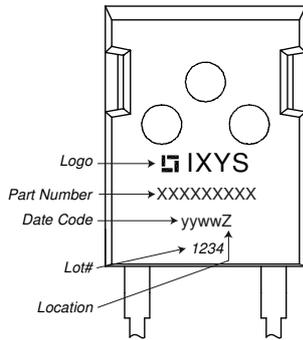
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSI45-08A	DSI45-08A	Tube	30	471887

Similar Part	Package	Voltage class
DSI45-12A	TO-247AD (2)	1200
DSI45-16A	TO-247AD (2)	1600
DSI45-16AR	ISOPLUS247 (2)	1600

Equivalent Circuits for Simulation   *on die level $T_{VJ} = 175°C$
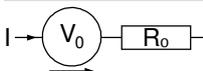
Rectifier

$V_{0\,max}$	threshold voltage	0.81		V
$R_{0\,max}$	slope resistance *	6.5		mΩ

Outlines   TO-247
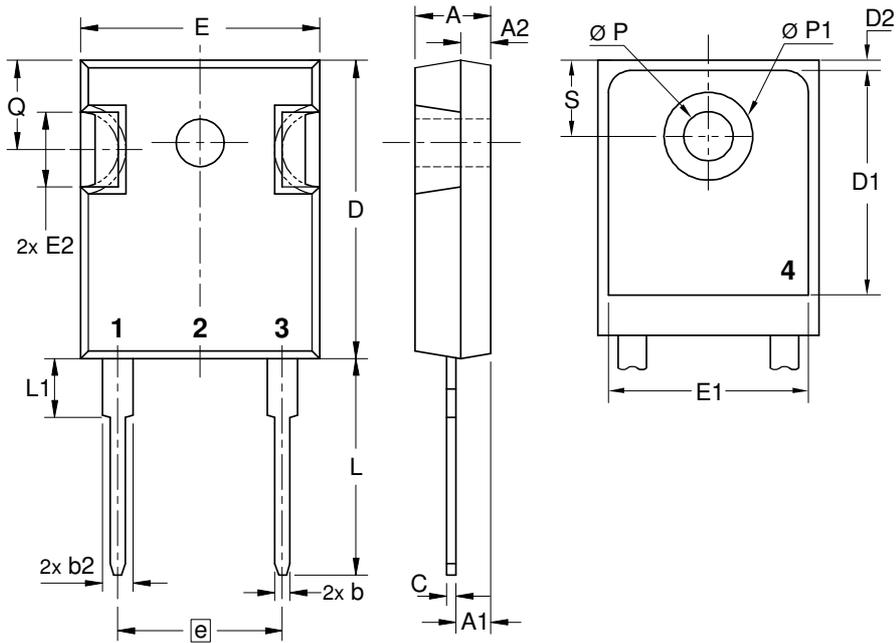
Sym.	Inches min.	Inches max.	Millimeter min.	Millimeter max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.430 BSC		10.92 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	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

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191129e

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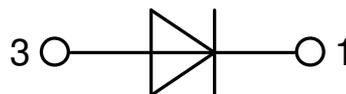
Rectifier
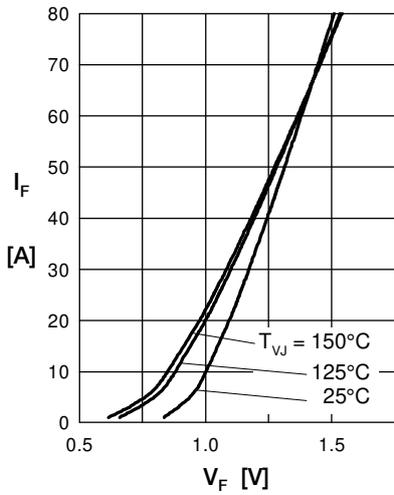
Fig. 1 Forward current versus voltage drop per diode
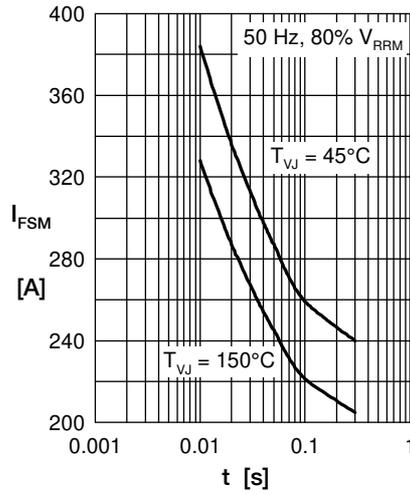

Fig. 2 Surge overload current
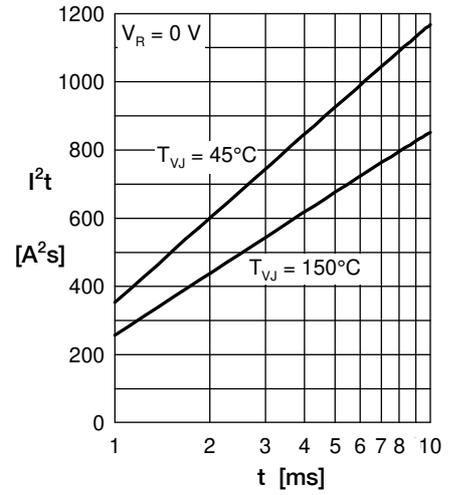
Fig. 3 I^2t versus time per diode
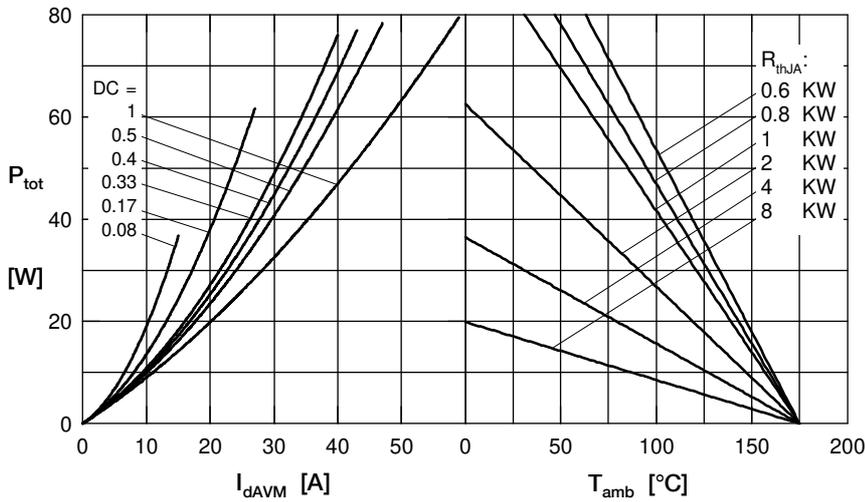
Fig. 4 Power dissipation vs. direct output current & ambient temperature
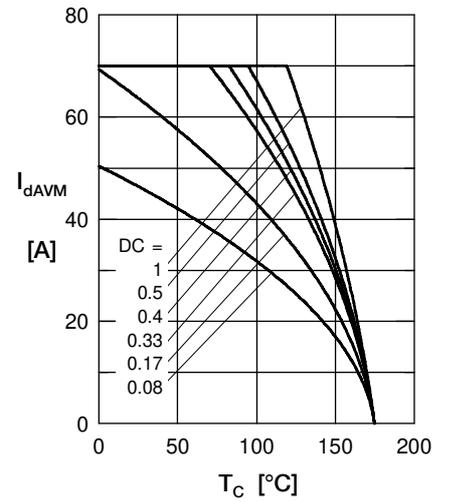
Fig. 5 Max. forward current vs. case temperature
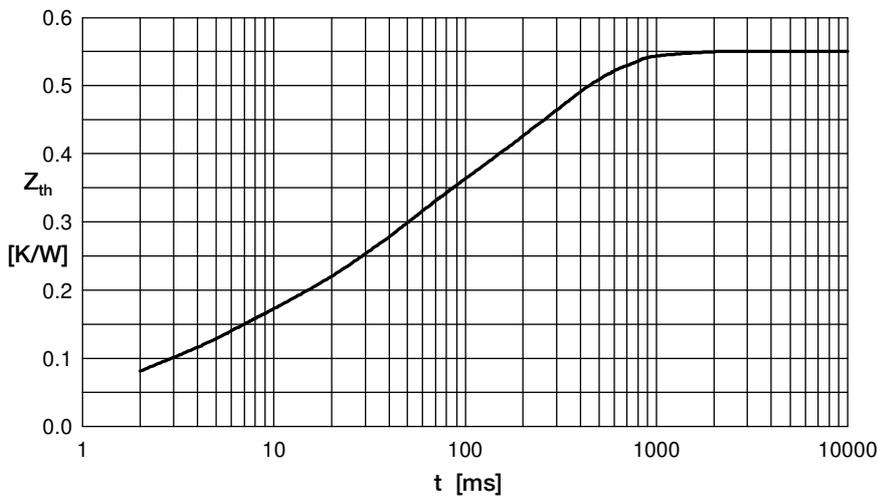
Fig. 6 Transient thermal impedance junction to case

i	R_i	t_i
1	0.033	0.0006
2	0.095	0.0039
3	0.164	0.033
4	0.258	0.272

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