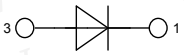
Standard Rectifier

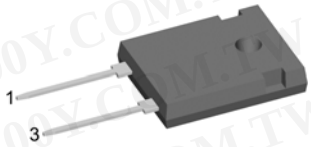
Single Diode

V_{RRM} = 1600 V
I_{FAV} = 45 A
V_F = 1.23 V

Part number

DSI45-16A





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:

- Housing: TO-247
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Symbol	Definition	Conditions		Ratings min.	typ.	max.	Unit
V_{RRM}	*max. repetitive reverse voltage*		T_{VJ} = 25°C			1600	V
I_R	*reverse current*	V_R = 1600 V	T_{VJ} = 25°C			20	µA
		V_R = 1600 V	T_{VJ} = 150°C			3	mA
V_F	*forward voltage*	I_F = 45 A	T_{VJ} = 25°C			1.28	V
		I_F = 90 A				1.37	V
		I_F = 45 A	T_{VJ} = 150°C			1.23	V
		I_F = 90 A				1.35	V
I_{FAV}	*average forward current*	rectangular d = 0.5	T_C = 130°C			45	A
V_{F0}	*threshold voltage* } *for power loss calculation only*		T_{VJ} = 175°C			0.81	V
r_F	*slope resistance* }					9.1	mΩ
R_{thJC}	*thermal resistance junction to case*					0.55	K/W
T_{VJ}	*virtual junction temperature*			-40		175	°C
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			518	A
		t = 10 ms (50 Hz), sine	T_{VJ} = 150°C			408	A
		t = 8,3 ms (60 Hz), sine	V_R = 0 V			441	A
I^2t	*value for fusing*	t = 10 ms (50 Hz), sine	T_{VJ} = 45°C			1152	A^2s
		t = 8,3 ms (60 Hz), sine	V_R = 0 V			1120	A^2s
		t = 10 ms (50 Hz), sine	T_{VJ} = 150°C			832	A^2s
		t = 8,3 ms (60 Hz), sine	V_R = 0 V			808	A^2s
C_J	*junction capacitance*	V_R = 400 V; f = 1 MHz	T_{VJ} = 25°C		18		pF

Release: PM _____, RD _____, QA _____, GM _____

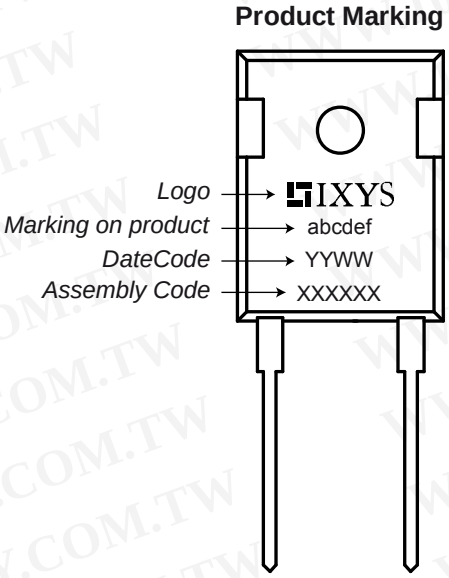
Date: PM _____, RD _____, QA _____, GM _____

IXYS reserves the right to change limits, conditions and dimensions. Data according to IEC 60747and per diode unless otherwise specified 20090529a

Symbol	Definition	Conditions	Ratings min.	typ.	max.	Unit
I_{RMS}	*RMS current*	per pin [1]			70	A
R_{thCH}	*thermal resistance case to heatsink*			0.25		K/W
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

[1] I_{RMS} is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.
In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

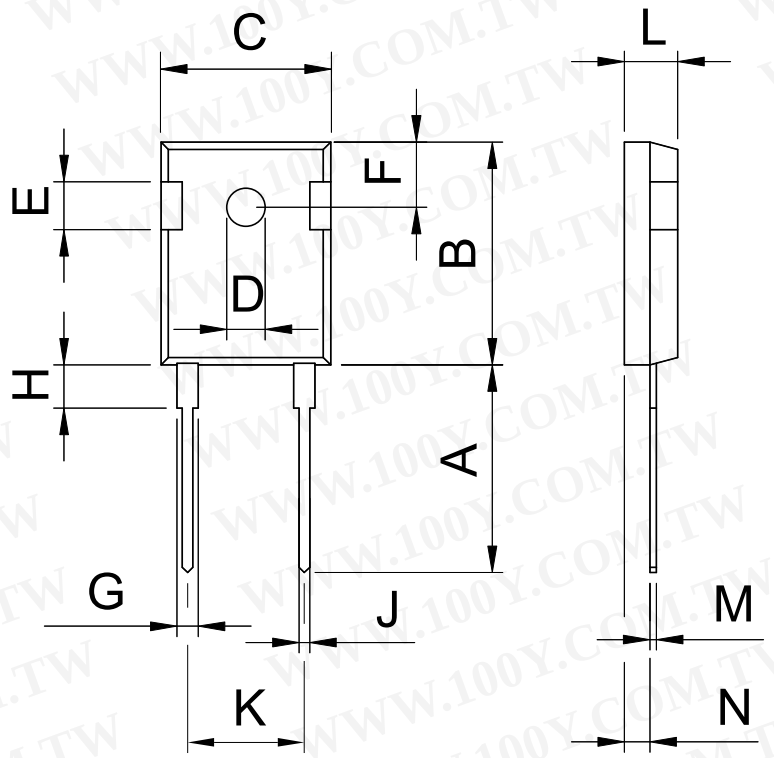
Product Marking



Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DSI45-16A	DSI45-16A	Tube	30	471917

Similar Part	Package	Voltage class
DSI45-16AR	ISOPLUS247 (2)	1600
DSI45-12A	TO-247AD (2)	1200
DSI45-08A	TO-247AD (2)	800

Outlines TO-247



Dim.	Millimeter Min.	Max.	Inches Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

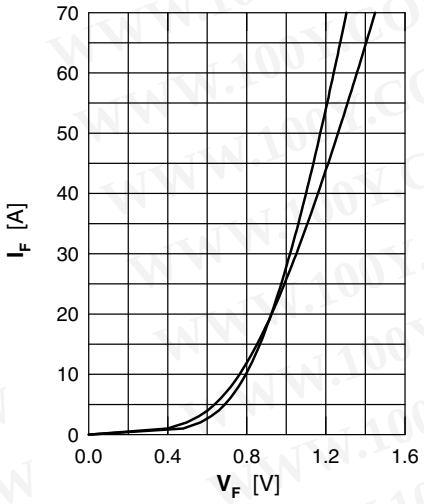


Fig. 1 Forward current versus voltage drop per diode

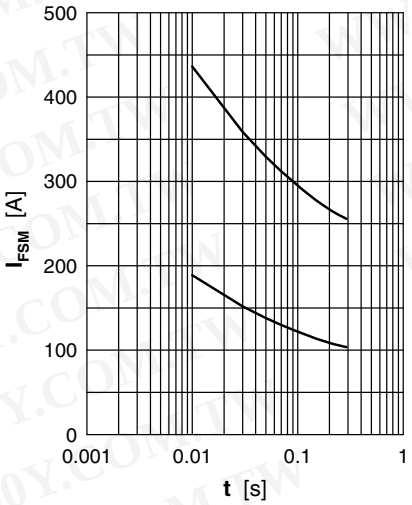


Fig. 2 Surge overload current

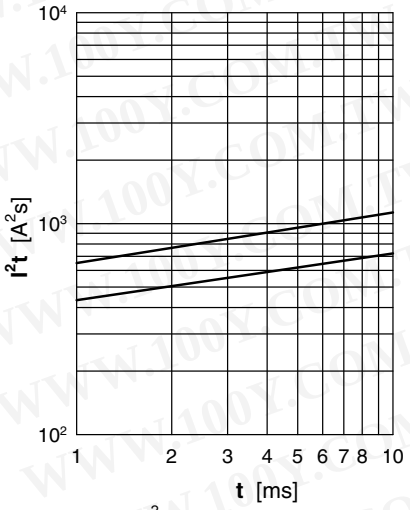


Fig. 3 I^2t versus time per diode

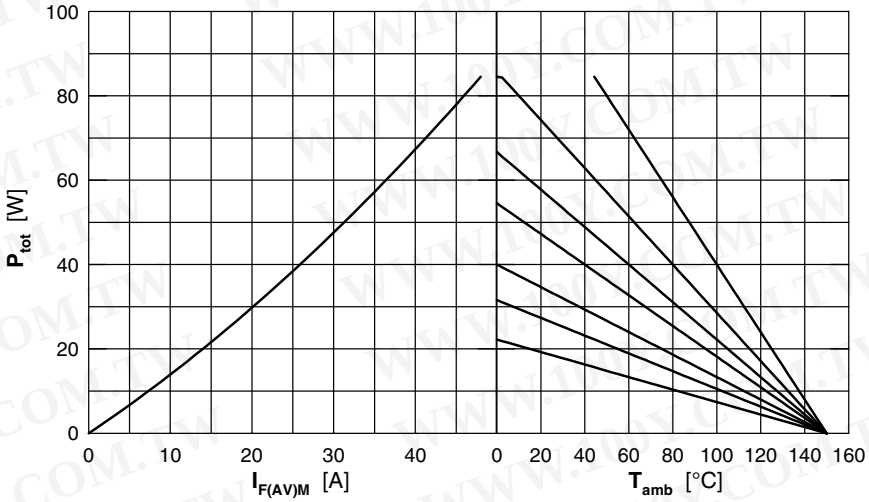


Fig. 4 Power dissipation vs. direct output current & ambient temperature, sine 180°

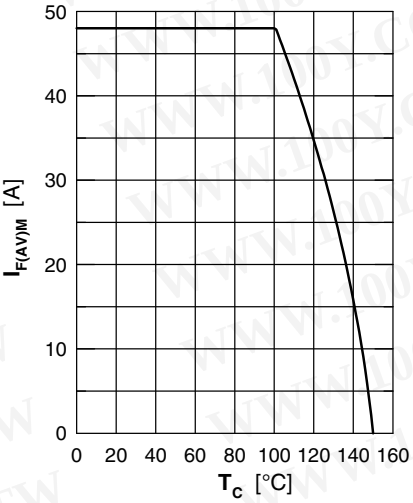


Fig. 5 Max. forward current versus case temperature, sine180°

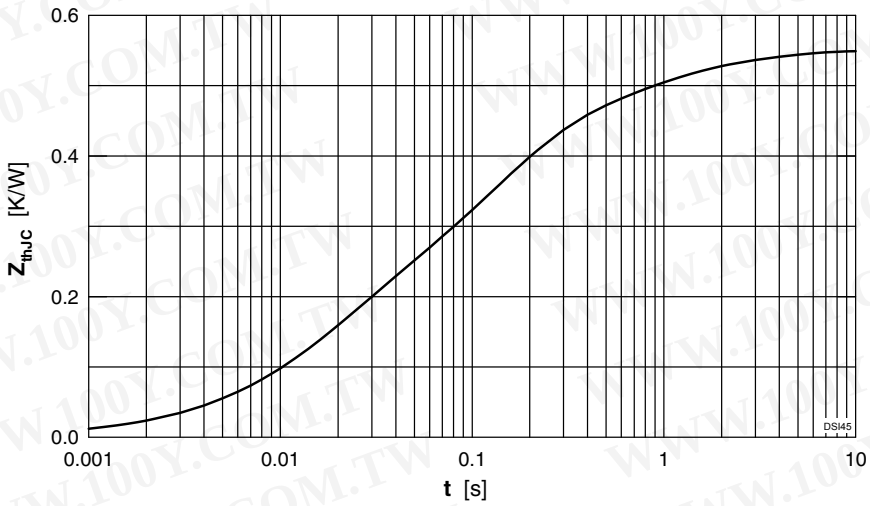


Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.1633	0.016
2	0.2517	0.118
3	0.0933	0.588
4	0.04167	2.6