IXYS
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Standard Rectifier

V_{RRM}	=	1600 V
I_{FAV}	= 2x	45 A
V_F	=	1.23 V

Common Cathode
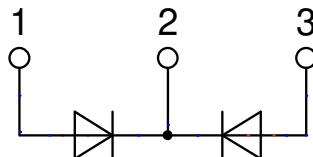
Part number

DSIK45-16AR

1
3

Backside: isolated

E72873

1   2   3

Features / Advantages:
- Planar passivated chips
- Very low leakage current
- Very low forward voltage drop
- Improved thermal behaviour

Applications:
- Diode for main rectification

Package: ISOPLUS247
- Isolation Voltage: 3600 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Backside: DCB ceramic
- Reduced weight
- Advanced power cycling

Disclaimer Notice
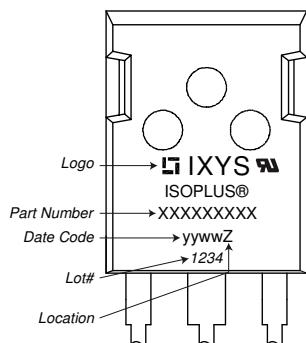
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Rectifier

Ratings

Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25°C$				1700	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25°C$				1600	V
I_R	reverse current	$V_R = 1600\ V$	$T_{VJ} = 25°C$			40	µA
		$V_R = 1600\ V$	$T_{VJ} = 150°C$			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	$T_C = 100°C$	$T_{VJ} = 175°C$			45	A
		sine 180°					
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					0.9	K/W
R_{thCH}	thermal resistance case to heatsink					0.3	K/W
P_{tot}	total power dissipation	$T_C = 25°C$				165	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   ISOPLUS247
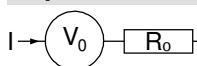
Symbol	Definition	Conditions		min.	typ.	max.	Unit
I$_{RMS}$	RMS current	per terminal [1]				70	A
T$_{VJ}$	virtual junction temperature			-40		175	°C
T$_{op}$	operation temperature			-40		150	°C
T$_{stg}$	storage temperature			-40		150	°C
Weight					6		g
F$_C$	mounting force with clip			20		120	N
d$_{Spp/App}$	creepage distance on surface | striking distance through air	terminal to terminal		2.7			mm
d$_{Spb/Apb}$		terminal to backside		4.1			mm
V$_{ISOL}$	isolation voltage	t = 1 second	50/60 Hz, RMS; I$_{ISOL}$ ≤ 1 mA	3600			V
		t = 1 minute		3000			V

Ratings

Product Marking

Logo	⚡ IXYS ℞
	ISOPLUS®
Part Number	XXXXXXXXX
Date Code	yywwZ
Lot#	1234
Location	
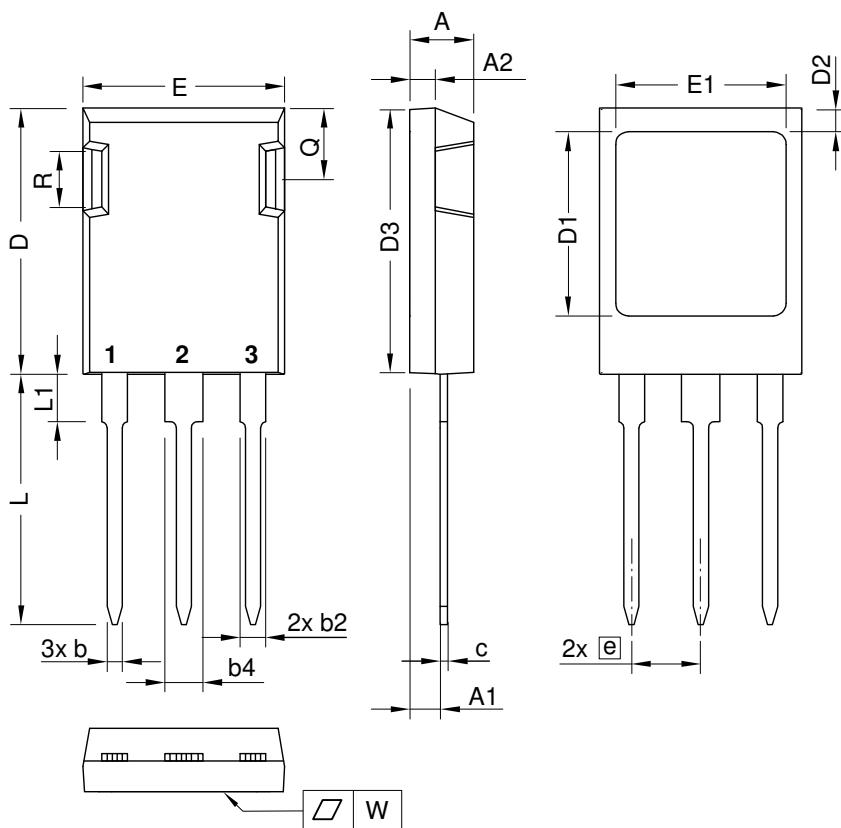
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSIK45-16AR	DSIK45-16AR	Tube	30	496022

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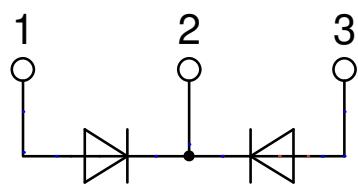
Rectifier

V$_{0 max}$	threshold voltage	0.81	V
R$_{0 max}$	slope resistance *	6.5	mΩ

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Outlines   ISOPLUS247

Dim.	Millimeter		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b2	1.91	2.20	0.075	0.087
b4	2.92	3.24	0.115	0.128
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
D1	15.75	16.26	0.620	0.640
D2	1.65	2.15	0.065	0.085
D3	20.30	20.70	0.799	0.815
E	15.75	16.13	0.620	0.635
E1	13.21	13.72	0.520	0.540
e	5.45 BSC		0.215 BSC	
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
Q	5.59	6.20	0.220	0.244
R	4.25	5.50	0.167	0.217
W	-	0.10	-	0.004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite
The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und L_{max}.
This drawing will meet all dimensions requiarement of JEDEC outline TO-247 AD except screw hole and except L_{max}.
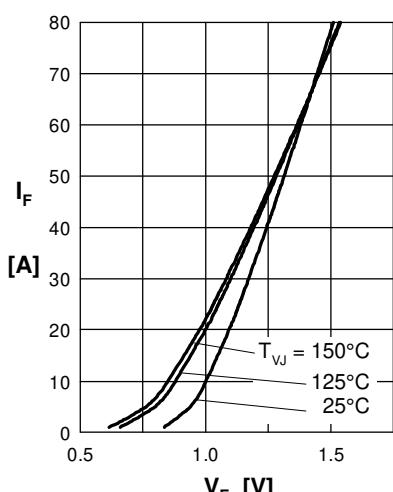
Rectifier


Fig. 1 Forward current versus voltage drop per diode
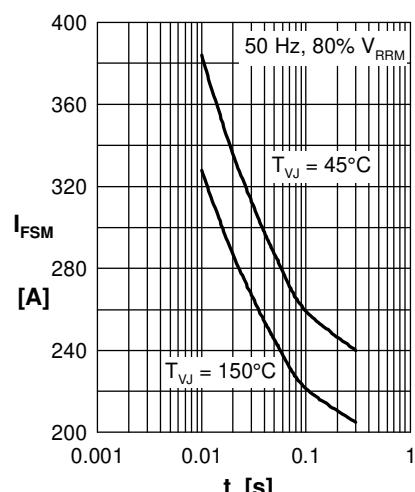

Fig. 2 Surge overload current
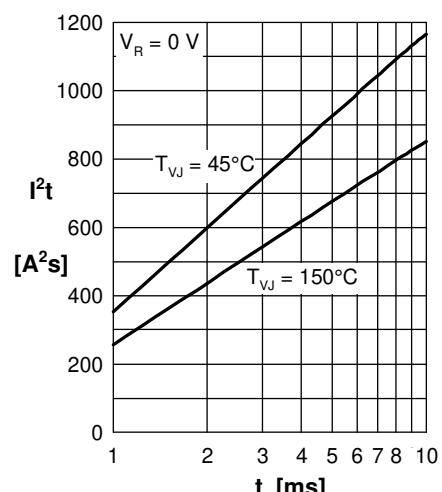
Fig. 3 I^2t versus time per diode
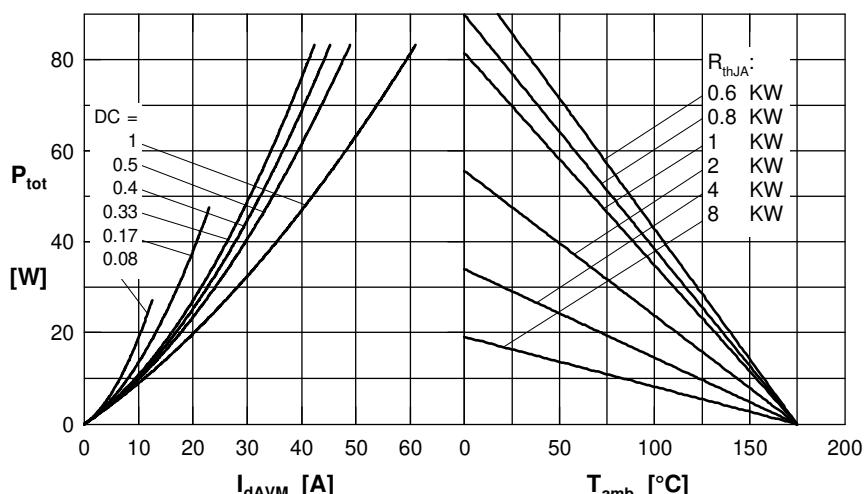
Fig. 4 Power dissipation vs. direct output current & ambient temperature
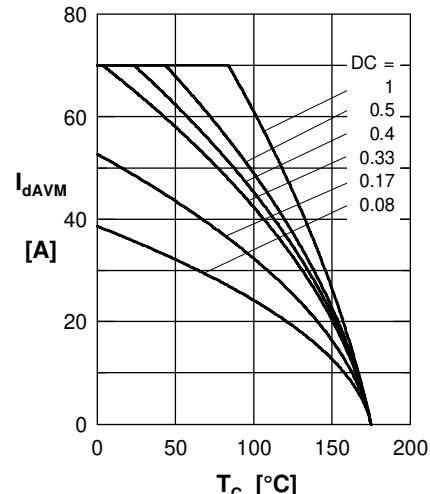

Fig. 5 Max. forward current vs. case temperature
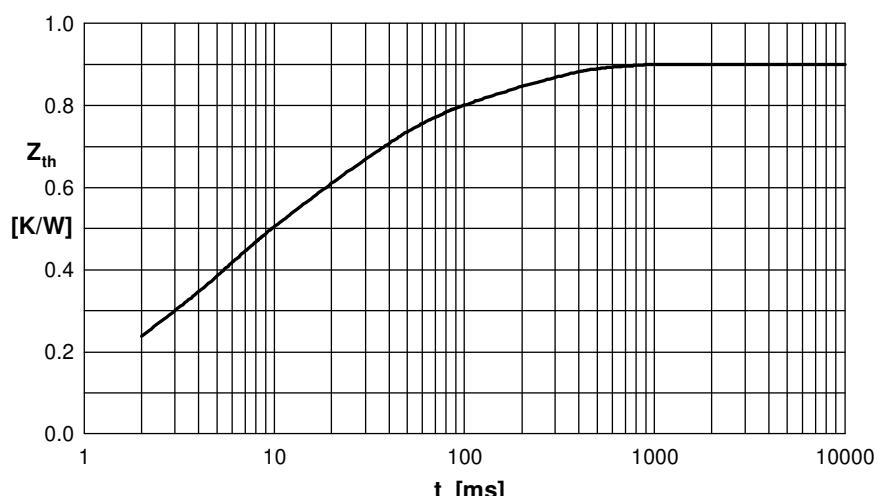
Fig. 6 Transient thermal impedance junction to case

i	R_i	t_i
1	0.0607	0.0004
2	0.123	0.00256
3	0.2305	0.045
4	0.323	0.0242
5	0.1628	0.18

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