Standard Rectifier

|		
V_{RRM}	$=$ 2x	800 V
I_{FAV}	$=$	8 A
V_F	$=$	1.08 V
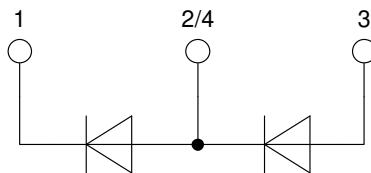
Phase leg

Part number

DSP8-08A

Backside: anode/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-220
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice
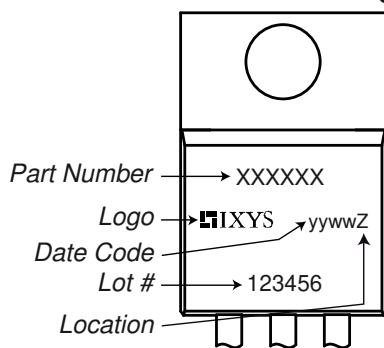
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Rectifier

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	$T_{VJ} = 25°C$			10	µA
		$V_R = 800$ V	$T_{VJ} = 150°C$			0.2	mA
V_F	forward voltage drop	$I_F = 8$ A	$T_{VJ} = 25°C$			1.16	V
		$I_F = 16$ A				1.35	V
		$I_F = 8$ A	$T_{VJ} = 150°C$			1.08	V
		$I_F = 16$ A				1.34	V
I_{FAV}	average forward current	$T_C = 160°C$ rectangular d = 0.5	$T_{VJ} = 175°C$			8	A
V_{F0}	threshold voltage	for power loss calculation only	$T_{VJ} = 175°C$			0.79	V
r_F	slope resistance					33	mΩ
R_{thJC}	thermal resistance junction to case					1.5	K/W
R_{thCH}	thermal resistance case to heatsink				0.5		K/W
P_{tot}	total power dissipation		$T_C = 25°C$			100	W
I_{FSM}	max. forward surge current	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			120	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			130	A
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			100	A
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			110	A
I^2t	value for fusing	t = 10 ms; (50 Hz), sine	$T_{VJ} = 45°C$			72	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			70	A²s
		t = 10 ms; (50 Hz), sine	$T_{VJ} = 150°C$			50	A²s
		t = 8,3 ms; (60 Hz), sine	$V_R = 0$ V			50	A²s
C_J	junction capacitance	$V_R = 400$ V; f = 1 MHz	$T_{VJ} = 25°C$		4		pF

Ratings

Package   TO-220

Symbol	Definition	Conditions	min.	typ.	max.	Unit
Ratings						
I_{RMS}	RMS current	per terminal			25	A
T_{VJ}	virtual junction temperature		-55		175	°C
T_{op}	operation temperature		-55		150	°C
T_{stg}	storage temperature		-55		150	°C
Weight				2		g
M_D	mounting torque		0.4		0.6	Nm
F_C	mounting force with clip		20		60	N

Product Marking

Part Number → XXXXXX
Logo → IXYS   yywwZ
Date Code →
Lot # → 123456
Location →
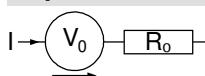
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DSP8-08A	DSP8-08A	Tube	50	465054
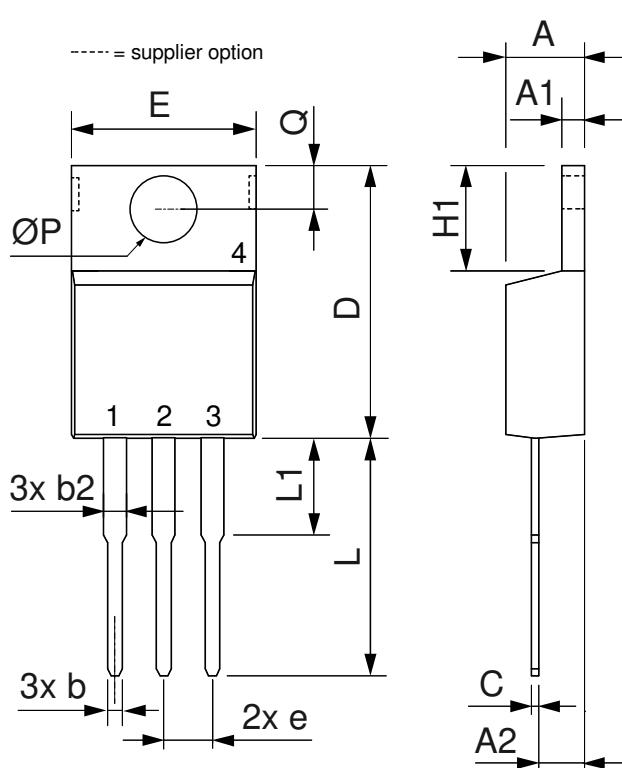
Similar Part	Package	Voltage class
DSP8-08S	TO-263AB (D2Pak) (2)	800
DSP8-08AS	TO-263AA (D2Pak) (3)	800
DSP8-12A	TO-220AB (3)	1200
DSP8-12AC	ISOPLUS220AB (3)	1200

DSP8-12S	TO-263AB (D2Pak) (2)	1200
DSP8-12AS	TO-263AA (D2Pak) (3)	1200
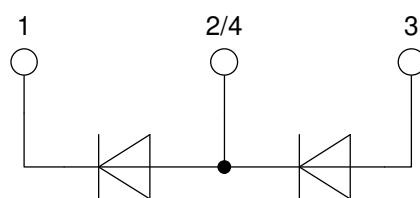
## Equivalent Circuits for Simulation   *on die level* $T_{VJ} = 175°C$

Rectifier

$V_{0\,max}$	threshold voltage	0.79	V
$R_{0\,max}$	slope resistance *	30	mΩ

IXYS reserves the right to change limits, conditions and dimensions.   Data according to IEC 60747and per semiconductor unless otherwise specified   20191128c

Outlines   TO-220

----- = supplier option

Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

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Rectifier
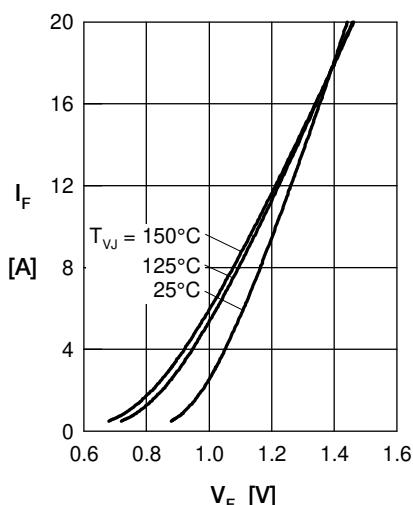
Fig. 1 Forward current versus
voltage drop per diode
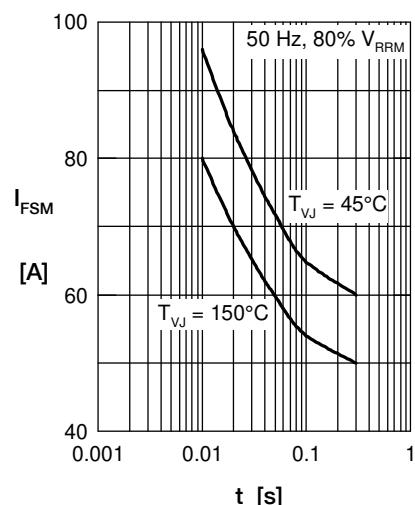

Fig. 2 Surge overload current
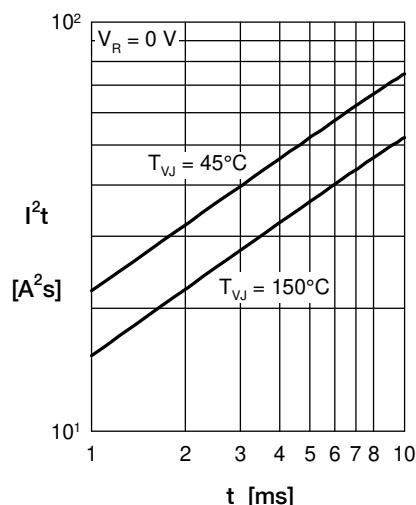
Fig. 3 I^2t versus time per diode
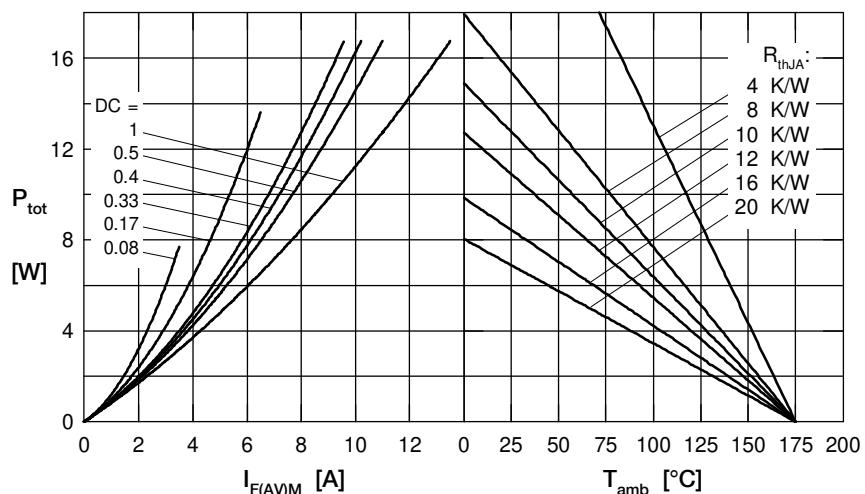
Fig. 4 Power dissipation vs. direct output current and ambient temperature
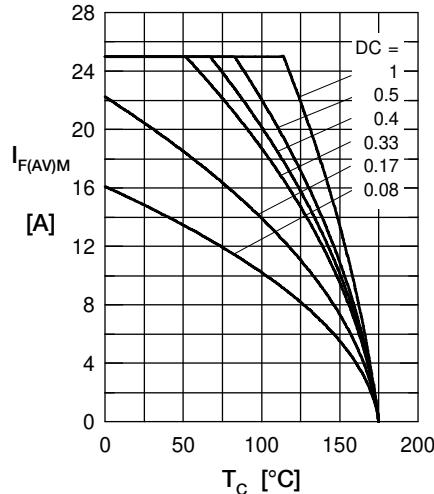

Fig. 5 Max. forward current vs.
case temperature
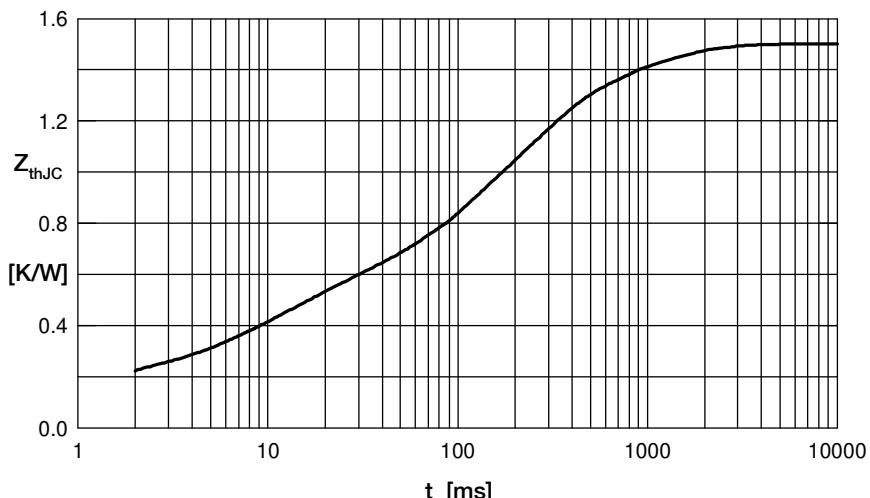
Fig. 6 Transient thermal impedance junction to case

Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.155	0.0005
2	0.332	0.0095
3	0.713	0.17
4	0.3	0.8
5	0.00001	0.00001

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