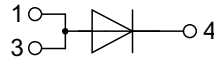
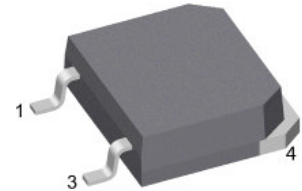


Fast Recovery Epitaxial Diode (FRED)

$I_{FAVM} = 109 \text{ A}$
 $V_{RRM} = 1200 \text{ V}$
 $t_{rr} = 40 \text{ ns}$

V_{RSM}	V_{RRM}	Type
V	V	
1200	1200	DSEI 120-12AZ


TO-268 AA


Symbol	Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 60^\circ\text{C}$; rectangular, $d = 0.5$	109	A
I_{FAV}	$T_C = 95^\circ\text{C}$; rectangular, $d = 0.5$	75	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	1200	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	600	A
		660	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	540	A
		600	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	1800	A ² s
		1800	A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	1450	A ² s
		1500	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ\text{C}$	357	W
M_d	mounting torque	0.8...1.2	Nm
Weight	typical	6	g

Features

- International standard package JEDEC TO-268AA
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low I_{RM} -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

Applications

- Antiparallel diode for high frequency switching devices
- Anti saturation diode
- Snubber diode
- Free wheeling diode in converters and motor control circuits
- Rectifiers in switch mode power supplies (SMPS)
- Inductive heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Advantages

- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

Symbol	Conditions	Characteristic Values		
		typ.	max.	
I_R	$V_R = V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$		3 mA
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$		1.5 mA
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 125^\circ\text{C}$		20 mA
V_F	$I_F = 70 \text{ A}$	$T_{VJ} = 150^\circ\text{C}$		1.55 V
		$T_{VJ} = 25^\circ\text{C}$		1.8 V
V_{T0}	for power-loss calculations only			1.2 V
r_T	$T_{VJ} = T_{VJM}$			4.6 mΩ
R_{thJC}		0.15	0.35	K/W
R_{thCH}				K/W
R_{thJA}			35	K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$		40	60 ns
I_{RM}	$V_R = 350 \text{ V}$; $I_F = 75 \text{ A}$; $-di_F/dt = 200 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$		25	30 A

① Chip capability Data according to IEC 60747

IXYS reserves the right to change limits, test conditions and dimensions.

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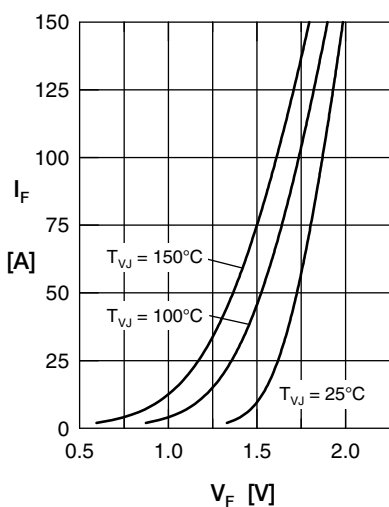


Fig. 1 Forward current I_F vs. V_F

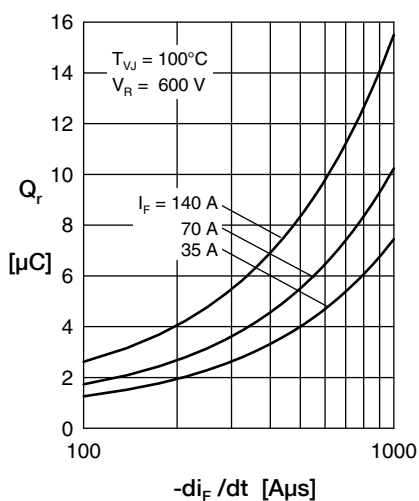


Fig. 2 Reverse recovery charge Q_r versus $-di_F/dt$

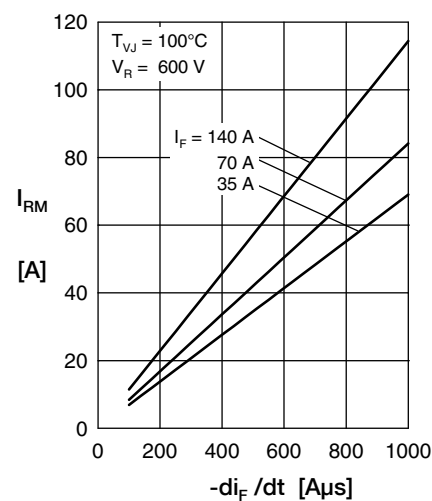


Fig. 3 Peak reverse current I_{RM} versus $-di_F/dt$

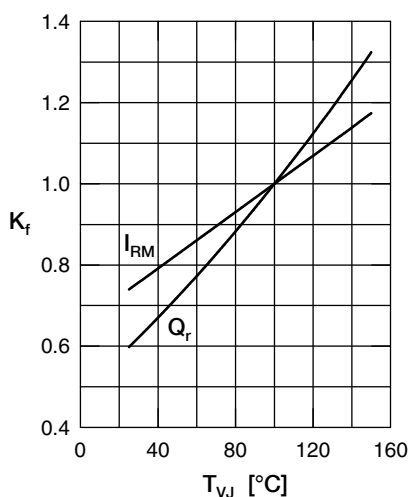


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

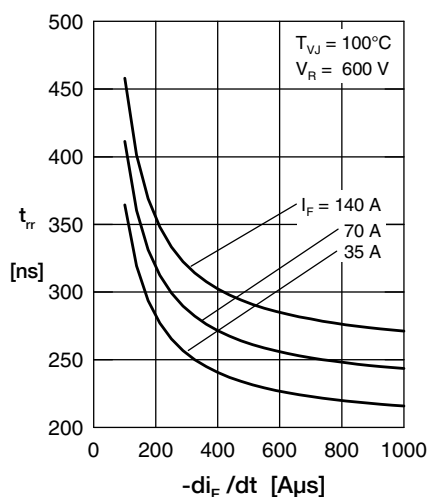


Fig. 5 Recovery time t_{tr} versus $-di_F/dt$

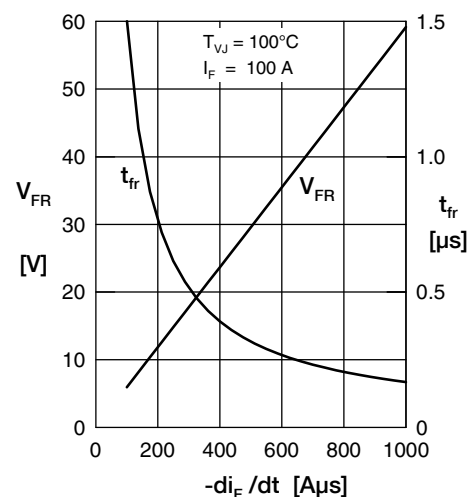
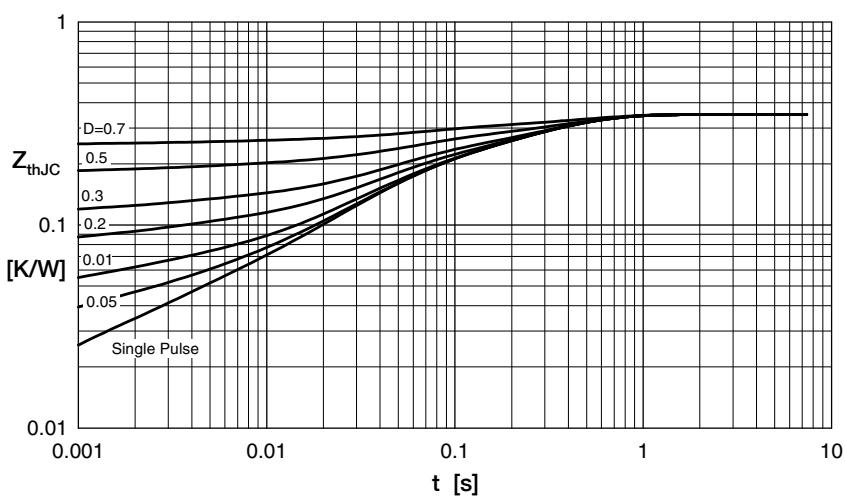


Fig. 6 Peak forward voltage V_{FR} and t_{fr} versus $-di_F/dt$

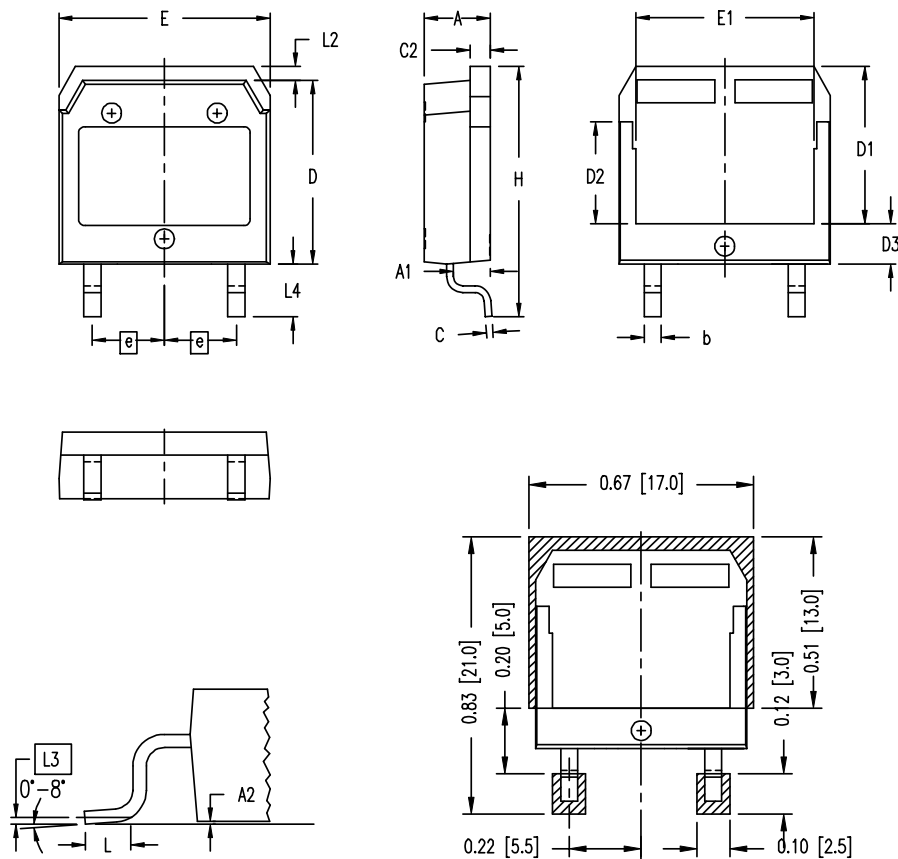


Constants for Z_{thJC} calculation:

i	R_{thi} (K/W)	t_i (s)
1	0.017	0.00038
2	0.0184	0.0026
3	0.1296	0.0387
4	0.185	0.274

Fig. 7 Transient thermal resistance junction to case at various duty cycles
IXYS reserves the right to change limits, test conditions and dimensions.

Dimensions TO-268AA



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.90	5.10	0.193	0.201
A1	2.70	2.90	0.106	0.114
A2	0.02	0.25	0.001	0.010
b	1.15	1.45	0.045	0.057
C	0.40	0.65	0.016	0.026
C2	1.45	1.60	0.057	0.063
D	13.80	14.00	0.543	0.551
D1	11.80	12.10	0.465	0.476
D2	7.50	7.80	0.295	0.307
D3	2.90	3.20	0.114	0.126
E	15.85	16.05	0.624	0.632
E1	13.30	13.60	0.524	0.535
e	5.450 BSC		0.215 BSC	
H	18.70	19.10	0.736	0.752
L	1.70	2.00	0.067	0.079
L2	1.00	1.15	0.039	0.045
L3	0.250 BSC		0.010 BSC	
L4	3.80	4.10	0.150	0.161

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- to perform joint risk and quality assessments;
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