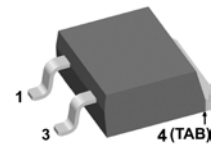
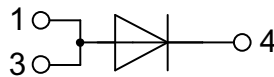


Fast Recovery Epitaxial Diode (FRED)

$I_{FAV} = 11 \text{ A}$
 $V_{RRM} = 1200 \text{ V}$
 $t_{rr} = 50 \text{ ns}$

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



Symbol	Conditions	Maximum Ratings		
I_{FRMS}	$T_{VJ} = T_{VJM}$	25	A	
I_{FAVM} ①	$T_C = 100^\circ\text{C}$; rectangular, $d = 0.5$	11	A	
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	150	A	
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$;	$t = 10 \text{ ms}$ (50 Hz), sine	75	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	80	
	$T_{VJ} = 150^\circ\text{C}$;	$t = 10 \text{ ms}$ (50 Hz), sine	65	A
		$t = 8.3 \text{ ms}$ (60 Hz), sine	70	
I^2t	$T_{VJ} = 45^\circ\text{C}$;	$t = 10 \text{ ms}$ (50 Hz), sine	28	A^2s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	27	
	$T_{VJ} = 150^\circ\text{C}$;	$t = 10 \text{ ms}$ (50 Hz), sine	21	A^2s
		$t = 8.3 \text{ ms}$ (60 Hz), sine	20	
T_{VJ}		-40...+150	$^\circ\text{C}$	
T_{VJM}		150	$^\circ\text{C}$	
T_{stg}		-40...+150	$^\circ\text{C}$	
M_d	mounting torque	0.4...0.6	Nm	
P_{tot}	$T_C = 25^\circ\text{C}$	78	W	
Weight	typical	2	g	

Features

- International standard package JEDEC TO-263 AB
- 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

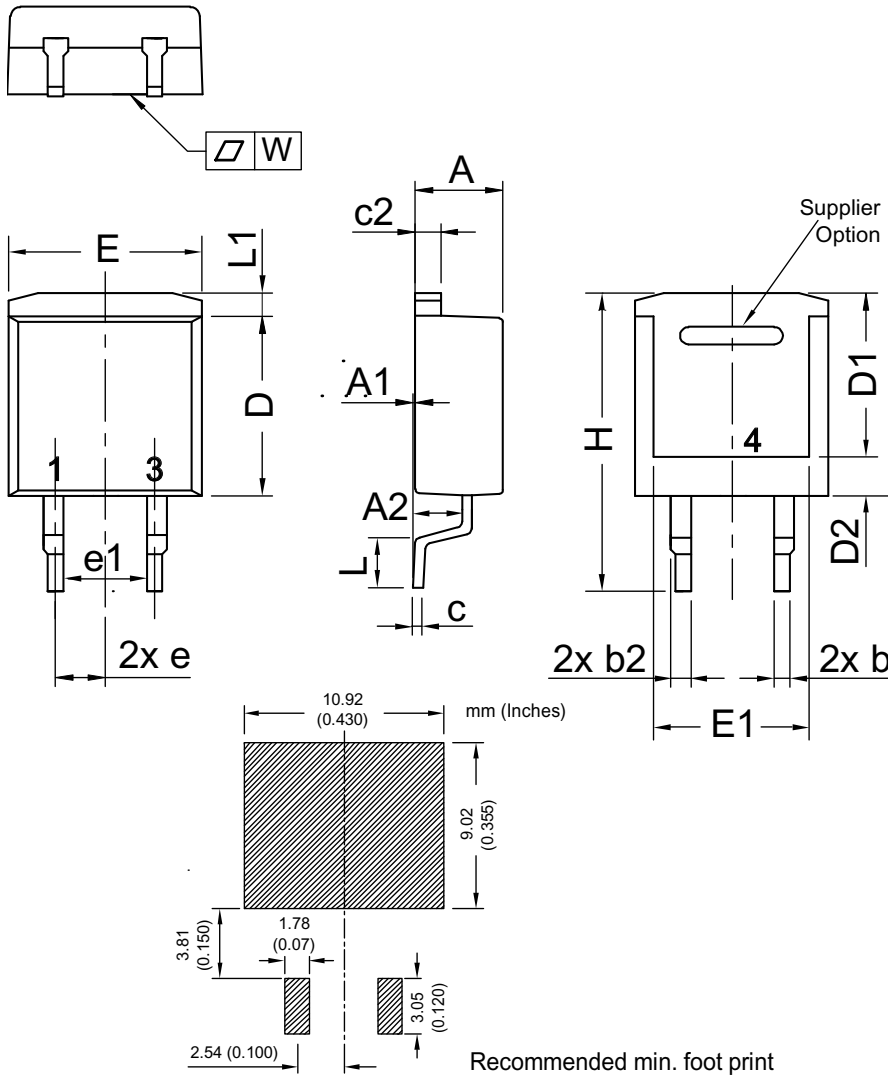
Advantages

- 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	$V_R = V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$	250	μA
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$	150	μA
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 125^\circ\text{C}$	4	mA
V_F	$I_F = 12 \text{ A}$	$T_{VJ} = 150^\circ\text{C}$	2.2	V
		$T_{VJ} = 25^\circ\text{C}$	2.6	V
V_{T0}	For power-loss calculations only		1.65	V
r_T	$T_{VJ} = T_{VJM}$		46.2	m Ω
R_{thJC}			1.6	K/W
R_{thCH}		0.25		K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 50 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	50	70	ns
I_{RM}	$V_R = 540 \text{ V}$; $I_F = 12 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	6.5	7.2	A

① I_{FAVM} rating includes reverse blocking losses at T_{VJM} . $V_R = 0.8 \cdot V_{RRM}$, duty cycle $d = 0.5$
Data according to IEC 60747

Dimensions TO-263 AB



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.06	4.83	0.160	0.190
A1	typ. 0.10		typ. 0.004	
A2	2.41		0.095	
b	0.51	0.99	0.020	0.039
b2	1.14	1.40	0.045	0.055
c	0.40	0.74	0.016	0.029
c2	1.14	1.40	0.045	0.055
D	8.38	9.40	0.330	0.370
D1	8.00	8.89	0.315	0.350
D2	2.3		0.091	
E	9.65	10.41	0.380	0.410
E1	6.22	8.50	0.245	0.335
e	2.54 BSC		0.100 BSC	
e1	4.28		0.169	
H	14.61	15.88	0.575	0.625
L	1.78	2.79	0.070	0.110
L1	1.02	1.68	0.040	0.066
W	typ. 0.02	0.040	typ. 0.0008	0.002

All dimensions conform with and/or within JEDEC standard.

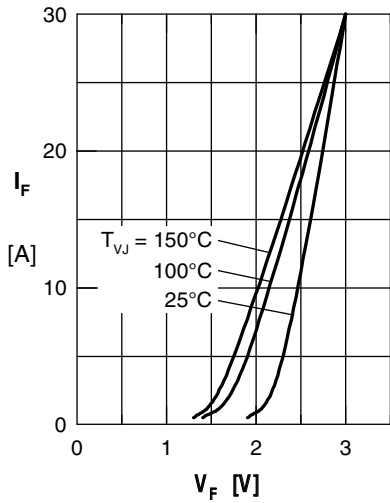


Fig. 1 Forward current I_F versus V_F

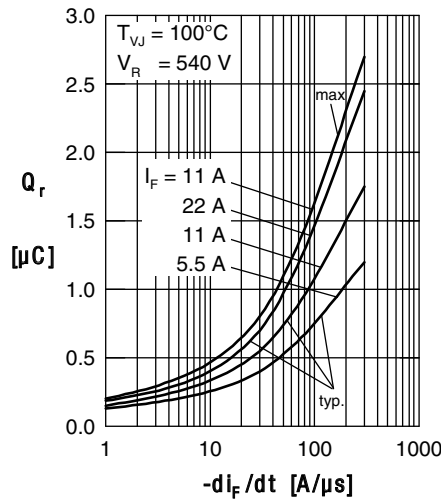


Fig. 2 Typ. reverse recov. charge Q_r versus $-di_F/dt$

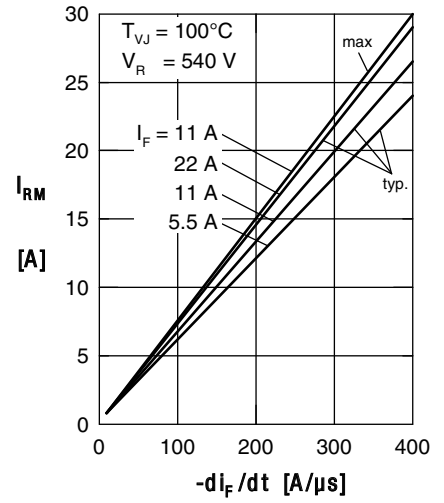


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

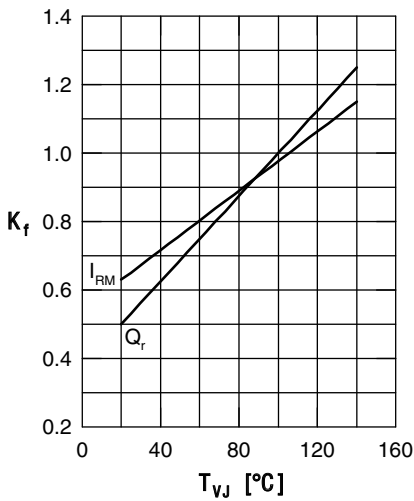


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

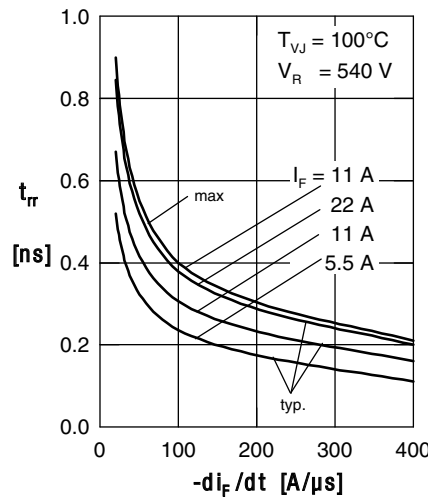


Fig. 5 Typ. recovery time t_{tr} versus $-di_F/dt$

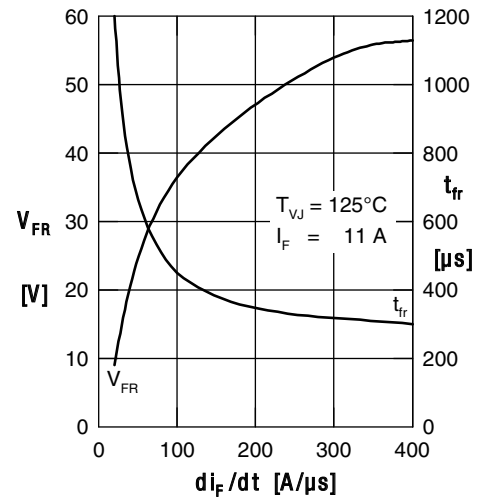


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

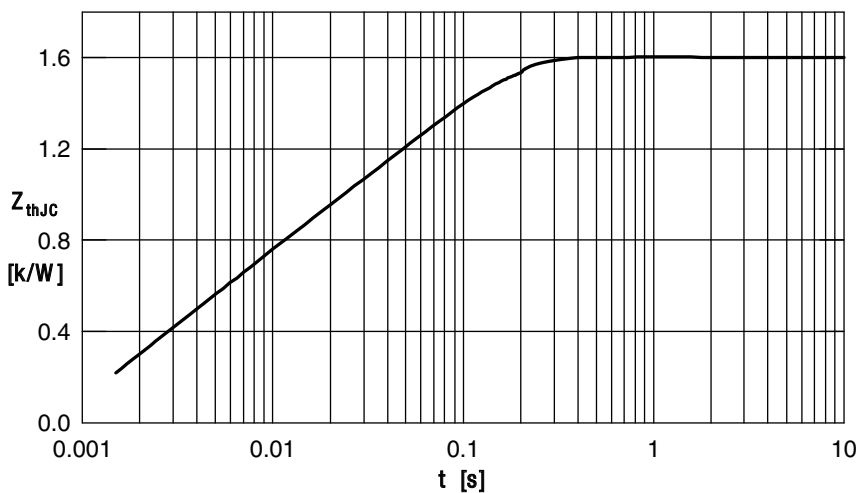


Fig. 7 Transient thermal impedance junction to case

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

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