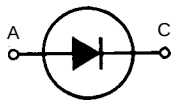
IXYS

Fast Recovery Epitaxial Diode (FRED)

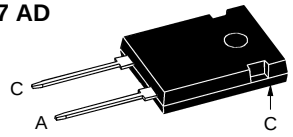
DSEI 60

I_{FAVM} = 69 A
V_{RRM} = 200 V
t_{rr} = 35 ns

V_{RSM} V	V_{RRM} V	Type
200	200	DSEI 60-02A



TO-247 AD



A = Anode, C = Cathode

Symbol	Test Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		98	A
I_{FAVM} ①	T_C = 85°C; rectangular, d = 0.5		69	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		800	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	600	A
		t = 8.3 ms (60 Hz), sine	650	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	540	A
		t = 8.3 ms (60 Hz), sine	580	A
I^2t	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	1800	A^2s
		t = 8.3 ms (60 Hz), sine	1770	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	1460	A^2s
		t = 8.3 ms (60 Hz), sine	1410	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
P_{tot}	T_C = 25°C		150	W
M_d	Mounting torque		0.8...1.2	Nm
Weight			6	g

Symbol	Test Conditions		Characteristic Values typ.	max.	
I_R	T_{VJ} = 25°C	$V_R = V_{RRM}$		50	µA
	T_{VJ} = 25°C	$V_R = 0.8 \cdot V_{RRM}$		40	µA
	T_{VJ} = 125°C	$V_R = 0.8 \cdot V_{RRM}$		11	mA
V_F	I_F = 60 A;	T_{VJ} = 150°C		0.88	V
		T_{VJ} = 25°C		1.08	V
V_{T0}	For power-loss calculations only			0.70	V
r_T	$T_{VJ} = T_{VJM}$			4.0	mΩ
R_{thJC}				0.75	K/W
R_{thCK}			0.25		K/W
R_{thJA}				35	K/W
t_{rr}	I_F = 1 A; -di/dt = 200 A/µs; V_R = 30 V; T_{VJ} = 25°C		35	50	ns
I_{RM}	V_R = 100 V; I_F = 60 A; $-di_F/dt$ = 200 A/µs L ≤ 0.05 µH; T_{VJ} = 100°C		8	10	A

Features

- International standard package JEDEC TO-247 AD
- 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

① I_{FAVM} rating includes reverse blocking losses at T_{VJM}, $V_R = 0.8\ V_{RRM}$, duty cycle d = 0.5
Data according to IEC 60747
IXYS reserves the right to change limits, test conditions and dimensions

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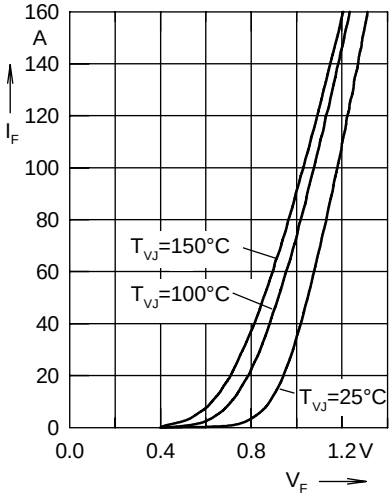


Fig. 1 Forward current I_F versus V_F

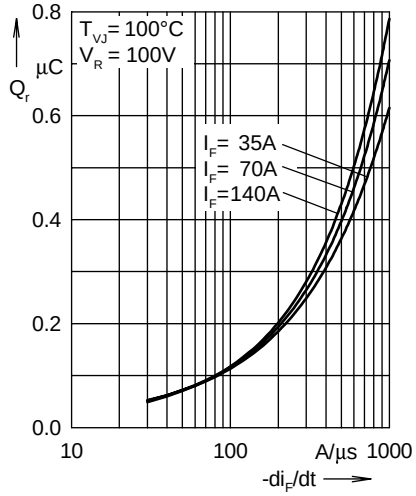


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

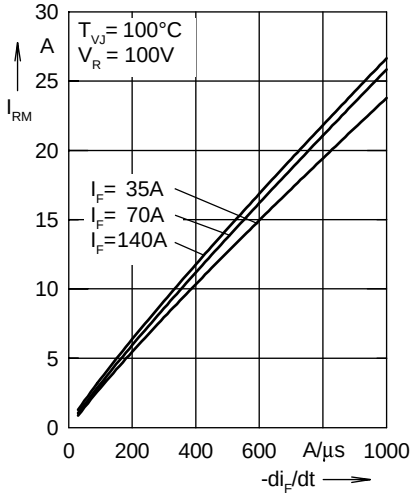


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

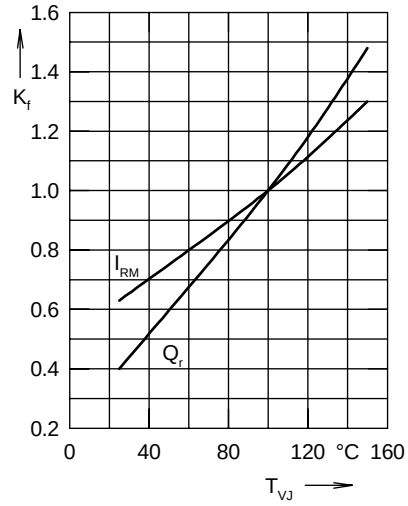


Fig. 4 Dynamic parameters Q_r, I_{RM} versus T_{VJ}

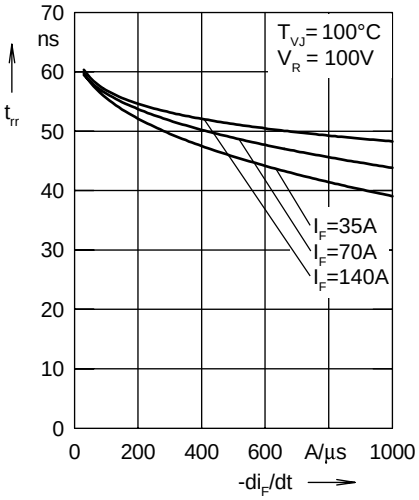


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

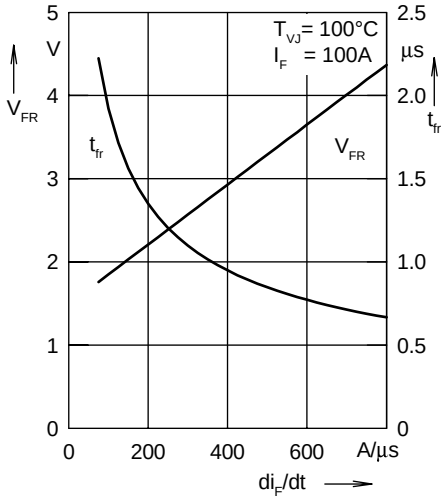


Fig. 6 Typ peak forward voltage V_{FR} and t_{fr} versus di_F/dt

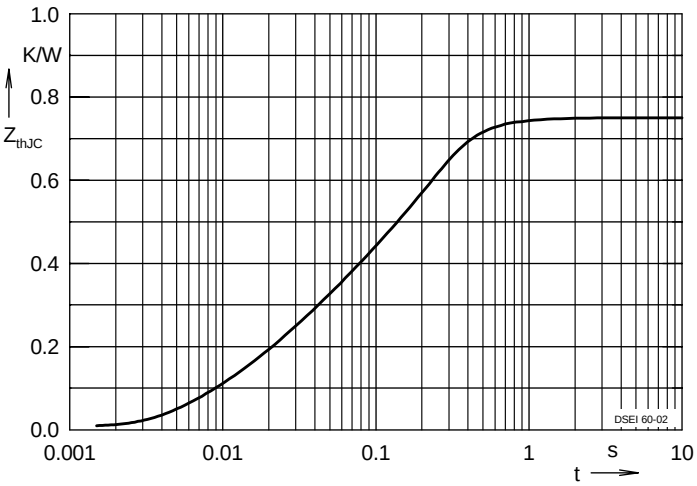
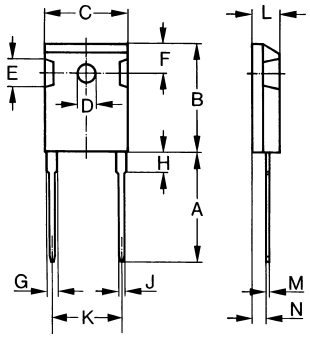


Fig. 7 Transient thermal impedance junction to case

Dimensions



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	2.2	2.54	0.087	0.102

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