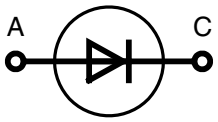
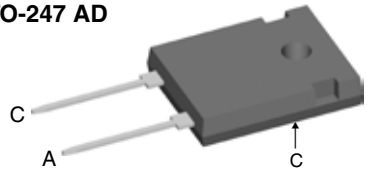
Fast Recovery Epitaxial Diode (FRED)

I_{FAV} = 37 A
V_{RRM} = 600 V
t_{rr} = 35 ns

V_{RSM} V	V_{RRM} V	Type
640	600	DSEI 30-06A



TO-247 AD



A = Anode, C = Cathode

Symbol	Conditions			Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$			70	A
I_{FAVM} ①	T_C = 85°C; rectangular, d = 0.5			37	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms	(50 Hz), sine	300	A
		t = 8.3 ms	(60 Hz), sine	320	A
	T_{VJ} = 150°C;	t = 10 ms	(50 Hz), sine	260	A
		t = 8.3 ms	(60 Hz), sine	280	A
I^2t	T_{VJ} = 45°C;	t = 10 ms	(50 Hz), sine	450	A^2s
		t = 8.3 ms	(60 Hz), sine	420	A^2s
	T_{VJ} = 150°C;	t = 10 ms	(50 Hz), sine	340	A^2s
		t = 8.3 ms	(60 Hz), sine	320	A^2s
T_{VJ}				-40...+150	°C
T_{VJM}				150	°C
T_{stg}				-40...+150	°C
P_{tot}	T_C = 25°C			125	W
M_d	mounting torque			0.8...1.2	Nm
Weight	typical			6	g

Symbol	Conditions		Characteristic Values typ.	max.	
I_R	$V_R = V_{RRM}$	T_{VJ} = 25°C		100	µA
	$V_R = 0.8 \cdot V_{RRM}$	T_{VJ} = 25°C		50	µA
	$V_R = 0.8 \cdot V_{RRM}$	T_{VJ} = 125°C		7	mA
V_F	I_F = 37 A	T_{VJ} = 150°C		1.4	V
		T_{VJ} = 25°C		1.6	V
V_{T0}	For power-loss calculations only			1.01	V
r_T	$T_{VJ} = T_{VJM}$			7.1	mΩ
R_{thJC}				1	K/W
R_{thCH}			0.25		K/W
t_{rr}	I_F = 1 A; -di/dt = 100 A/µs; V_R = 30 V; T_{VJ} = 25°C		35	50	ns
I_{RM}	V_R = 350 V; I_F = 30 A; $-di_F/dt$ = 240 A/µs; L ≤ 0.05 µH; T_{VJ} = 100°C		10	11	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

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

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

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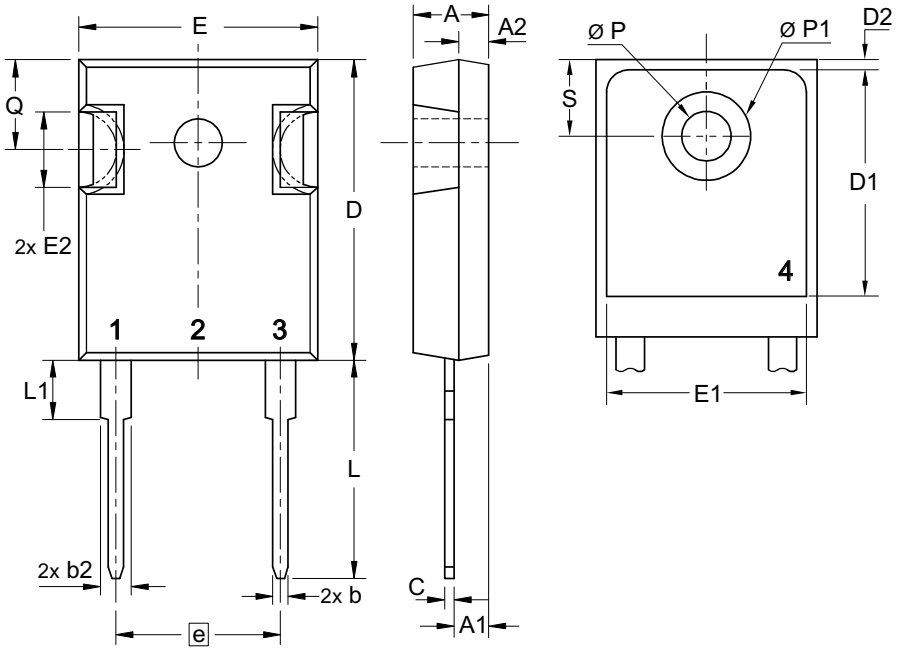
Dimensions TO-247 AD



Sym.	Inches		Millimeter	
	min.	max.	min.	max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.430 BSC		10.92 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39

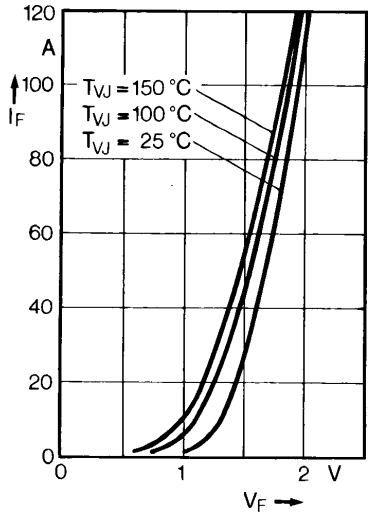


Fig. 1 Forward current versus voltage drop

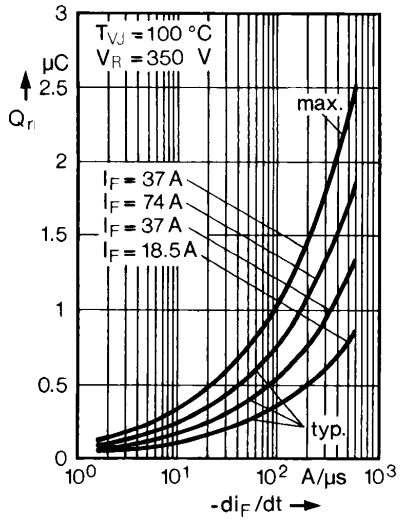


Fig. 2 Recovery charge versus $-di_F/dt$

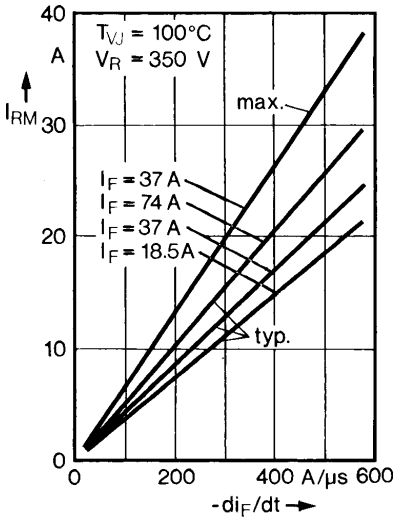


Fig. 3 Peak reverse current versus $-di_F/dt$

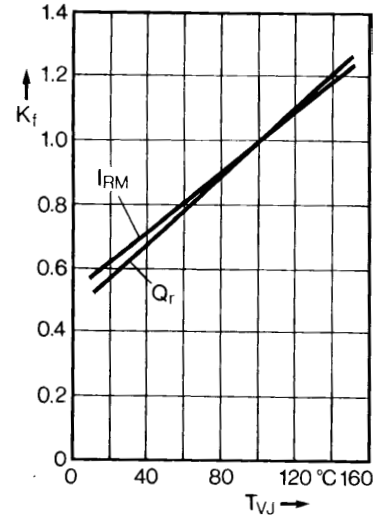


Fig. 4 Dynamic parameters vs. junction temperature

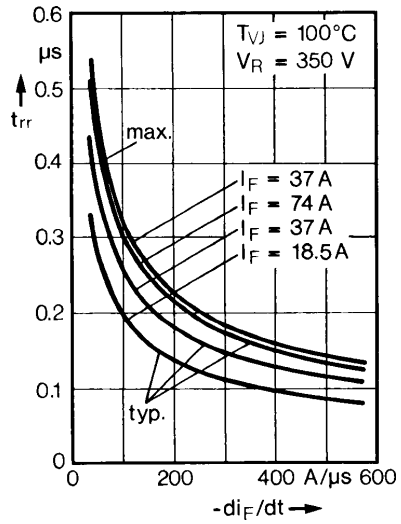


Fig. 5 Recovery time versus $-di_F/dt$

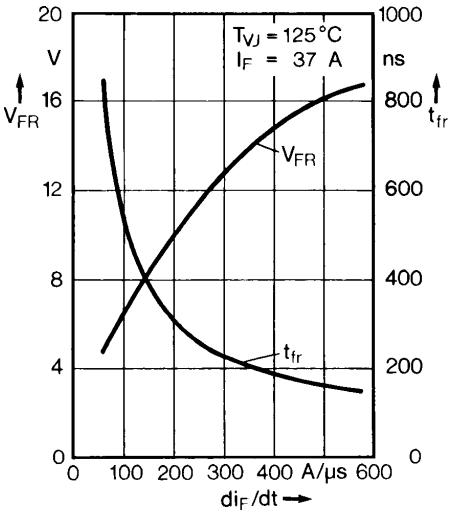


Fig. 6 Peak forward voltage versus $-di_F/dt$

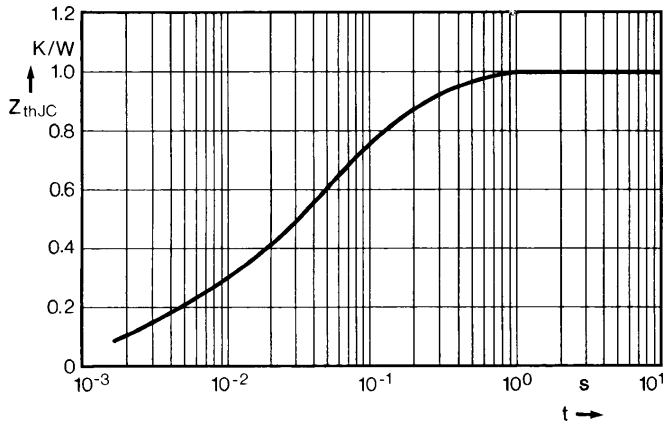


Fig. 7 Transient thermal impedance junction to case