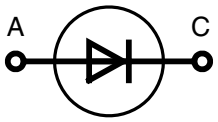
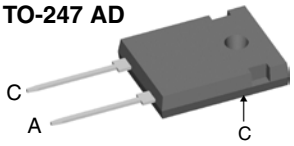
Fast Recovery Epitaxial Diode (FRED)

I_{FAV} = 60 A
V_{RRM} = 600 V
t_{rr} = 35 ms

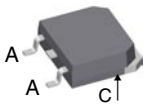
V_{RSM} V	V_{RRM} V	Type
600	600	DSEI 60-06A
600	600	DSEI 60-06AT



TO-247 AD



TO-268 AA
(AT Type)



A = Anode, C = Cathode

Symbol	Conditions		Maximum Ratings	
I_{FRMS}			100	A
I_{FAVM} ①	T_C = 70°C; rectangular, d = 0.5		60	A
I_{FRM}	t_p < 10 µs; rep. rating, pulse width limited by T_{VJM}			
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	550	A
		t = 8.3 ms (60 Hz), sine	600	
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	480	A
		t = 8.3 ms (60 Hz), sine	520	
I^2t	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	1510	A^2s
		t = 8.3 ms (60 Hz), sine	1490	
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	1150	A^2s
		t = 8.3 ms (60 Hz), sine	1120	
T_{VJ}			-55...+150	°C
T_{VJM}			150	°C
T_{stg}			-55...+150	°C
P_{tot}	T_C = 25°C		166	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		200	µA
	$V_R = 0.8 \cdot V_{RRM}$	T_{VJ} = 25°C		100	µA
	$V_R = 0.8 \cdot V_{RRM}$	T_{VJ} = 125°C		14	mA
V_F	I_F = 70 A	T_{VJ} = 150°C		1.5	V
		T_{VJ} = 25°C		1.8	V
V_{T0}	For power-loss calculations only			1.13	V
r_T	$T_{VJ} = T_{VJM}$			4.7	mΩ
R_{thJC}				0.75	K/W
R_{thCH}	(version A)		0.25		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 = 350 V; I_F = 60 A; $-di_F/dt$ = 480 A/µs L ≤ 0.05 µH; T_{VJ} = 100°C		6.0	7.5	A

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

Features

- International standard package JEDEC TO-247 AD
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low IRM-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

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

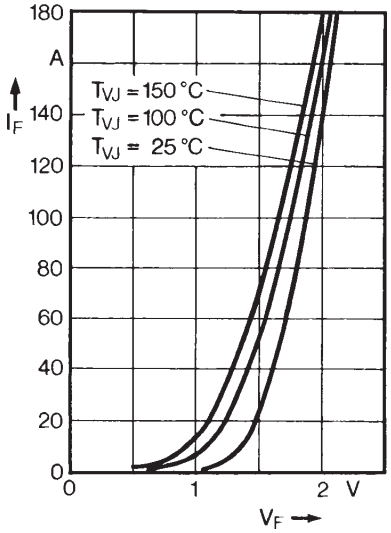


Fig. 1 Forward current versus voltage drop.

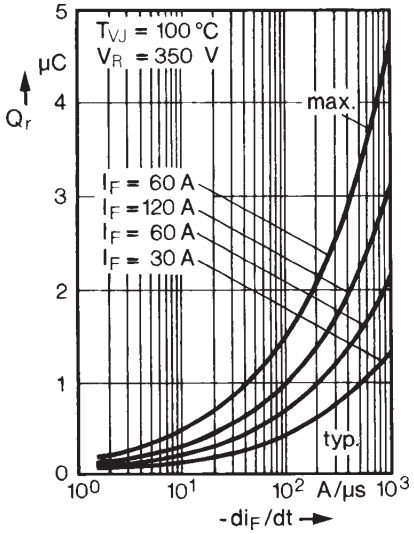


Fig. 2 Recovery charge versus $-di_F/dt$.

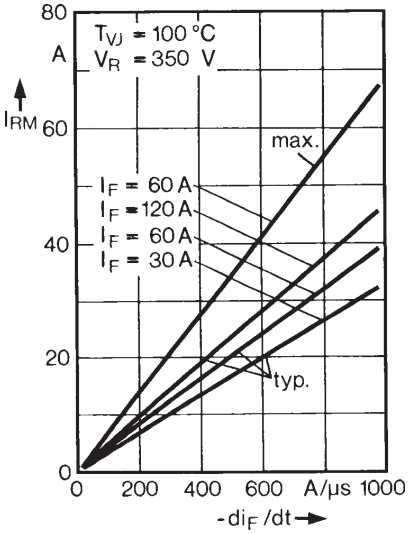


Fig. 3 Peak reverse current versus $-di_F/dt$.

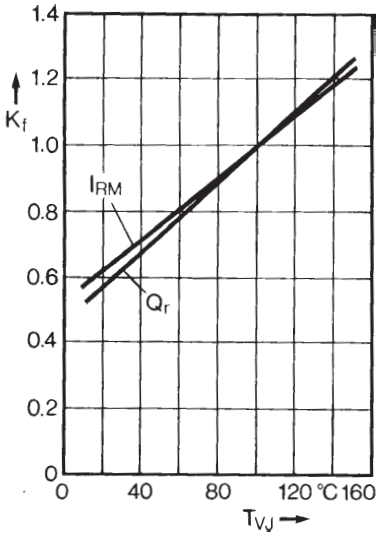


Fig. 4 Dynamic parameters versus junction temperature.

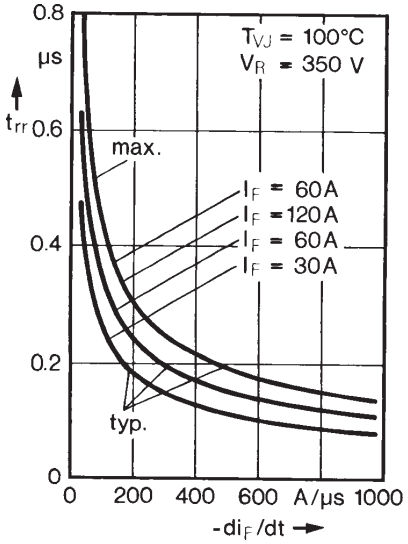


Fig. 5 Recovery time versus $-di_F/dt$.

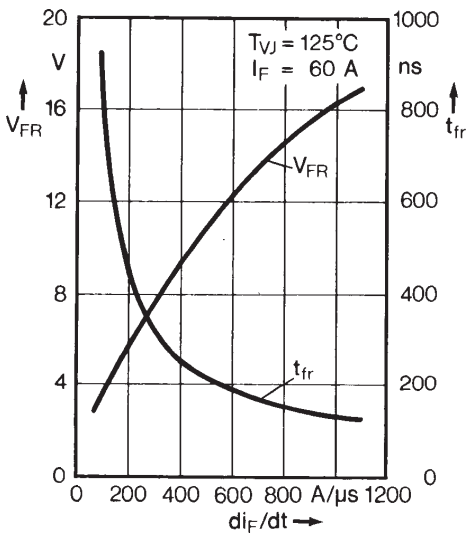


Fig. 6 Peak forward voltage versus di_F/dt.

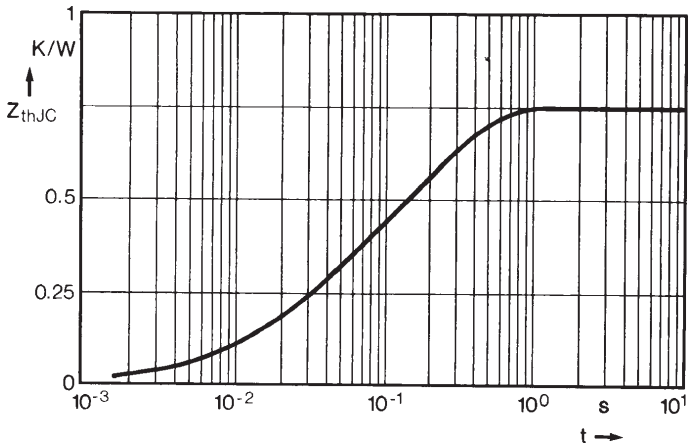
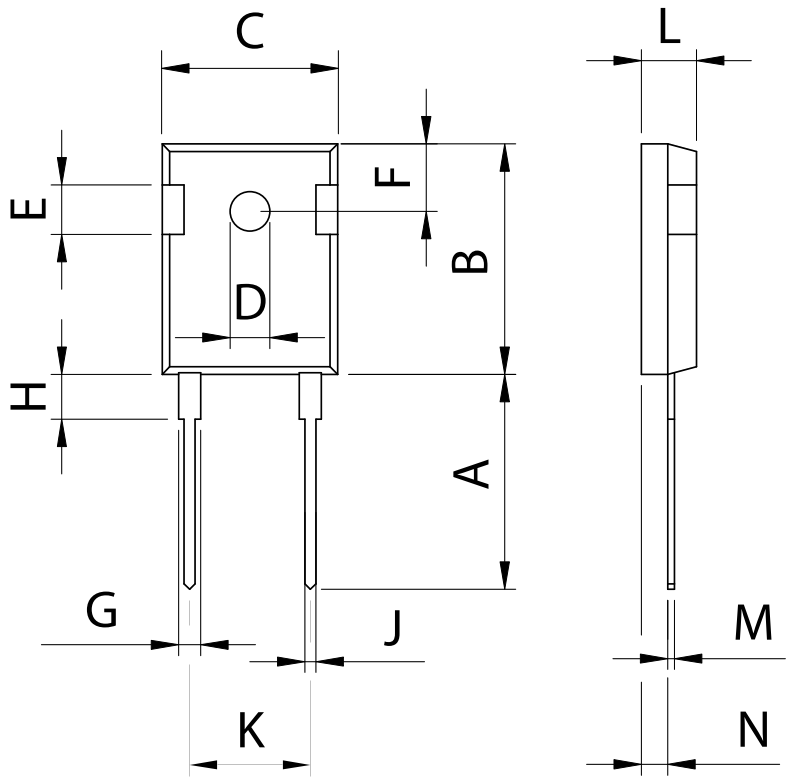


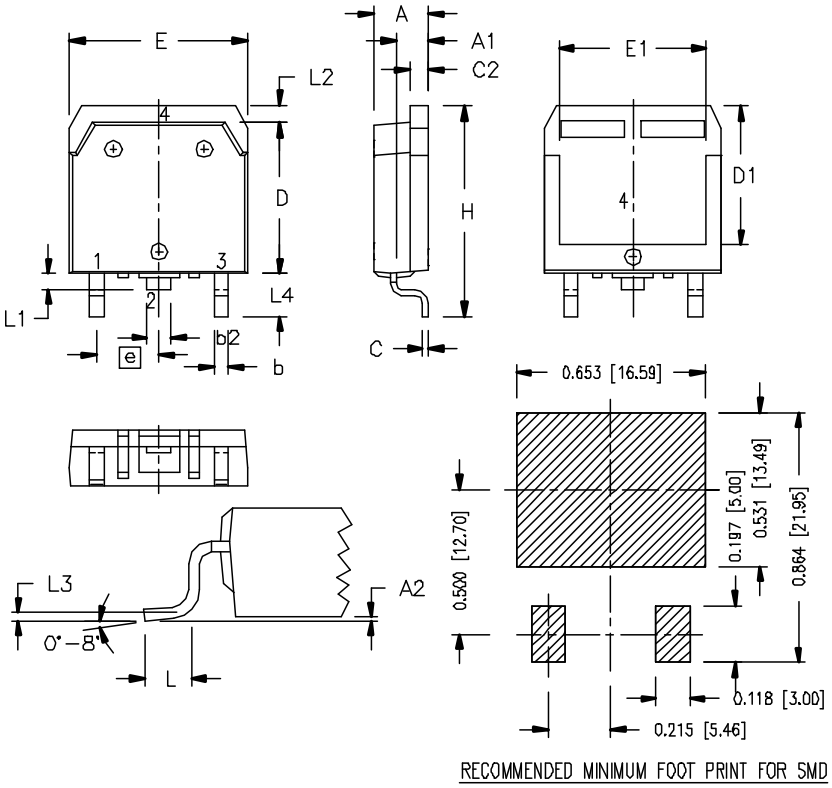
Fig. 7 Transient thermal impedance junction to case.

Dimensions TO-247 AD



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	1.5	2.49	0.087	0.102

Dimensions TO-268 AA



SYM	INCHES MIN	MAX	MILLIMETERS MIN	MAX
A	.193	.201	4.90	5.10
A1	.106	.114	2.70	2.90
A2	.001	.010	0.02	0.25
b	.045	.057	1.15	1.45
b2	.075	.083	1.90	2.10
C	.016	.026	0.40	0.65
C2	.057	.063	1.45	1.60
D	.543	.551	13.80	14.00
D1	.488	.500	12.40	12.70
E	.624	.632	15.85	16.05
E1	.524	.535	13.30	13.60
e	.215 BSC		5.45 BSC	
H	.736	.752	18.70	19.10
L	.094	.106	2.40	2.70
L1	.047	.055	1.20	1.40
L2	.039	.045	1.00	1.15
L3	.010 BSC		0.25 BSC	
L4	.150	.161	3.80	4.10

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