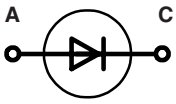
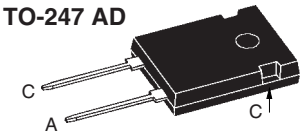
Fast Recovery Epitaxial Diode (FRED)

V_{RRM} = 600 V
I_{FAVM} = 60 A
t_{rr} = 35 ns

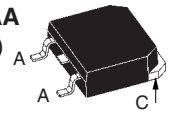
V_{RSM} V	V_{RRM} V	Type
600	600	DSEI 60-06A
600	600	DSEI 60-06AT



TO-247 AD



TO-268 AA
(AT Type)



A = Anode, C = Cathode

Symbol	Conditions		Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$		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}		800	A
I_{FSM}	T_{VJ} = 45°C; t = 10 ms	(50 Hz), sine	550	A
	t = 8.3 ms	(60 Hz), sine	600	A
	T_{VJ} = 150°C; t = 10 ms	(50 Hz), sine	480	A
	t = 8.3 ms	(60 Hz), sine	520	A
I^2t	T_{VJ} = 45°C t = 10 ms	(50 Hz), sine	1510	A^2s
	t = 8.3 ms	(60 Hz), sine	1490	A^2s
	T_{VJ} = 150°C; t = 10 ms	(50 Hz), sine	1150	A^2s
	t = 8.3 ms	(60 Hz), sine	1120	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
P_{tot}	T_C = 25°C		166	W
M_d	Mounting torque		0.8...1.2	Nm
Weight			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		4	4.4	A
	L ≤ 0.05 µH; T_{VJ} = 100°C				

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

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

0549

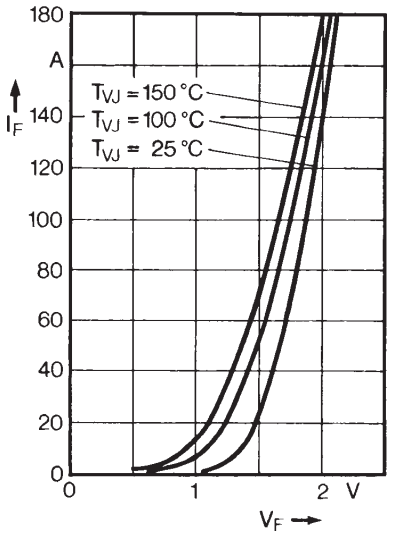


Fig. 1 Forward current versus voltage drop.

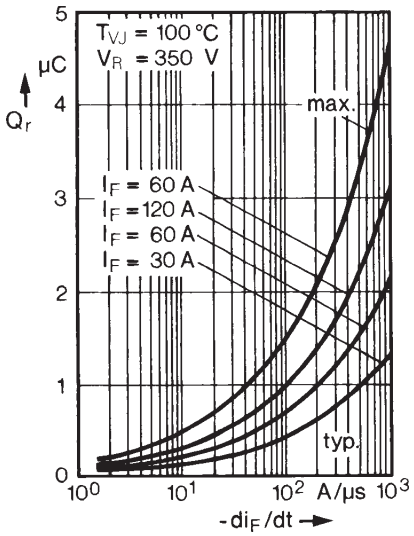


Fig. 2 Recovery charge versus $-di_F/dt$.

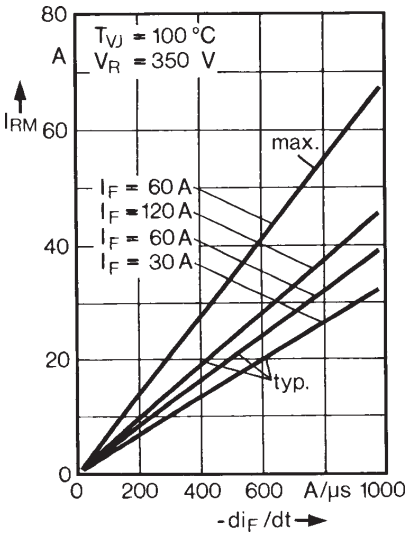


Fig. 3 Peak reverse current versus $-di_F/dt$.

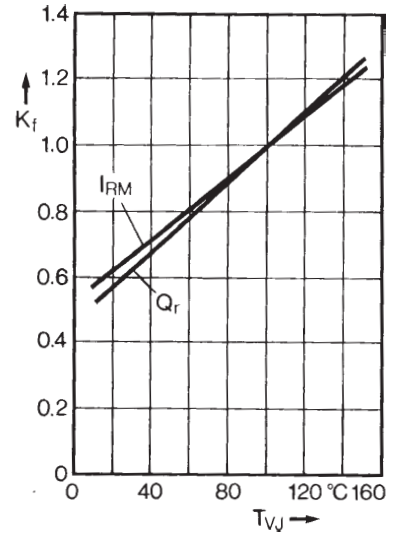


Fig. 4 Dynamic parameters versus junction temperature.

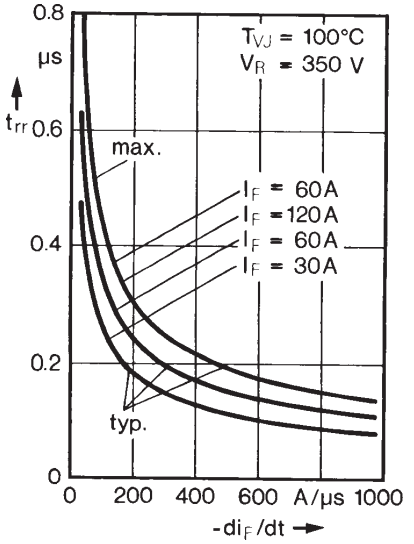


Fig. 5 Recovery time versus $-di_F/dt$.

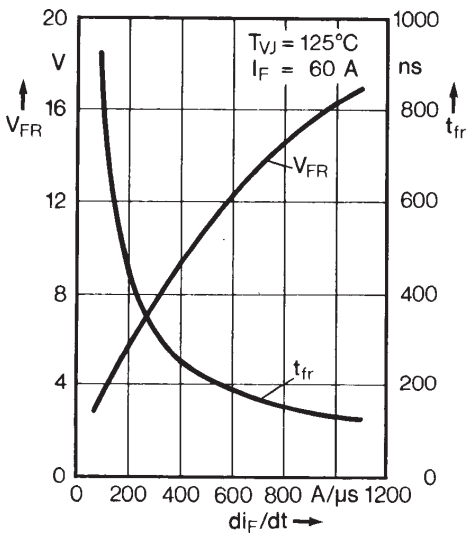


Fig. 6 Peak forward voltage versus di_F/dt.

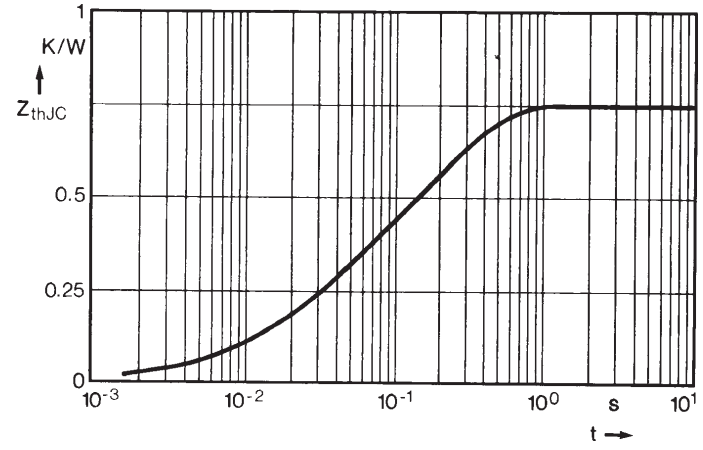
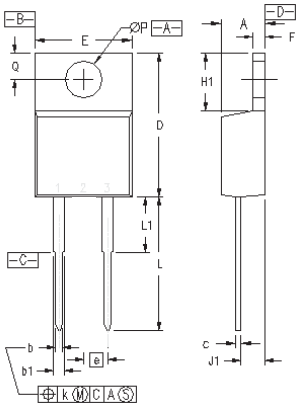


Fig. 7 Transient thermal impedance junction to case.

Dimensions



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4..32	4.83	0.170	0.190
b	0.64	1.02	0.025	0.040
b1	1.15	1.65	0.045	0.065
c	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54 BSC		0.100 BSC	
F	1.14	1.40	0.045	0.055
H1	5.85	6.85	0.230	0.270
J1	2.29	2.79	0.090	0.110
k	0	0.38	0	0.015
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.53	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125