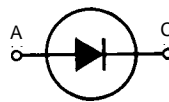


Fast Recovery Epitaxial Diode (FRED)

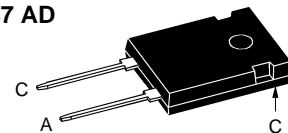
DSEI 60

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

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



TO-247 AD



A = Anode, C = Cathode

Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM} ①	$T_C = 70^\circ\text{C}$; rectangular, $d = 0.5$	60	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	800	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	550	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	600	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	480	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	520	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	1510	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	1490	A^2s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	1150	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	1120	A^2s
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	166	W
M_d	Mounting torque	0.8...1.2	Nm
Weight		6	g

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

Symbol	Test Conditions	Characteristic Values	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$	$V_R = V_{RRM}$	200 μA
	$T_{VJ} = 25^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	100 μA
	$T_{VJ} = 125^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	14 mA
V_F	$I_F = 70 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$		1.5 V
	$T_{VJ} = 25^\circ\text{C}$		1.8 V
V_{T0}	For power-loss calculations only		1.13 V
r_T	$T_{VJ} = T_{VJM}$		4.7 $\text{m}\Omega$
R_{thJC}	0.25		0.75 K/W
R_{thCK}			K/W
R_{thJA}			35 K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 200 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	50 ns
I_{RM}	$V_R = 350 \text{ V}$; $I_F = 60 \text{ A}$; $-di_F/dt = 480 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	19	21 A

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

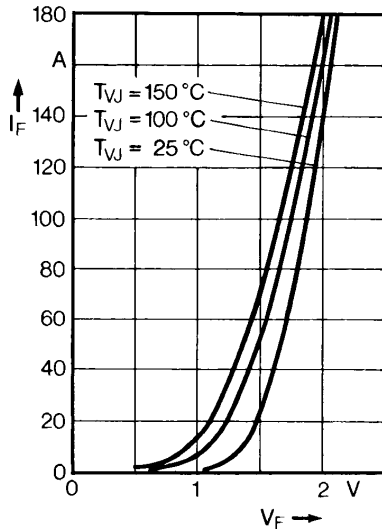


Fig. 1 Forward current versus voltage drop.

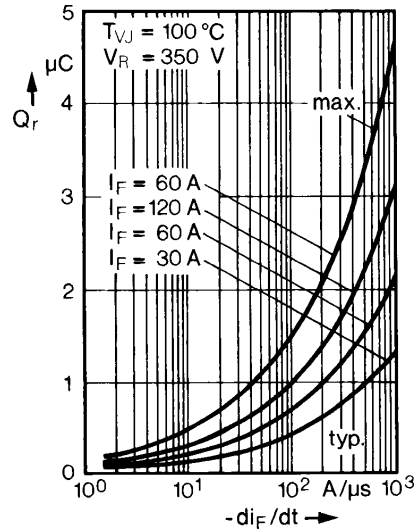


Fig. 2 Recovery charge versus $-di_F/dt$.

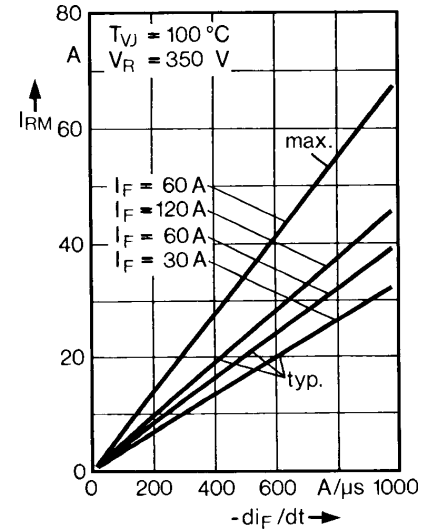


Fig. 3 Peak reverse current versus $-di_F/dt$.

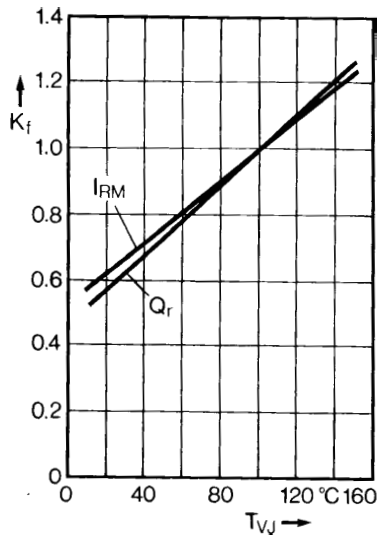


Fig. 4 Dynamic parameters versus junction temperature.

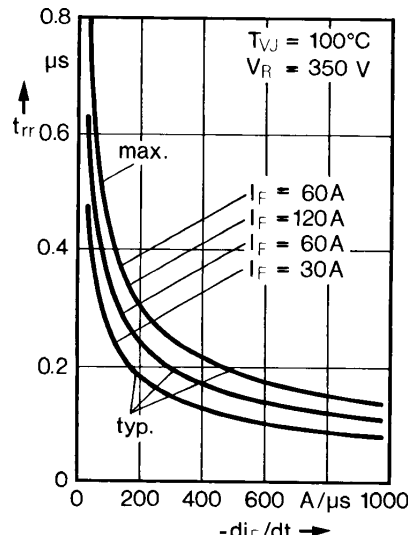


Fig. 5 Recovery time versus $-di_F/dt$.

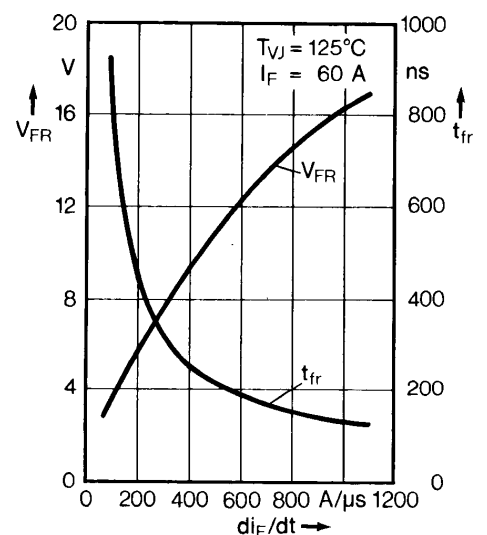


Fig. 6 Peak forward voltage versus di_F/dt .

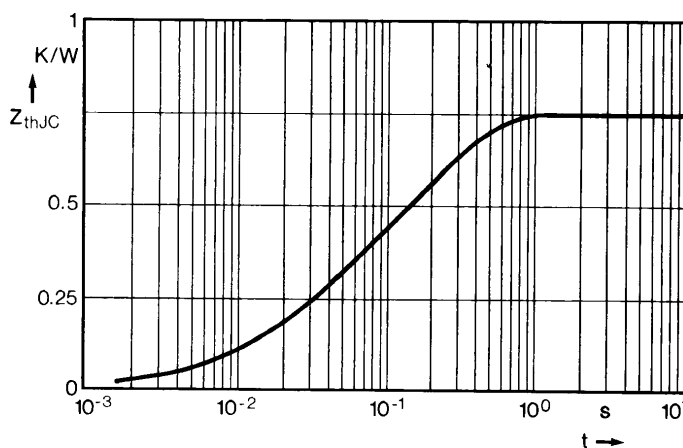
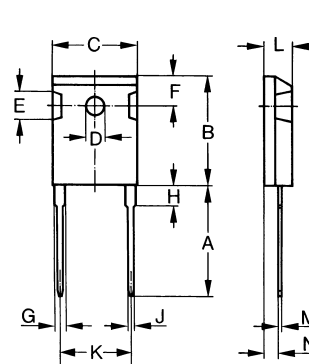


Fig. 7 Transient thermal impedance junction to case.

Dimensions



Dim.	Millimeter 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