

Common Cathode Fast Recovery Epitaxial Diode (FRED)

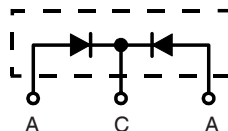
DSEK 60

$$I_{FAVM} = 2 \times 34 \text{ A}$$

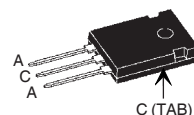
$$V_{RRM} = 200 \text{ V}$$

$$t_{rr} = 35 \text{ ns}$$

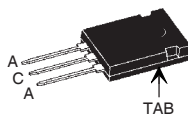
V_{RSM} V	V_{RRM} V	Type
200	200	DSEK 60-02A
200	200	DSEK 60-02AR



TO-247 AD
Version A



ISOPLUS 247™
Version AR



A = Anode, C = Cathode

Symbol	Test Conditions	Maximum Ratings per leg	
I_{FRMS}	$T_{VJ} = T_{VJM}$	50	A
I_{FAVM}	$T_C = 115^\circ\text{C}$; rectangular, $d = 0.5$	34	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	375	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	325	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	350	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	290	A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	310	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	530	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	510	A^2s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	420	A^2s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	400	A^2s
T_{VJ}		-40...+150	$^\circ\text{C}$
T_{VJM}		150	$^\circ\text{C}$
T_{stg}		-40...+150	$^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	125	W
M_d^*	Mounting torque with screw M3	0.45-0.55/4-5	Nm/lb.in.
	Mounting torque with screw M3.5	0.45-0.55/4-5	Nm/lb.in.
V_{ISOL}^{**}	50/60 Hz, RMS, $t = 1 \text{ minute}$, leads-to-tab	2500	V~
Weight		6	g

* Version A only; ** Version AR only

Symbol	Test Conditions	Characteristic Values per leg	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$	$V_R = V_{RRM}$	200 μA
	$T_{VJ} = 25^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	50 μA
	$T_{VJ} = 125^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	5 mA
V_F	$I_F = 30 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$		0.85 V
	$T_{VJ} = 25^\circ\text{C}$		1.10 V
V_{T0}	For power-loss calculations only		0.72 V
r_T	$T_{VJ} = T_{VJM}$		4.2
$m\Omega$			
R_{thJC}			1 K/W
R_{thCH}		0.5	K/W
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 100 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	50ns
I_{RM}	$V_R = 100 \text{ V}$; $I_F = 30 \text{ A}$; $-di_F/dt = 100 \text{ A}/\mu\text{s}$	4	5 A
	$L \leq 0.05 \mu\text{H}$; $T_{VJ} = 25^\circ\text{C}$		

* 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 refer to a single diode unless otherwise stated.

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

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 behavior
- Epoxy meets UL 94V-0 flammability classification
- Version AR isolated and UL registered E153432

Applications

- Rectifiers in switch mode power supplies (SMPS)
- 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

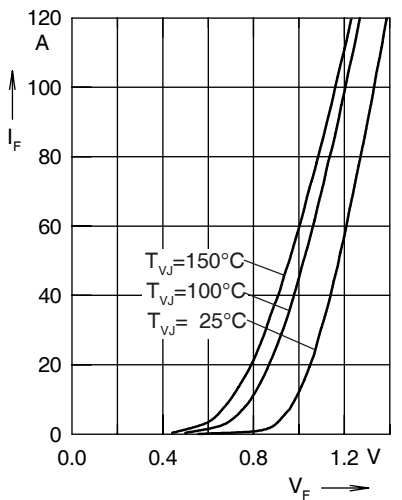


Fig. 1 Forward current I_F versus V_F

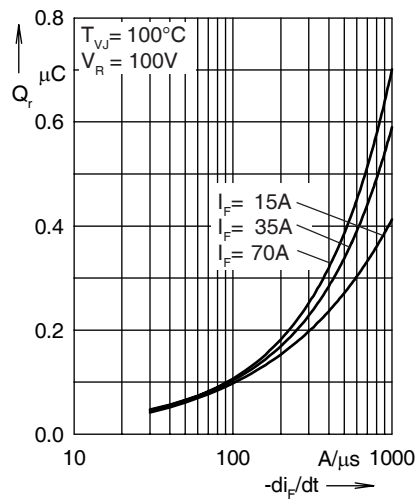


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

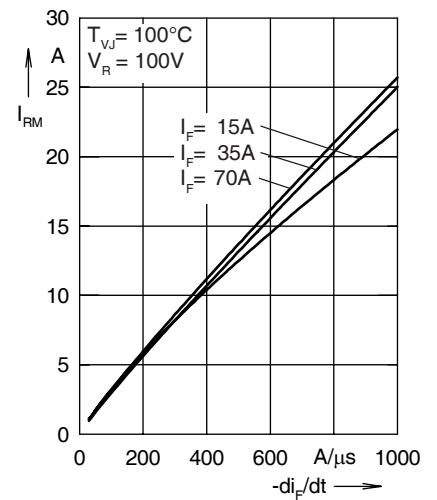


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

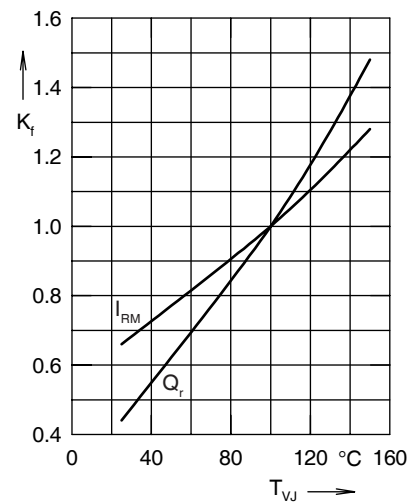


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

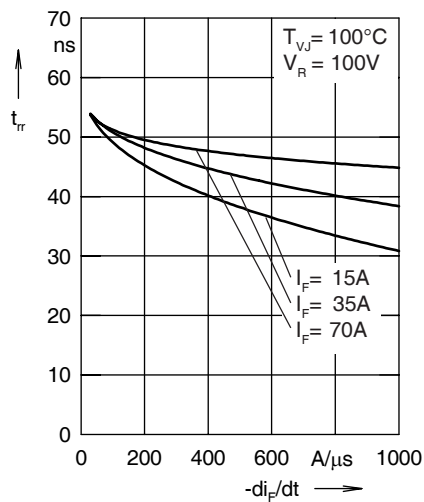


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

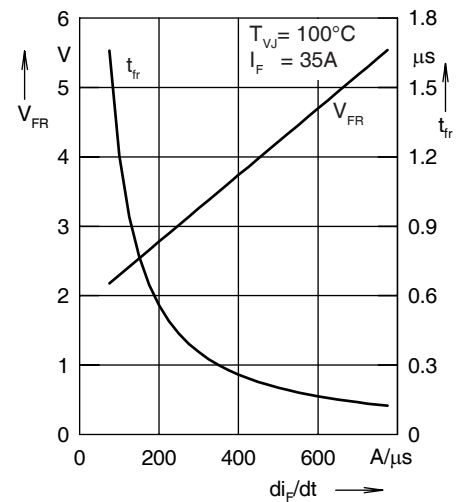


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

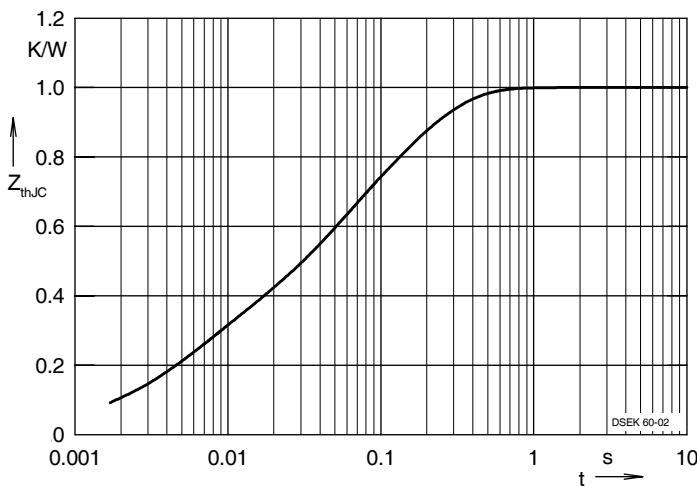
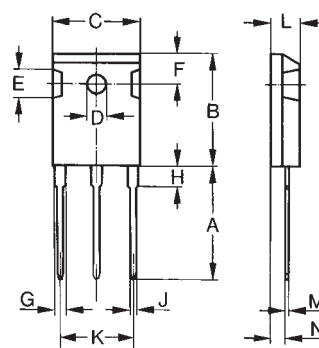


Fig. 7 Transient thermal impedance junction to case

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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