

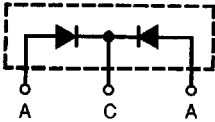
Common Cathode
Fast Recovery
Epitaxial Diode (FRED)

DSEK 30

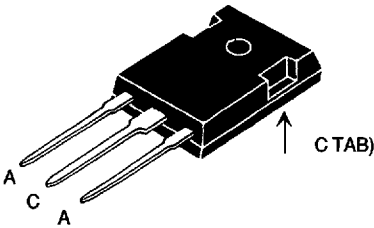
$V_{RRM} = 600\text{ V}$
 $I_{FAVM} = 2 \times 30\text{ A}$
 $t_{rr} = 35\text{ ns}$

Preliminary data

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



TO-247 AD



A = Anode, C = Cathode, TAB = Cathode

Symbol	Test Conditions	Maximum Ratings	
I_{FRMS} I_{FAVM} I_{FRM}	$T_{VJ} = T_{VJM}$ $T_C = 85^\circ\text{C}$; rectangular, $d = 0.5$ $t_p < 10\text{ }\mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	50 30 375	A A A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine	300 320	A A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine	260 280	A A
$\int i^2 dt$	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine	450 420	A^2s A^2s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine $t = 8.3\text{ ms}$ (60 Hz), sine	340 320	A^2s A^2s
T_{VJ} T_{VJM} T_{stg}		-40...+150 150 -40...+150	$^\circ\text{C}$ $^\circ\text{C}$ $^\circ\text{C}$
P_{tot}	$T_C = 25^\circ\text{C}$	125	W
M_d	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45-0.55/4-5 0.45-0.55/4-5	Nm/lb.in. Nm/lb.in.
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 behavior
- Epoxy meet UL 94V-0 flammability classification

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

Symbol	Test Conditions	Characteristic Values	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$	100 50 7	μA μA mA
V_F	$I_F = 37\text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	1.4 1.6	V V
V_{T0} r_T	For power-loss calculations only $T_{VJ} = T_{VJM}$	1.01 7.1	V m Ω
R_{thJC} R_{thCK} R_{thJA}		1 0.5 70	K/W K/W 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	ns
I_{RM}	$V_R = 350\text{ V}$; $I_F = 30\text{ A}$; $-di_F/dt = 240\text{ A}/\mu\text{s}$ $L \leq 0.05\text{ }\mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	10	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 DIN/IEC 747 and refer to a single diode unless otherwise stated.
IXYS reserves the right to change limits, test conditions and dimensions

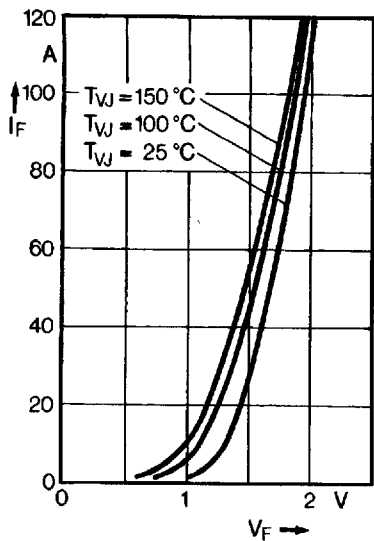


Fig. 1 Forward current versus voltage drop.

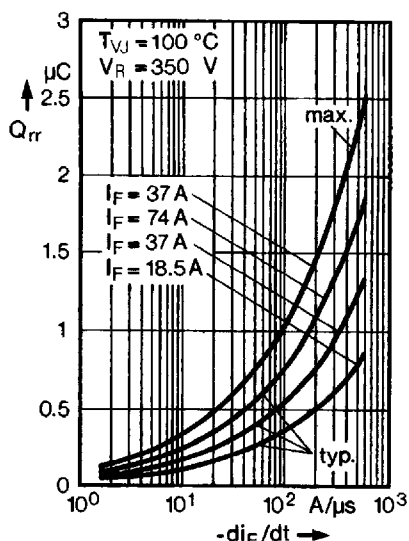


Fig. 2 Recovery charge versus $-di_F/dt$.

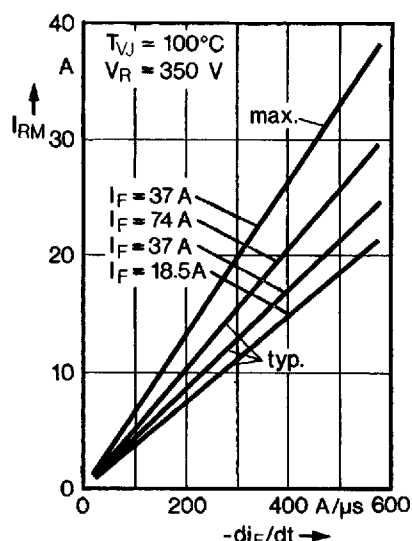


Fig. 3 Peak reverse current versus $-di_F/dt$.

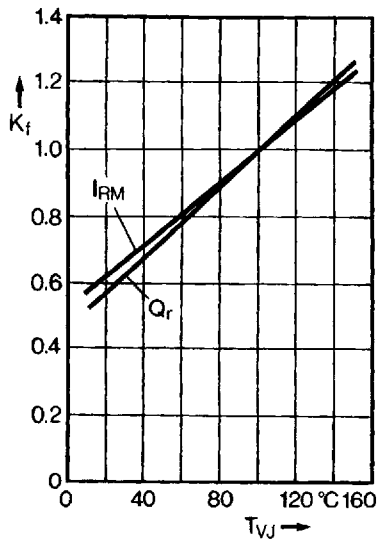


Fig. 4 Dynamic parameters versus junction temperature.

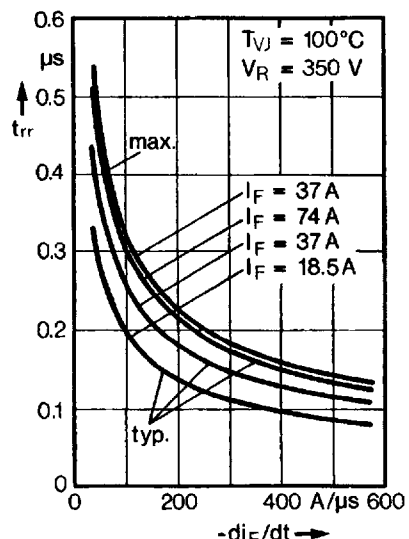


Fig. 5 Recovery time versus $-di_F/dt$.

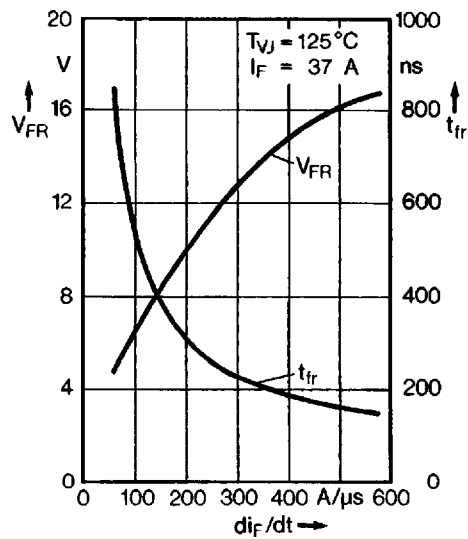


Fig. 6 Peak forward voltage versus $-di_F/dt$.

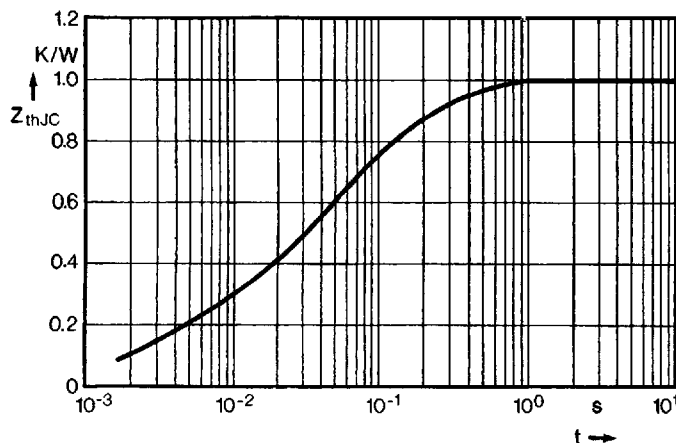
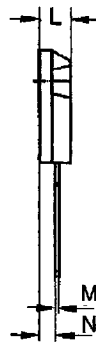
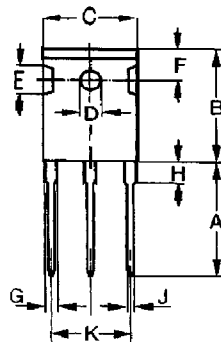


Fig. 7 Transient thermal impedance junction to case.

Dimensions



Dim.	Millimeter		Inches	
	Min.	Max.	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