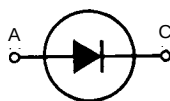


Fast Recovery Epitaxial Diode (FRED)

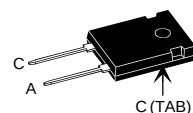
DSEI 30

$I_{FAVM} = 30\text{ A}$
 $V_{RRM} = 1000\text{ V}$
 $t_{rr} = 35\text{ ns}$

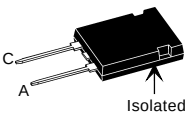
V_{RSM} V	V_{RRM} V	Type
1000	1000	DSEI 30-10A
1000	1000	DSEI 30-10AR



TO-247 AD
Version A



ISOPLUS 247™
Version AR



A = Anode, C = Cathode

* Patent pending

Symbol	Test Conditions	Maximum Ratings	
I_{FRMS} I_{FAVM} ① 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}	70 30 375	A A A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	200	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	210	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	185	A
	$t = 8.3\text{ ms}$ (60 Hz), sine	195	A
I^2t	$T_{VJ} = 45^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	200	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	180	A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10\text{ ms}$ (50 Hz), sine	170	A ² s
	$t = 8.3\text{ ms}$ (60 Hz), sine	160	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ\text{C}$	138	W
M_d^* F_C	Mounting torque mounting force with clip	0.8...1.2 20...120	Nm N
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	
		typ.	max.
I_R	$T_{VJ} = 25^\circ\text{C}$	$V_R = V_{RRM}$	750 μA
	$T_{VJ} = 25^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	250 μA
	$T_{VJ} = 125^\circ\text{C}$	$V_R = 0.8 \cdot V_{RRM}$	7 mA
V_F	$I_F = 36\text{ A}$; $T_{VJ} = 150^\circ\text{C}$		2 V
	$T_{VJ} = 25^\circ\text{C}$		2.4 V
V_{T0}	For power-loss calculations only		1.5 V
r_T	$T_{VJ} = T_{VJM}$		12.5 mΩ
R_{thJC} R_{thCK} R_{thJA}		0.25	0.9 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	50 ns
I_{RM}	$V_R = 540\text{ V}$; $I_F = 30\text{ A}$; $-di_F/dt = 240\text{ A}/\mu\text{s}$ $L \leq 0.05\text{ }\mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	16	18 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

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
- Version AR isolated and UL registered E153432

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

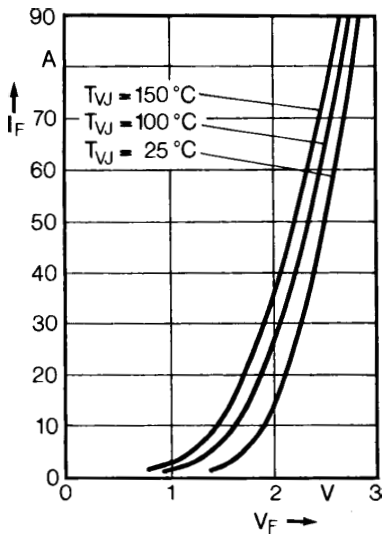


Fig. 1 Forward current versus voltage drop.

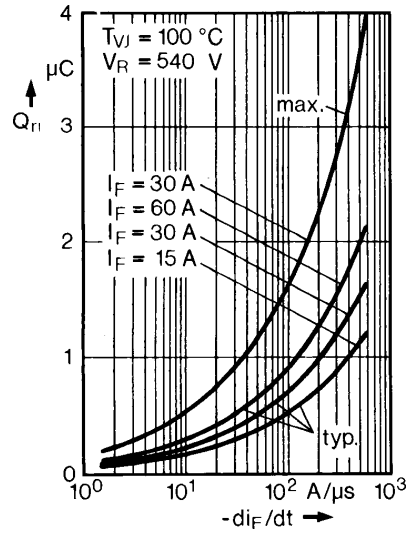


Fig. 2 Recovery charge versus $-di_F/dt$.

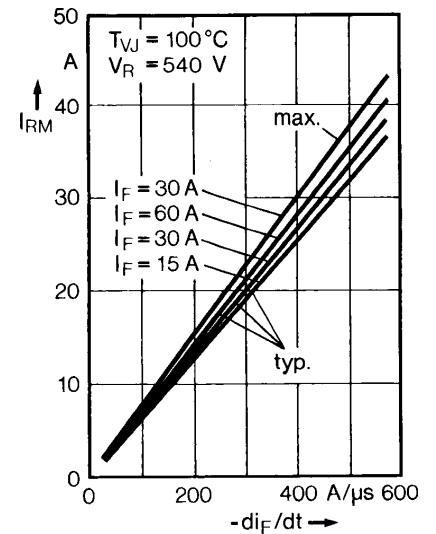


Fig. 3 Peak reverse current versus $-di_F/dt$.

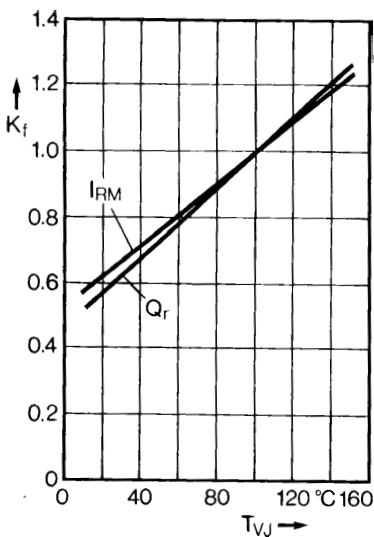


Fig. 4 Dynamic parameters versus junction temperature.

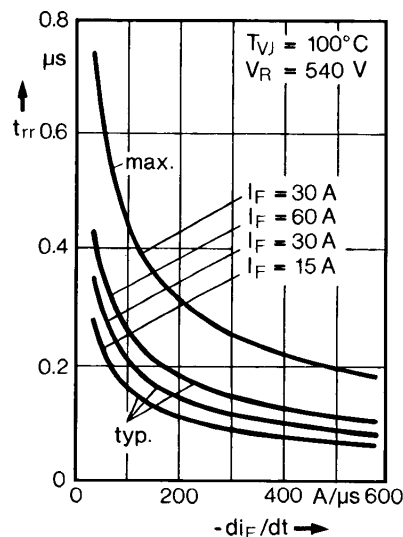


Fig. 5 Recovery time versus $-di_F/dt$.

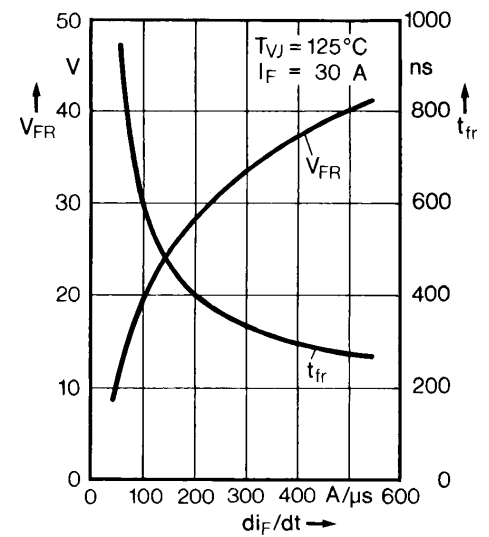


Fig. 6 Peak forward voltage versus di_F/dt .

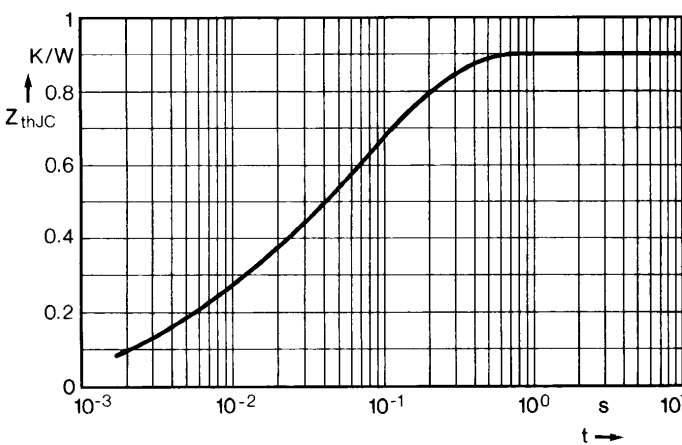
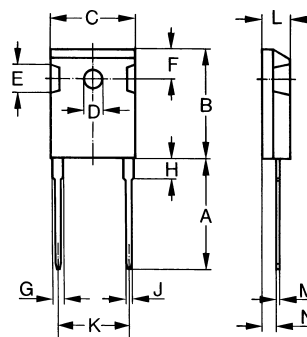


Fig. 7 Transient thermal impedance junction to case.

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

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