

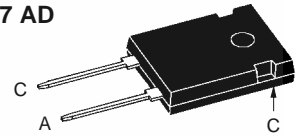
# Fast Recovery Epitaxial Diode (FRED)

**DSEI 30**  $I_{FAVM} = 26 A$   
 $V_{RRM} = 1200 V$   
 $t_{rr} = 40 ns$

$V_{RSM}$	$V_{RRM}$	Type
V	V	
1200	1200	DSEI 30-12A



TO-247 AD



A = Anode, C = Cathode

Symbol	Test Conditions	Maximum Ratings	
$I_{FRMS}$ $I_{FAVM}$ ① $I_{FRM}$	$T_{VJ} = T_{VJM}$ $T_C = 85^\circ C$ ; rectangular, $d = 0.5$ $t_p < 10 \mu s$ ; rep. rating, pulse width limited by $T_{VJM}$	70 26 375	A A A
$I_{FSM}$	$T_{VJ} = 45^\circ C$ ; $t = 10 ms$ (50 Hz), sine $t = 8.3 ms$ (60 Hz), sine	200 210	A A
	$T_{VJ} = 150^\circ C$ ; $t = 10 ms$ (50 Hz), sine $t = 8.3 ms$ (60 Hz), sine	185 195	A A
$I^2t$	$T_{VJ} = 45^\circ C$ $t = 10 ms$ (50 Hz), sine $t = 8.3 ms$ (60 Hz), sine	200 180	A <sup>2</sup> s A <sup>2</sup> s
	$T_{VJ} = 150^\circ C$ ; $t = 10 ms$ (50 Hz), sine $t = 8.3 ms$ (60 Hz), sine	170 160	A <sup>2</sup> s A <sup>2</sup> s
$T_{VJ}$ $T_{VJM}$ $T_{stg}$		-40...+150 150 -40...+150	°C °C °C
$P_{tot}$	$T_C = 25^\circ C$	138	W
$M_d$	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4 0.55/5	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 behaviour
- Epoxy meet 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

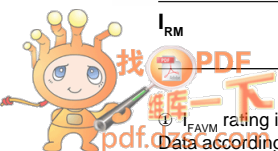
- High reliability circuit operation
- Low voltage peaks for reduced protection circuits
- Low noise switching
- Low losses
- Operating at lower temperature or space saving by reduced cooling

Symbol	Test Conditions	Characteristic Values	
		typ.	max.
$I_R$	$T_{VJ} = 25^\circ C$ $V_R = V_{RRM}$ $T_{VJ} = 25^\circ C$ $V_R = 0.8 \cdot V_{RRM}$ $T_{VJ} = 125^\circ C$ $V_R = 0.8 \cdot V_{RRM}$	750 250 7	$\mu A$ $\mu A$ mA
$V_F$	$I_F = 30 A$ ; $T_{VJ} = 150^\circ C$ $T_{VJ} = 25^\circ C$	2.2 2.55	V V
$V_{T0}$ $r_T$	For power-loss calculations only $T_{VJ} = T_{VJM}$	1.65 18.2	V m $\Omega$
$R_{thJC}$ $R_{thCK}$ $R_{thJA}$		0.1	0.9 K/W K/W K/W
$t_{rr}$	$I_F = 1 A$ ; $-di/dt = 100 A/\mu s$ ; $V_R = 30 V$ ; $T_{VJ} = 25^\circ C$	40	60 ns
$I_{RM}$	$V_R = 540 V$ ; $I_F = 30 A$ ; $-di_F/dt = 240 A/\mu s$ $L \leq 0.05 \mu H$ ; $T_{VJ} = 100^\circ C$	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

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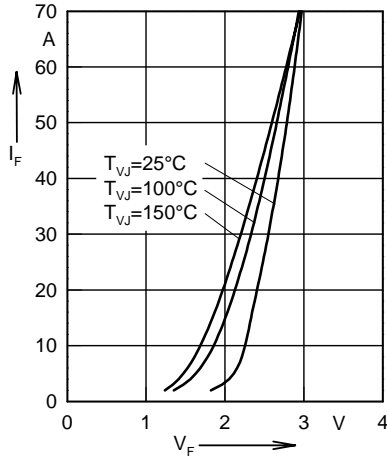


Fig. 1 Forward current versus voltage drop.

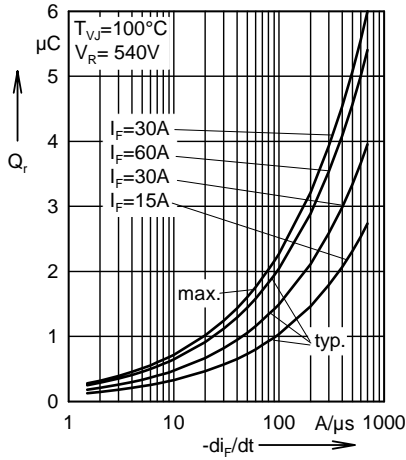


Fig. 2 Recovery charge versus  $-di_F/dt$ .

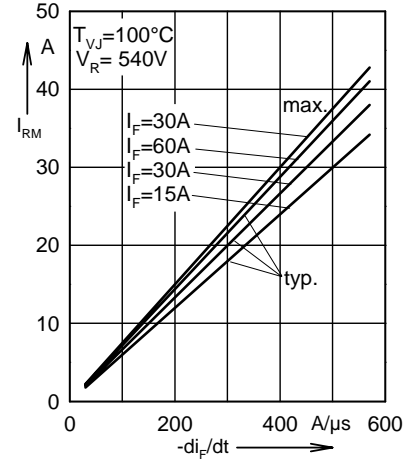


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

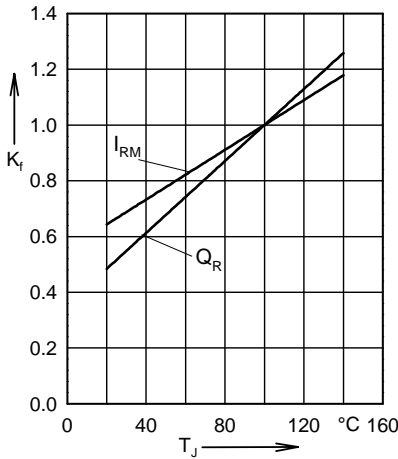


Fig. 4 Dynamic parameters versus junction temperature.

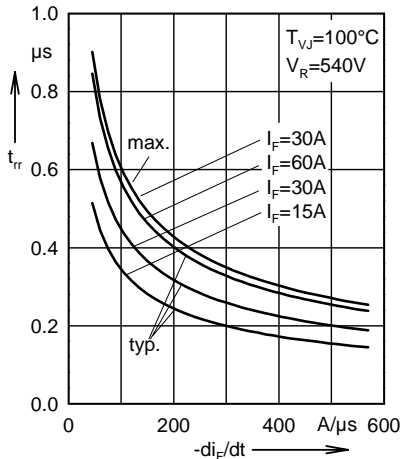


Fig. 5 Recovery time versus  $-di_F/dt$ .

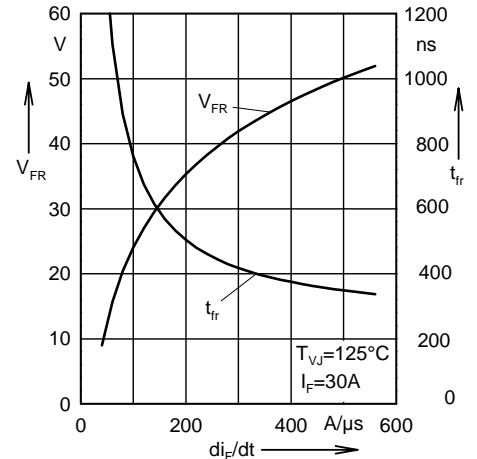


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

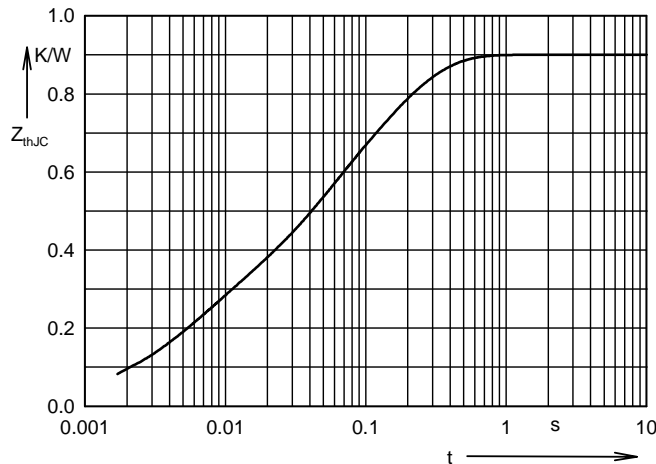


Fig. 7 Transient thermal impedance junction to case.

