

Fast Recovery Epitaxial Diode (FRED)

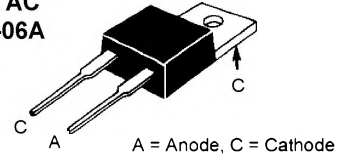
DSEI 8

$I_{FAVM} = 8 \text{ A}$
 $V_{RRM} = 600 \text{ V}$
 $t_{rr} = 35 \text{ ns}$

V_{RSM} V	V_{RRM} V	Type
640	600	DSEI 8-06A
640	600	DSEI 8-06AS

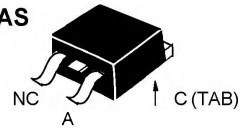


TO-220 AC
DSEI 8-06A



Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	16	A
$I_{FAVM} \star$	$T_C = 115^\circ\text{C}$; rectangular, $d = 0.5$	8	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	130	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	100	A
		110	A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	85	A
		95	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	50	A ² s
		50	A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine $t = 8.3 \text{ ms}$ (60 Hz), sine	36	A ² s
		37	A ² s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25^\circ\text{C}$	50	W
M_d	Mounting torque with screw M3 Mounting torque with screw M3.5	0.45/4	Nm/lb.in.
		0.55/5	Nm/lb.in.
Weight		2	g

TO-263 AA
DSEI 8-06AS



Features

- International standard package JEDEC TO-220 AC
- 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	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$		20 μA
	$T_{VJ} = 25^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		10 μA
	$T_{VJ} = 125^\circ\text{C}$ $V_R = 0.8 \cdot V_{RRM}$		1.5 mA
V_F	$I_F = 8 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$		1.3 V
			1.5 V
V_{TO}	For power-loss calculations only		0.98 V
r_T	$T_{VJ} = T_{VJM}$		28.7 m Ω
R_{thJC}	0.5		2.5 K/W
R_{thCK}		K/W	
R_{thJA}		60 K/W	
t_{rr}	$I_F = 1 \text{ A}$; $-di/dt = 50 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35	50 ns
I_{RM}	$V_R = 350 \text{ V}$; $I_F = 8 \text{ A}$; $-di_F/dt = 64 \text{ A}/\mu\text{s}$ $L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	2.5	2.8 A

$\star I_{FAVM}$ 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

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

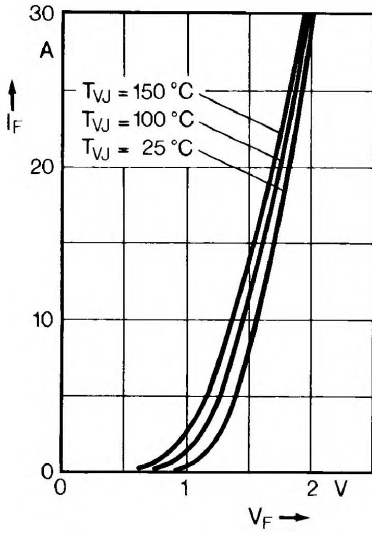


Fig. 1 Forward current versus voltage drop.

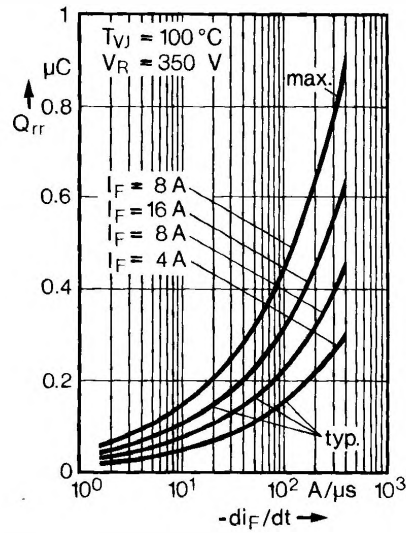


Fig. 2 Recovery charge versus $-di_F/dt$.

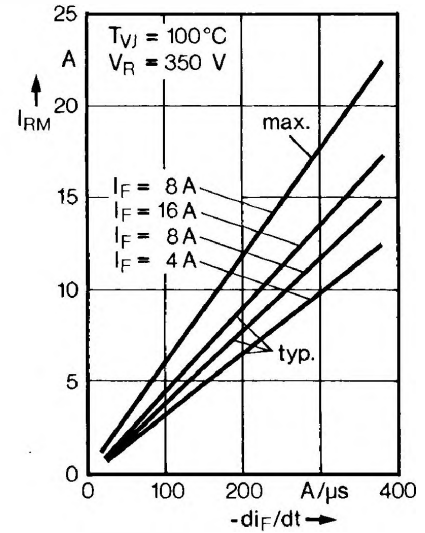


Fig. 3 Peak reverse current versus $-di_F/dt$.

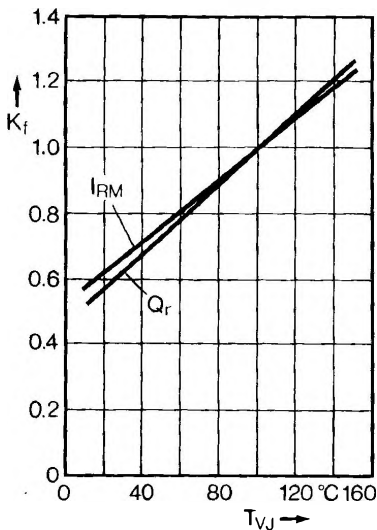


Fig. 4 Dynamic parameters versus junction temperature.

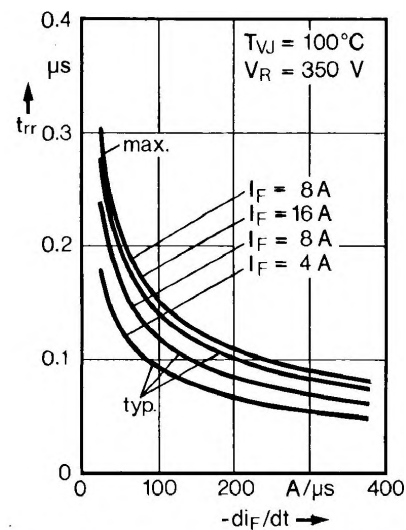


Fig. 5 Recovery time versus $-di_F/dt$.

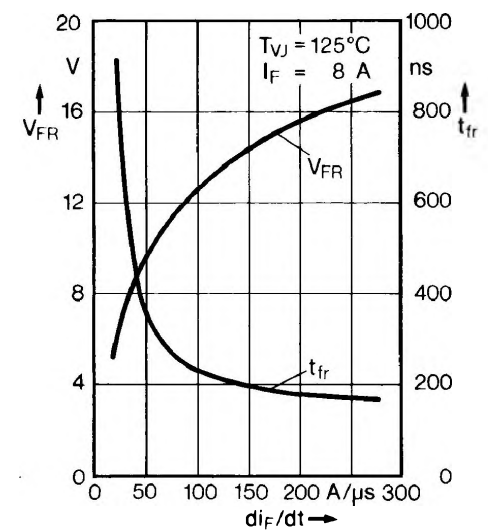


Fig. 6 Peak forward voltage versus $-di_F/dt$.

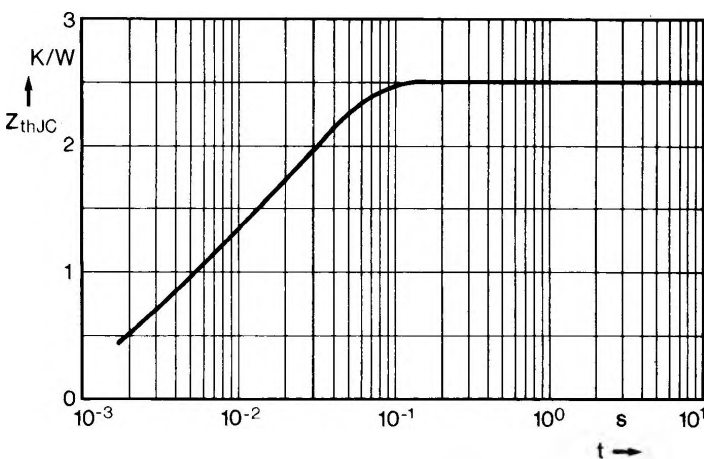
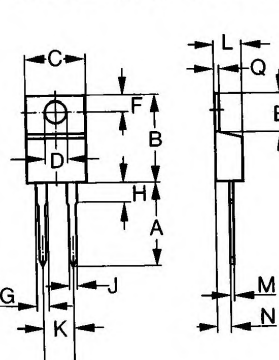


Fig. 7 Transient thermal impedance junction to case.

Dimensions TO-220 AC



Dim.	Millimeter		Inches	
	Min	Max	Min	Max
A	12.70	14.73	0.500	0.580
B	14.23	16.51	0.560	0.650
C	9.66	10.66	0.380	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.300	0.420
F	2.54	3.42	0.100	0.135
G	1.15	1.77	0.045	0.070
H	-	6.35	-	0.250
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.190	0.210
L	3.56	4.82	0.140	0.190
M	0.51	0.76	0.020	0.030
N	2.04	2.49	0.080	0.115
Q	0.64	1.39	0.025	0.055

Dimension TO-263 AA see DSEI 19 page 17