

IXYS

Fast Recovery Epitaxial Diode

DSEI 12

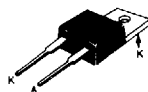
 $I_{FAV} = 12 \text{ A}$
 $V_{RRM} = 800\text{-}1000 \text{ V}$
 $t_{rr} \leq 50 \text{ ns}$

V_{RSM} V	V_{RRM} V	Type
800	800	DSEI 12-08A
1000	1000	DSEI 12-10A



Symbol	Test conditions	Maximum ratings
I_{RMS}	$T_{VJ} = T_{VM}$	25 A
I_{AVM}	1) $T_C = 100^\circ\text{C}$; rectangular, $\delta = 0.5$	12 A
I_{PRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	150 A
I_{PRM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	75 A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	80 A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	65 A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	70 A
df/dt	$T_{VJ} = 45^\circ\text{C}$ $t = 10 \text{ ms}$ (50 Hz), sine	28 A/s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	27 A/s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	21 A/s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	20 A/s
T_{VJ}		-40...+150 $^\circ\text{C}$
T_{VM}		150 $^\circ\text{C}$
T_{MP}		-40...+150 $^\circ\text{C}$
P_{tot}	$T_C = 100^\circ\text{C}$	31 W
M	Mounting torque	45-55 Ncm
Weight		2 g

TO-220 AC



A = Anode

K = Cathode

Features

- International standard package
- Glass passivated chips
- Very short recovery time
- Extremely low losses at high switching frequencies
- Low I_{PRM} -values
- Soft recovery behaviour

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
- 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	typ.	Characteristics max.
I_R	$T_{VJ} = 25^{\circ}\text{C}$ $V_R = V_{RRM}$	1	mA
	$T_{VJ} = 25^{\circ}\text{C}$ $V_R = 0.8 \cdot V_{RRM}$	150	μA
	$T_{VJ} = 125^{\circ}\text{C}$ $V_R = 0.8 \cdot V_{RRM}$	4	mA
V_F	$I_F = 12 \text{ A}$ $T_{VJ} = 150^{\circ}\text{C}$	2.1	V
	$T_{VJ} = 25^{\circ}\text{C}$	2.7	V
V_{TO}	For power-loss calculations only	1.67	V
r_F	$T_{VJ} = T_{VM}$	33.6	m Ω
R_{thJC}		1.6	K/W
R_{thJA}		80	K/W
t_{rr}	$I_F = 1 \text{ A}$; $di/dt = -15 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$	50	ns
I_{RM}	$V_R = 540 \text{ V}$; $I_F = 12 \text{ A}$; $di/dt = -100 \text{ A}/\mu\text{s}$	6.5	7.2
	$L \leq 0.05 \mu\text{H}$; $T_{VJ} = 100^{\circ}\text{C}$		A

1) I_{FAVM} Rating includes reverse blocking losses at T_{VJM} , $V_R = 0.8 V_{RRM}$, duty cycle $\delta = 0.5$
Standards: DIN/IEC 747

DSEI 12, 800-1000 V

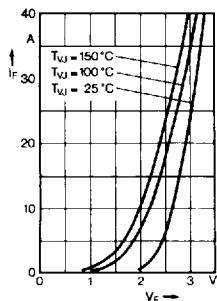


Fig. 1 Forward current versus voltage drop.

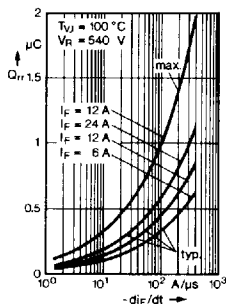
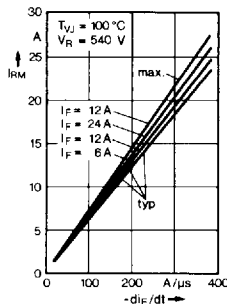
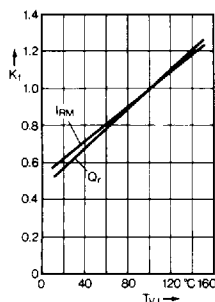
Fig. 2 Recovery charge versus $-di_F/dt$.Fig. 3 Peak reverse current versus $-di_F/dt$.

Fig. 4 Dynamic parameters versus junction temperature.

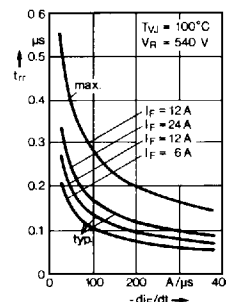
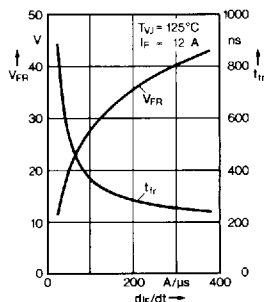
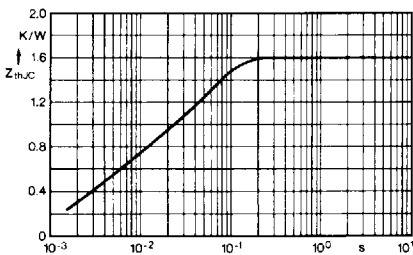
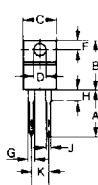
Fig. 5 Recovery time versus $-di_F/dt$.Fig. 6 Peak forward voltage versus $-di_F/dt$.

Fig. 7 Transient thermal impedance junction to case.

Dimensions



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	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	0.230	0.270
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
O	0.64	1.39	0.025	0.055