

IXYS

Fast Recovery Epitaxial Diode

DSEI 12

$$I_{FAV} = 14 \text{ A}$$

$$V_{RRM} = 400\text{-}600 \text{ V}$$

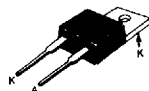
$$t_{rr} \leq 35 \text{ ns}$$

V_{RRM} V	V_{RRM} V	Type
440	400	DSEI 12-04A
540	500	DSEI 12-05A
640	600	DSEI 12-06A



Symbol	Test conditions	Maximum ratings
I_{FRMS}	$T_{VJ} = T_{VJM}$	25 A
I_{FAV}	$T_C = 100^\circ\text{C}$; rectangular, $\delta = 0.5$	14 A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	150 A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	100 A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	110 A
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	85 A
	$t = 8.3 \text{ ms}$ (60 Hz), sine	95 A
f_{Pdt}	$T_{VJ} = 45^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	50 A ² s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	50 A ² s
	$T_{VJ} = 150^\circ\text{C}$; $t = 10 \text{ ms}$ (50 Hz), sine	36 A ² s
	$t = 8.3 \text{ ms}$ (60 Hz), sine	37 A ² s
T_{VJ}		-40...+150 °C
T_{VJM}		150 °C
T_{stg}		-40...+150 °C
P_{DM}	$T_C = 100^\circ\text{C}$	25 W
M_s	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_{FSM} -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	Characteristics
	typ.	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
	$T_{VJ} = 125^\circ\text{C}$; $V_R = 0.8 \cdot V_{RRM}$	3 mA
V_F	$I_F = 16 \text{ A}$; $T_{VJ} = 150^\circ\text{C}$	1.5 V
	$T_{VJ} = 25^\circ\text{C}$	1.7 V
V_{TO}	For power-loss calculations only	1.12 V
r_F	$T_{VJ} = T_{VJM}$	23.2 m Ω
R_{thJC}		2 K/W
R_{thJA}		60 K/W
t_{rr}	$I_F = 1 \text{ A}$; $di/dt = -15 \text{ A}/\mu\text{s}$; $V_R = 30 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	35 ns
I_{RM}	$V_R = 350 \text{ V}$; $I_F = 12 \text{ A}$; $di/dt = -100 \text{ A}/\mu\text{s}$	6 A
L	$\leq 0.05 \mu\text{H}$; $T_{VJ} = 100^\circ\text{C}$	

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

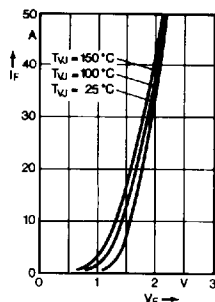


Fig. 1 Forward current versus voltage drop.

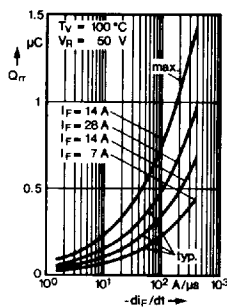
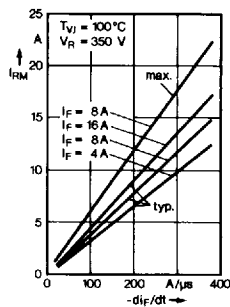
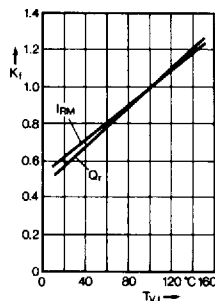
Fig. 2 Recovery charge versus $-di/dt$.Fig. 3 Peak reverse current versus $-di/dt$.

Fig. 4 Dynamic parameters versus junction temperature.

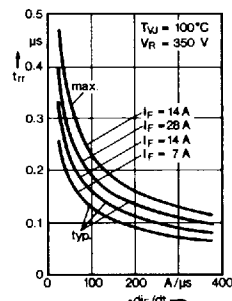
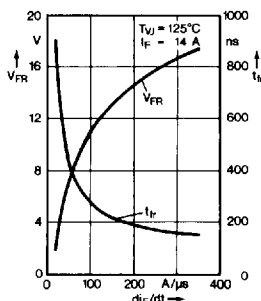
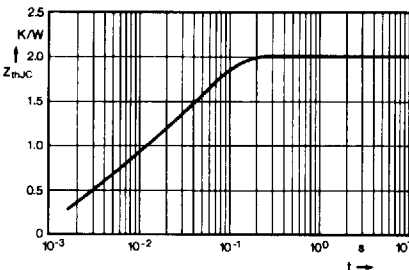
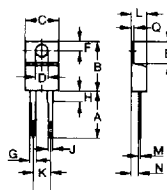
Fig. 5 Recovery time versus $-di/dt$.Fig. 6 Peak forward voltage versus $-di/dt$.

Fig. 7 Transient thermal impedance junction to case.

Dimensions



Dim.	Millimeter Min.	Max.	Inches 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	0.84	0.89	0.035	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