IXYS

Fast Recovery Epitaxial Diode

DSEI 12

I_{FAV} = 14 A
V_{RRM} = 400-600 V
t_{rr} ≤ 35 ns

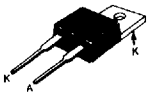
V_{RSM} V	V_{RRM} V	Type
440	400	DSEI 12-04A
540	500	DSEI 12-05A
640	600	DSEI 12-06A

Symbol	Test conditions		Maximum ratings	
I_{FRMS}	T_{VJ} = T_{VJM}		25	A
I_{FAVM} 1)	T_C = 100°C: rectangular, δ = 0.5		14	A
I_{FRM}	t_P < 10 µs; rep. rating, pulse width limited by T_{VJM}		150	A
I_{FSM}	T_{VJ} = 45°C;	t = 10 ms (50 Hz), sine	100	A
		t = 8.3 ms (60 Hz), sine	110	A
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	85	A
		t = 8.3 ms (60 Hz), sine	95	A
$\int i^2dt$	T_{VJ} = 45°C	t = 10 ms (50 Hz), sine	50	A^2s
		t = 8.3 ms (60 Hz), sine	50	A^2s
	T_{VJ} = 150°C;	t = 10 ms (50 Hz), sine	36	A^2s
		t = 8.3 ms (60 Hz), sine	37	A^2s
T_{VJ}			-40...+150	°C
T_{VJM}			150	°C
T_{stg}			-40...+150	°C
P_{tot}	T_C = 100°C		25	W
M_d	Mounting torque		45-55	Ncm
Weight			2	g

Symbol	Test conditions		typ.	Characteristics max.	
I_R	T_{VJ} = 25°C	V_R = V_{RRM}		1	mA
	T_{VJ} = 25°C	V_R = 0.8 • V_{RRM}		150	µA
	T_{VJ} = 125°C	V_R = 0.8 • V_{RRM}		3	mA
V_F	I_F = 16 A:	T_{VJ} = 150°C		1.5	V
		T_{VJ} = 25°C		1.7	V
V_{TO}	For power-loss calculations only			1.12	V
r_F	T_{VJ} = T_{VJM}			23.2	mΩ
R_{thJC}				2	K/W
R_{thJA}				60	K/W
t_{rr}	I_F = 1 A; di/dt = -15 A/µs; V_R = 30 V; T_{VJ} = 25°C			35	ns
I_{RM}	V_R = 350 V; I_F = 12 A; di_F/dt = -100 A/µs		4	6	A
	L ≤ 0.05 µH; T_{VJ} = 100°C				

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

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_{RM}-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

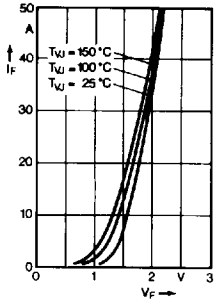


Fig. 1 Forward current versus voltage drop.

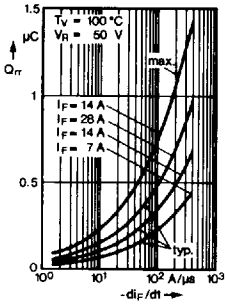


Fig. 2 Recovery charge versus $-di_F/dt$.

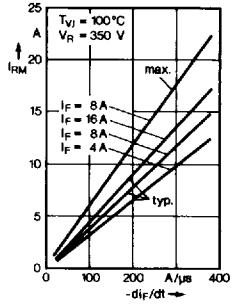


Fig. 3 Peak reverse current versus $-di_F/dt$.

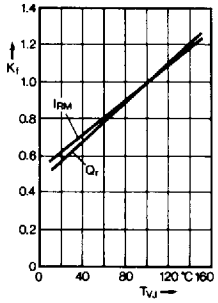


Fig. 4 Dynamic parameters versus junction temperature.

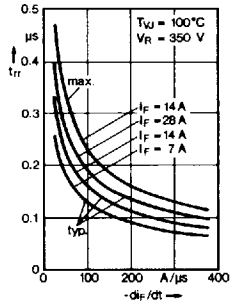


Fig. 5 Recovery time versus $-di_F/dt$.

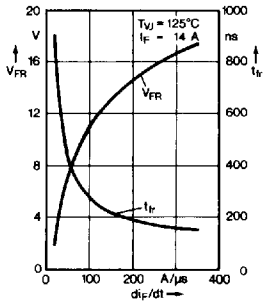


Fig. 6 Peak forward voltage versus $-di_F/dt$.

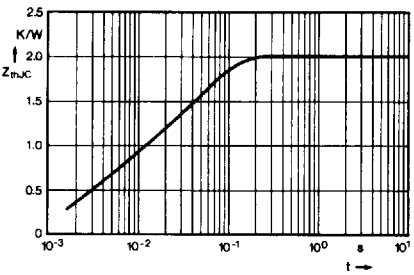
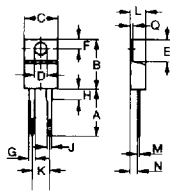


Fig. 7 Transient thermal impedance junction to case.

Dimensions



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