IXYS

Fast Recovery Epitaxial Diode (FRED)
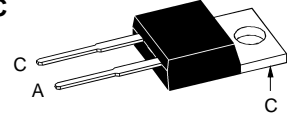
DSEI 20

I_{FAVM} = 17 A
V_{RRM} = 1200 V
t_{rr} = 40 ns

V_{RSM}	V_{RRM}	Type
V	V	
1200	1200	DSEI 20-12A

A ▷|◁ C

TO-220 AC

A = Anode, C = Cathode

Symbol	Test Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	70	A
I_{FAVM} ①	$T_C = 85°C$; rectangular, d = 0.5	17	A
I_{FRM}	$t_P < 10\ \mu s$; rep. rating, pulse width limited by T_{VJM}	220	A
I_{FSM}	$T_{VJ} = 45°C$; t = 10 ms (50 Hz), sine	130	A
	t = 8.3 ms (60 Hz), sine	140	A
	$T_{VJ} = 150°C$; t = 10 ms (50 Hz), sine	110	A
	t = 8.3 ms (60 Hz), sine	120	A
I^2t	$T_{VJ} = 45°C$ t = 10 ms (50 Hz), sine	85	A^2s
	t = 8.3 ms (60 Hz), sine	80	A^2s
	$T_{VJ} = 150°C$; t = 10 ms (50 Hz), sine	60	A^2s
	t = 8.3 ms (60 Hz), sine	60	A^2s
T_{VJ}		-40...+150	°C
T_{VJM}		150	°C
T_{stg}		-40...+150	°C
P_{tot}	$T_C = 25°C$	78	W
M_d	Mounting torque	0.4...0.6	Nm
Weight		2	g

Symbol	Test Conditions	Characteristic Values	
		typ.	max.
I_R	$T_{VJ} = 25°C$ $V_R = V_{RRM}$		750 μA
	$T_{VJ} = 25°C$ $V_R = 0.8 \cdot V_{RRM}$		250 μA
	$T_{VJ} = 125°C$ $V_R = 0.8 \cdot V_{RRM}$		7 mA
V_F	$I_F = 12$ A; $T_{VJ} = 150°C$		1.87 V
	$T_{VJ} = 25°C$		2.15 V
V_{T0}	For power-loss calculations only	1.65	V
r_T	$T_{VJ} = T_{VJM}$	18.2	mΩ
R_{thJC}			1.6 K/W
R_{thJA}			60 K/W
t_{rr}	$I_F = 1$ A; -di/dt = 100 A/μs; $V_R = 30$ V; $T_{VJ} = 25°C$	40	60 ns
I_{RM}	$V_R = 540$ V; $I_F = 20$ A; -$di_F/dt = 100$ A/μs $L \leq 0.05\ \mu H$; $T_{VJ} = 100°C$	7	A

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
- Epoxy meets 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

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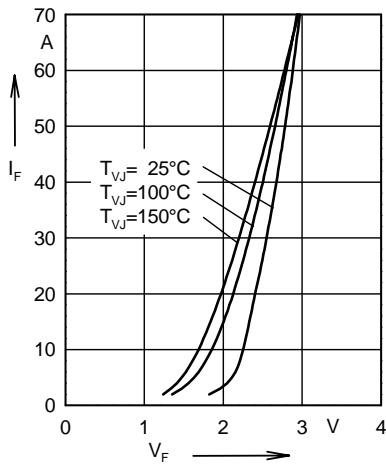IXYS reserves the right to change limits, test conditions and dimensions

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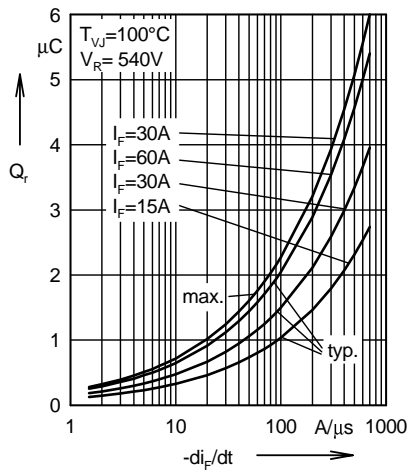
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Fig. 1 Forward current versus voltage drop.
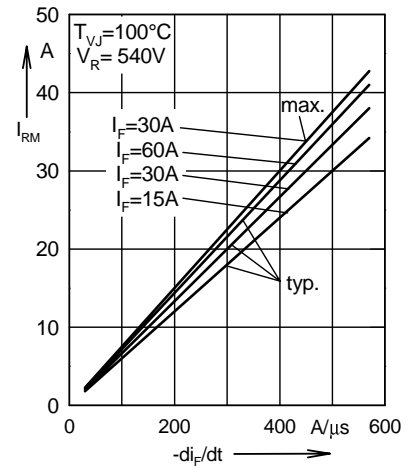
Fig. 2 Recovery charge versus -di$_F$/dt.
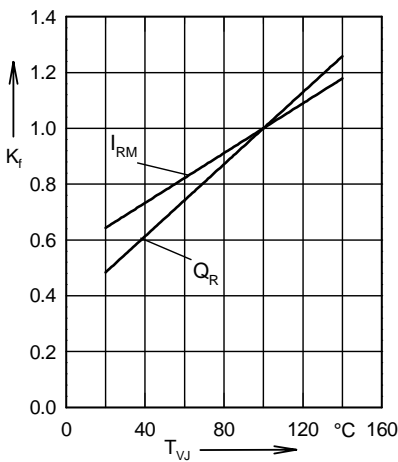
Fig. 3 Peak reverse current versus -di$_F$/dt.

Fig. 4 Dynamic parameters versus junction temperature.
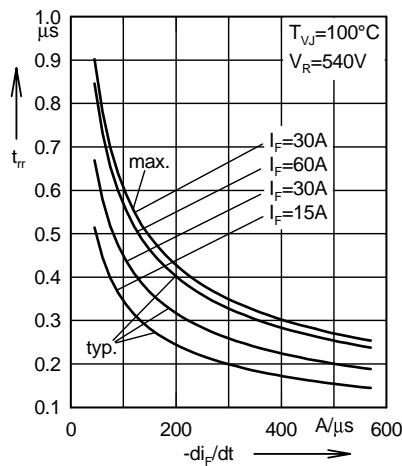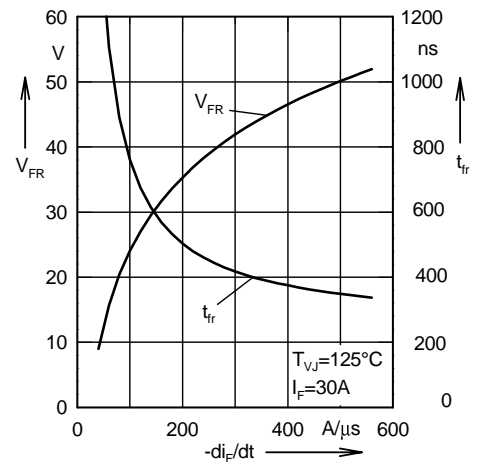
Fig. 5 Recovery time versus -di$_F$/dt.
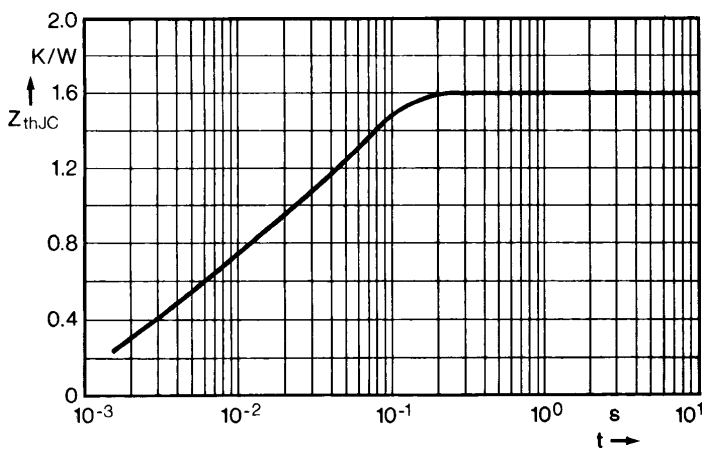
Fig. 6 Peak forward voltage versus di$_F$/dt.

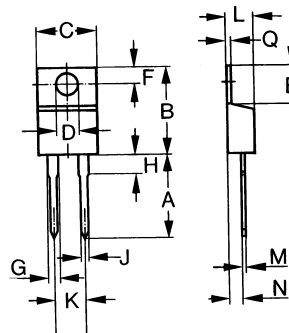Fig. 7 Transient thermal impedance junction to case.

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	0.420
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	0.38	0.56	0.015	0.022
N	2.04	2.49	0.080	0.115
Q	0.64	1.39	0.025	0.055