



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

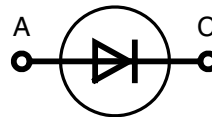
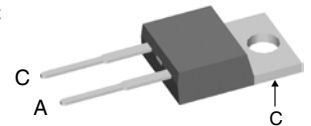
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# Fast Recovery Epitaxial Diode (FRED)

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

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


**TO-220 AC**


A = Anode, C = Cathode

Symbol	Conditions	Maximum Ratings		
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	25	A	
$I_{FAVM}$ ①	$T_C = 100^\circ\text{C}$ ; rectangular, $d = 0.5$	12	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	75	A
		$t = 8.3\text{ ms}$ (60 Hz), sine	80	
	$T_{VJ} = 150^\circ\text{C}$ ;	$t = 10\text{ ms}$ (50 Hz), sine	65	A
		$t = 8.3\text{ ms}$ (60 Hz), sine	70	
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ ;	$t = 10\text{ ms}$ (50 Hz), sine	28	A <sup>2</sup> s
		$t = 8.3\text{ ms}$ (60 Hz), sine	27	
	$T_{VJ} = 150^\circ\text{C}$ ;	$t = 10\text{ ms}$ (50 Hz), sine	21	A <sup>2</sup> s
		$t = 8.3\text{ ms}$ (60 Hz), sine	20	
$T_{VJ}$		-40...+150	$^\circ\text{C}$	
$T_{VJM}$		150	$^\circ\text{C}$	
$T_{stg}$		-40...+150	$^\circ\text{C}$	
$P_{tot}$	$T_C = 25^\circ\text{C}$	78	W	
$M_d$	mounting torque	0.4...0.6	Nm	
<b>Weight</b>	typical	2	g	

**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 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

Symbol	Conditions	Characteristic Values		
		typ.	max.	
$I_R$	$V_R = V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$	250	$\mu\text{A}$
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 25^\circ\text{C}$	150	$\mu\text{A}$
	$V_R = 0.8 \cdot V_{RRM}$	$T_{VJ} = 125^\circ\text{C}$	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
$V_{T0}$	For power-loss calculations only		1.67	V
$r_T$	$T_{VJ} = T_{VJM}$		33.6	m $\Omega$
$R_{thJC}$			1.6	K/W
$R_{thCH}$		0.5		K/W
$R_{thJA}$			60	K/W
$t_{rr}$	$I_F = 1\text{ A}$ ; $-di/dt = 50\text{ A}/\mu\text{s}$ ; $V_R = 30\text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$	50	60	ns
$I_{RM}$	$V_R = 540\text{ V}$ ; $I_F = 12\text{ A}$ ; $-di_F/dt = 100\text{ A}/\mu\text{s}$ $L \leq 0.05\ \mu\text{H}$ ; $T_{VJ} = 100^\circ\text{C}$	6.5	7.2	A

①  $I_{FAVM}$  rating includes reverse blocking losses at  $T_{VJM}$ .  $V_R = 0.8 \cdot V_{RRM}$ , duty cycle  $d = 0.5$   
Data according to IEC 60747

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

© 2004 IXYS All rights reserved

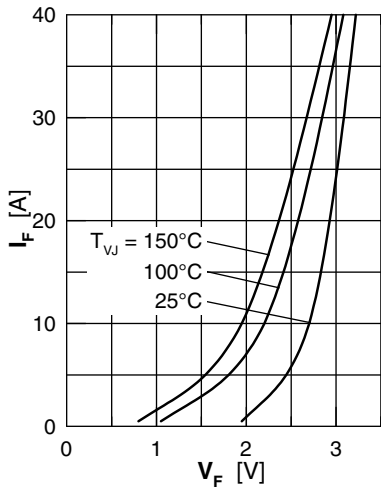


Fig. 1 Forward current versus voltage drop

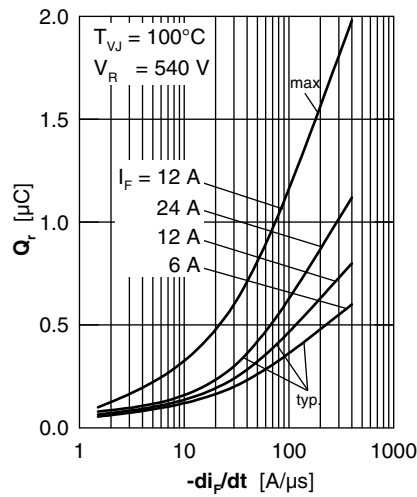


Fig. 2 Recovery charge versus  $-di_F/dt$

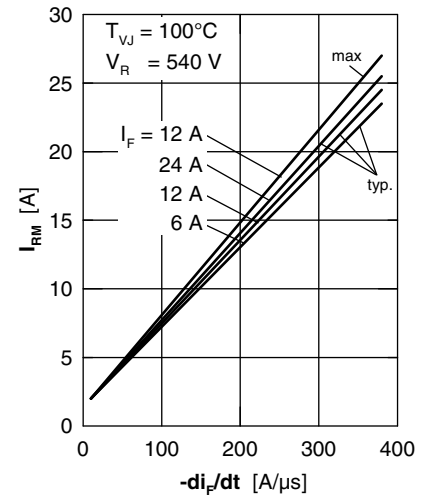


Fig. 3 Peak reverse current versus  $-di_F/dt$

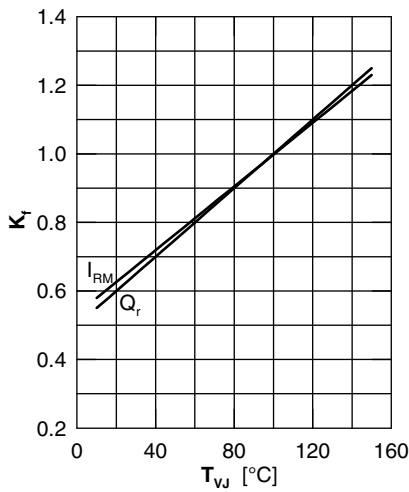


Fig. 4 Dynamic parameters versus junction temperature

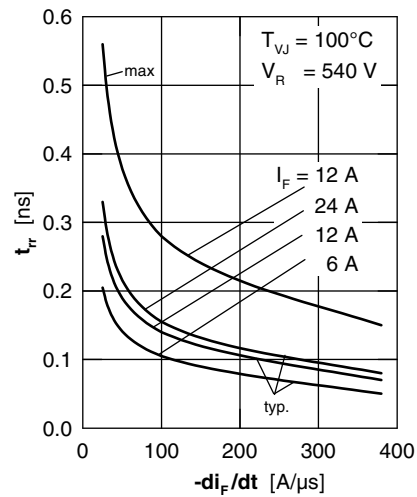


Fig. 5 Recovery time versus  $-di_F/dt$

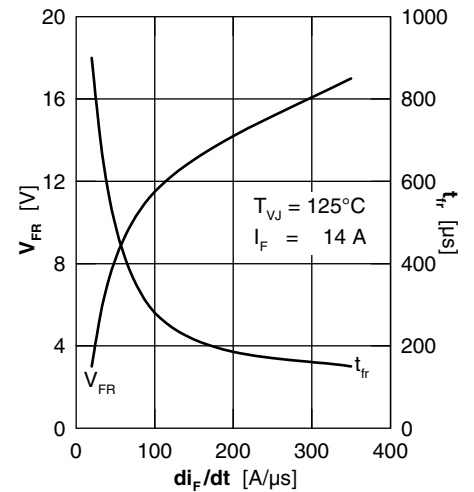


Fig. 6 Peak forward voltage versus  $di_F/dt$

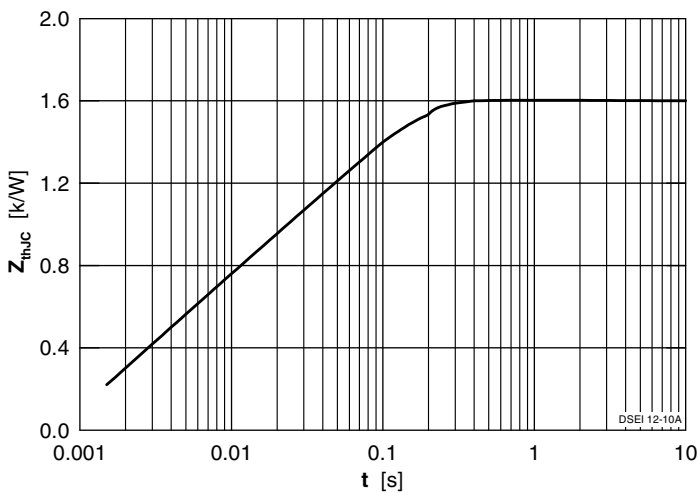
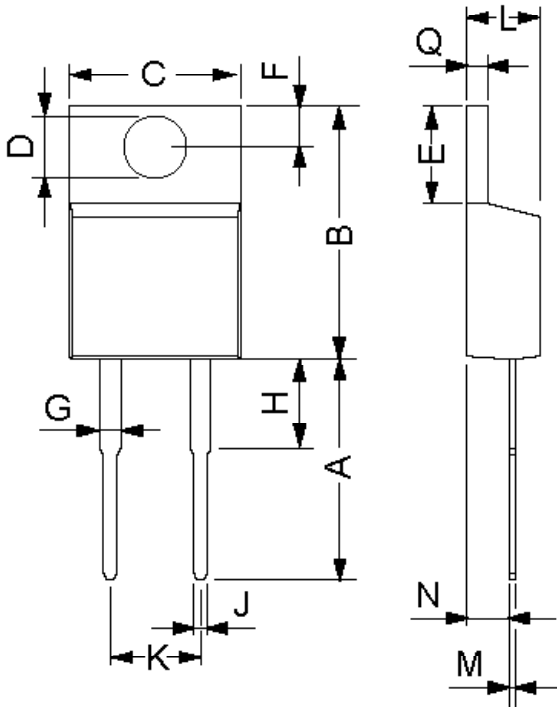


Fig. 7 Transient thermal resistance junction to case

## Dimensions TO-220 AC



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.7	14.73	0.5	0.58
B	14.23	16.51	0.56	0.65
C	9.66	10.66	0.38	0.42
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.3	0.42
F	2.54	3.42	0.1	0.135
G	1.15	1.77	0.045	0.07
H	-	6.35	-	0.25
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.19	0.21
L	3.56	4.82	0.14	0.19
M	0.51	0.76	0.02	0.03
N	2.04	2.49	0.08	0.115
Q	0.64	1.39	0.025	0.055