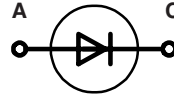
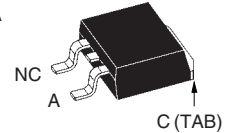


# Fast Recovery Epitaxial Diode (FRED)

$V_{RRM} = 600\text{ V}$   
 $I_{FAVM} = 20\text{ A}$   
 $t_{rr} = 35\text{ ns}$

$V_{RSM}$	$V_{RRM}$	Type
V	V	
600	600	DSEI 19-06AS


**TO-263 AA**


A = Anode, C = Cathode,  
NC = No connection, TAB = Cathode

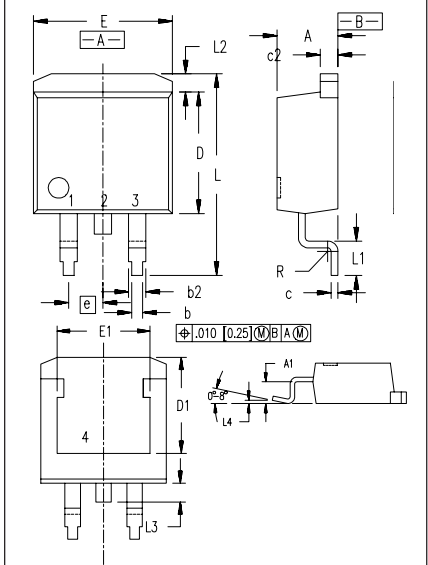
Symbol	Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	25	A
$I_{FAVM}$ ①	$T_C = 65^\circ\text{C}$ ; rectangular, $d = 0.5$	20	A
$I_{FRM}$	$t_p < 10\ \mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	150	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine	100	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
$I^2t$	$T_{VJ} = 45^\circ\text{C}$ $t = 10\text{ ms}$ (50 Hz), sine	50	A <sup>2</sup> s
	$t = 8.3\text{ ms}$ (60 Hz), sine	50	A <sup>2</sup> s
	$T_{VJ} = 150^\circ\text{C}$ ; $t = 10\text{ ms}$ (50 Hz), sine	36	A <sup>2</sup> s
	$t = 8.3\text{ ms}$ (60 Hz), sine	37	A <sup>2</sup> s
$T_{VJ}$		-40...+150	°C
$T_{VJM}$		150	°C
$T_{stg}$		-40...+150	°C
$P_{tot}$	$T_C = 25^\circ\text{C}$	61	W
Weight		2	g

**Features**

- International standard surface mount package JEDEC TO-263 AA
- Planar passivated chips
- Very short recovery time
- Extremely low switching losses
- Low  $I_{RM}$ -values
- Soft recovery behaviour
- Epoxy meets UL 94V-0

Symbol	Conditions	Characteristic Values	
		typ.	max.
$I_R$	$T_{VJ} = 25^\circ\text{C}$ ; $V_R = V_{RRM}$	50	$\mu\text{A}$
	$T_{VJ} = 25^\circ\text{C}$ ; $V_R = 0.8 \cdot V_{RRM}$	25	$\mu\text{A}$
	$T_{VJ} = 125^\circ\text{C}$ ; $V_R = 0.8 \cdot V_{RRM}$	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
$V_{T0}$	For power-loss calculations only	1.12	V
$r_T$	$T_{VJ} = T_{VJM}$	23.2	m $\Omega$
$R_{thJC}$		2	K/W
$t_{rr}$	$I_F = 1\text{ A}$ ; $-di/dt = 50\text{ A}/\mu\text{s}$ ; $V_R = 30\text{ V}$ ; $T_{VJ} = 25^\circ\text{C}$	35	50 ns
$I_{RM}$	$V_R = 350\text{ V}$ ; $I_F = 12\text{ A}$ ; $-di_F/dt = 100\text{ A}/\mu\text{s}$ $L \leq 0.05\ \mu\text{H}$ ; $T_{VJ} = 100^\circ\text{C}$	4	4.4 A

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

**TO-263 AA Outline**


Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.06	4.83	.160	.190
A1	2.03	2.79	.080	.110
b	0.51	0.99	.020	.039
b2	1.14	1.40	.045	.055
c	0.46	0.74	.018	.029
c2	1.14	1.40	.045	.055
D	8.64	9.65	.340	.380
D1	7.11	8.13	.280	.320
E	9.65	10.29	.380	.405
E1	6.86	8.13	.270	.320
e	2.54	BSC	.100	BSC
L	14.61	15.88	.575	.625
L1	2.29	2.79	.090	.110
L2	1.02	1.40	.040	.055
L3	1.27	1.78	.050	.070
L4	0	0.38	0	.015
R	0.46	0.74	.018	.029

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

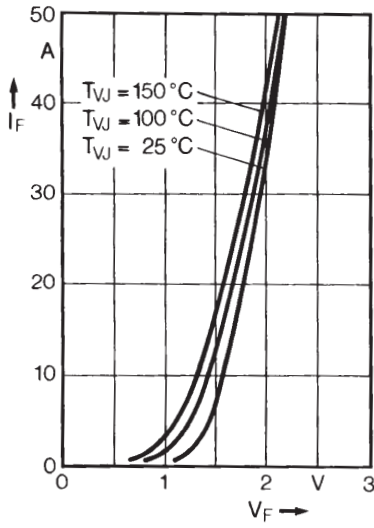


Fig. 1 Forward current versus voltage drop.

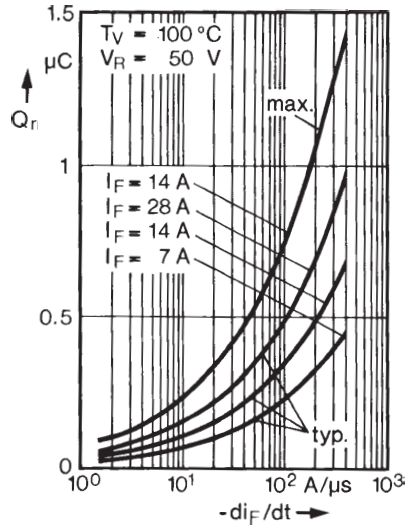


Fig. 2 Recovery charge versus  $-di_F/dt$ .

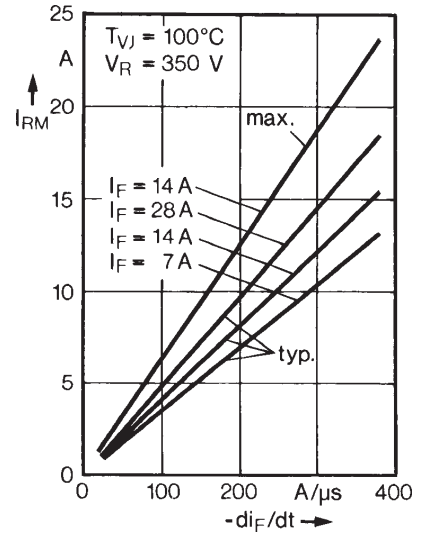


Fig. 3 Peak reverse current versus  $-di_F/dt$ .

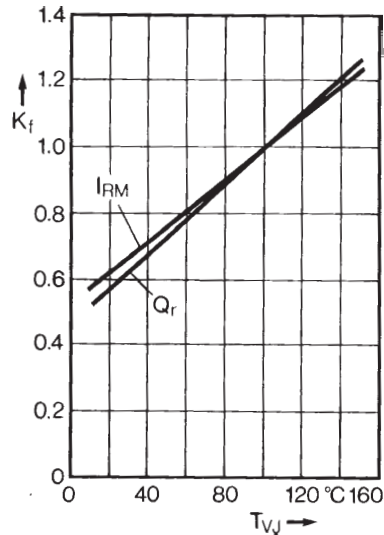


Fig. 4 Dynamic parameters versus junction temperature.

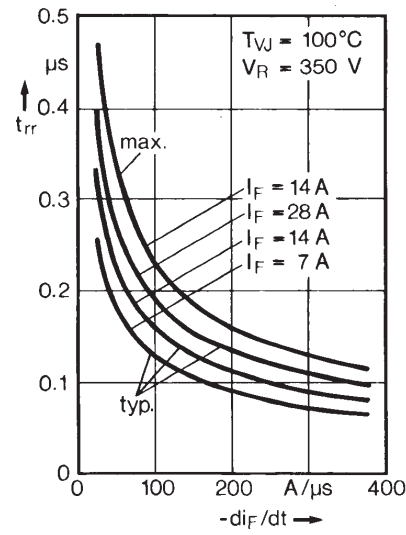


Fig. 5 Recovery time versus  $-di_F/dt$ .

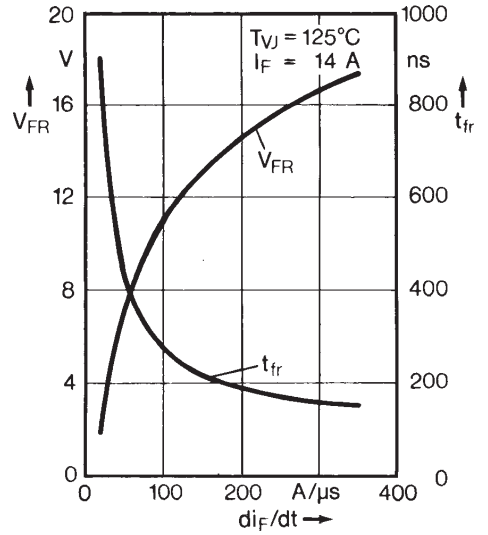


Fig. 6 Peak forward voltage versus  $di_F/dt$ .

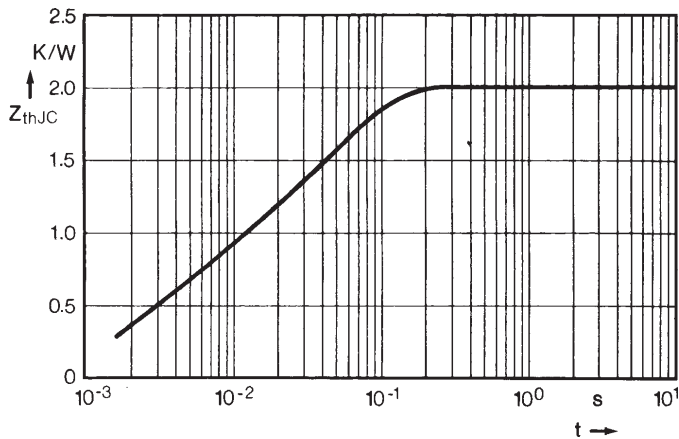


Fig. 7 Transient thermal impedance junction to case.