

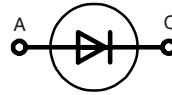
# Fast Recovery Diode

## SONIC-FRD™ series

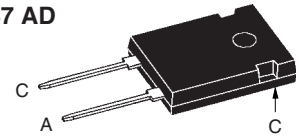
$$I_{FAVM} = 20 \text{ A}$$

$$V_{RRM} = 1800 \text{ V}$$

$V_{RSM}$	$V_{RRM}$	Type
V	V	
1800	1800	DH 20-18A



TO-247 AD



A = Anode, C = Cathode

Symbol	Conditions	Maximum Ratings	
$I_{FRMS}$	$T_{VJ} = T_{VJM}$	70	A
$I_{FAVM}$	$T_C = 80^\circ\text{C}$ ; rectangular, $d = 0.5$	20	A
$I_{FRM}$	$t_p < 10 \mu\text{s}$ ; rep. rating, pulse width limited by $T_{VJM}$	200	A
$I_{FSM}$	$T_{VJ} = 45^\circ\text{C}$ ; $t_p = 10 \text{ ms}$ (50 Hz), sine	150	A
$E_{AS}$	$T_{VJ} = 25^\circ\text{C}$ ; non-repetitive $I_{AS} = \text{tbd A}$ ; $L = 100 \mu\text{H}$	tbd	mJ
$I_{AR}$	$V_A = 1.5 \cdot V_R$ typ.; $f = 10 \text{ kHz}$ ; repetitive	tbd	A
$T_{VJ}$		-40...+150	$^\circ\text{C}$
$T_{VJM}$		150	$^\circ\text{C}$
$T_{stg}$		-40...+150	$^\circ\text{C}$
$P_{tot}$	$T_C = 25^\circ\text{C}$	140	W
$M_d$	Mounting torque	0.8...1.2	Nm
Weight		6	g

### Features

- Small temperature dependence for
  - forward voltage drop
  - reverse recovery current
- Optimized for
  - dynamic avalanche ruggedness
  - low loss performance
- Exceptionally soft recovery
- Low reverse recovery current characteristic
- Soft recovery current without tail
- Optimized for high frequency hard switching

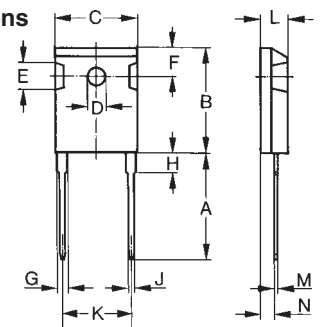
### Applications

- 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)
- Induction heating and melting
- Uninterruptible power supplies (UPS)
- Ultrasonic cleaners and welders

Symbol	Conditions	Characteristic Values		
		typ.	max.	
$I_R$	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$	20	50	$\mu\text{A}$ mA
$V_F$	$I_F = 20 \text{ A}$ ; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	2.5	2.9	V V
$V_{T0}$	For power-loss calculations only		2.1	V
$r_T$	$T_{VJ} = T_{VJM}$		44	m $\Omega$
$R_{thJC}$			0.9	K/W
$R_{thCH}$		0.25		K/W
$t_{rr}$	$I_F = 20 \text{ A}$ ; $-di/dt = 450 \text{ A}/\mu\text{s}$ ; $V_R = 1200 \text{ V}$ ;	230		ns
$I_{RM}$	$T_{VJ} = 25^\circ\text{C}$	23		A
$S$	$t_b/t_a$	3.6		
$RSF$	$di_F/dt / di_R/dt$	tbd		
$t_{rr}$	$I_F = 20 \text{ A}$ ; $-di/dt = 450 \text{ A}/\mu\text{s}$ ; $V_R = 1200 \text{ V}$ ;	400		ns
$I_{RM}$	$T_{VJ} = 125^\circ\text{C}$	27		A
$S$	$t_b/t_a$	7		
$RSF$	$di_F/dt / di_R/dt$	tbd		

Data according to IEC 60747

### Dimensions



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	19.81	20.32	0.780	0.800
B	20.80	21.46	0.819	0.845
C	15.75	16.26	0.610	0.640
D	3.55	3.65	0.140	0.144
E	4.32	5.49	0.170	0.216
F	5.4	6.2	0.212	0.244
G	1.65	2.13	0.065	0.084
H	-	4.5	-	0.177
J	1.0	1.4	0.040	0.055
K	10.8	11.0	0.426	0.433
L	4.7	5.3	0.185	0.209
M	0.4	0.8	0.016	0.031
N	1.5	2.49	0.087	0.102

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

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