

Fast Recovery Diode

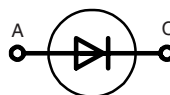
SONIC-FRD™ series

$$I_{FAVM} = 60 \text{ A}$$

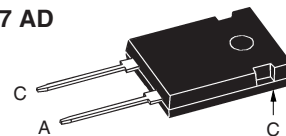
$$V_{RRM} = 1400-1800 \text{ V}$$

$$t_{rr} = 150 \text{ ns}$$

V_{RSM} V	V_{RRM} V	Type
1400	1400	DH 60-14A
1600	1600	DH 60-16A
1800	1800	DH 60-18A



TO-247 AD



A = Anode, C = Cathode

Symbol	Conditions	Maximum Ratings	
I_{FRMS}	$T_{VJ} = T_{VJM}$	100	A
I_{FAVM}	$T_C = 89^\circ\text{C}$; rectangular, $d = 0.5$	60	A
I_{FRM}	$t_p < 10 \mu\text{s}$; rep. rating, pulse width limited by T_{VJM}	900	A
I_{FSM}	$T_{VJ} = 45^\circ\text{C}$; $t_p = 10 \text{ ms}$ (50 Hz), sine	650	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}	$T_C = 25^\circ\text{C}$	415	W
M_d	Mounting torque	0.8...1.2	Nm
Weight		6	g

Features

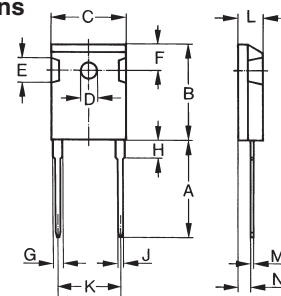
- Small temperature dependence for
 - forward voltage drop
 - reverse recovery current
- Optimized for
 - dynamic avalanche ruggedness
 - low loss performance
- Exceptionally soft recovery
- Low reverse recovery current characteristic
- Soft recovery current without tail
- Optimized for high frequency 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	$T_{VJ} = 25^\circ\text{C}$ $V_R = V_{RRM}$ $T_{VJ} = 125^\circ\text{C}$ $V_R = V_{RRM}$	100 2	200 mA
V_F	$I_F = 60 \text{ A}$; $T_{VJ} = 125^\circ\text{C}$ $T_{VJ} = 25^\circ\text{C}$	2.3	2.7 2.7 V
V_{T0}	For power-loss calculations only		1.95 V
r_T	$T_{VJ} = T_{VJM}$		12 mΩ
R_{thJC}			0.3 K/W
R_{thCH}		0.25	K/W
t_{rr}	$I_F = 60 \text{ A}$; $-di/dt = 600 \text{ A}/\mu\text{s}$; $V_R = 1200 \text{ V}$; $T_{VJ} = 25^\circ\text{C}$	150	ns
I_{RM}		50	A
t_{rr}	$I_F = 60 \text{ A}$; $-di/dt = 600 \text{ A}/\mu\text{s}$; $V_R = 1200 \text{ V}$; $T_{VJ} = 125^\circ\text{C}$	350	ns
I_{RM}		55	A

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

Data according to IEC 60747

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

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1 - 2

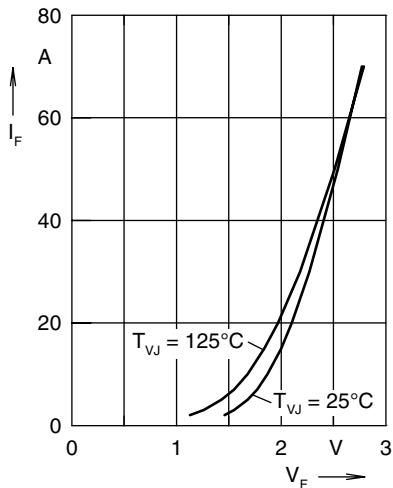


Fig. 1 Typ. forward current I_F versus V_F

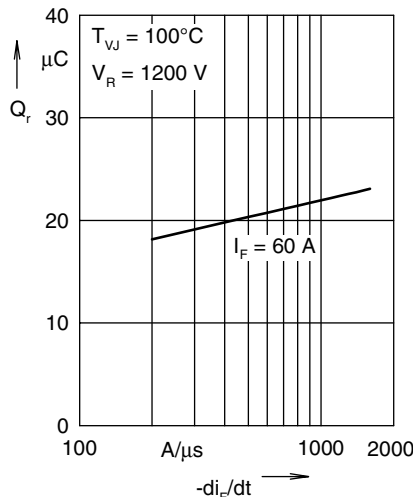


Fig. 2 Typ. reverse recovery charge Q_r versus $-di_F/dt$

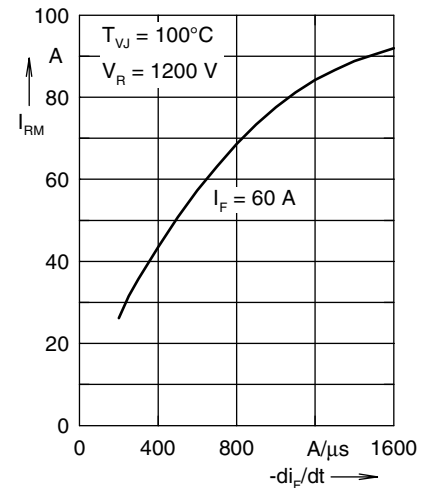


Fig. 3 Typ. peak reverse current I_{RM} versus $-di_F/dt$

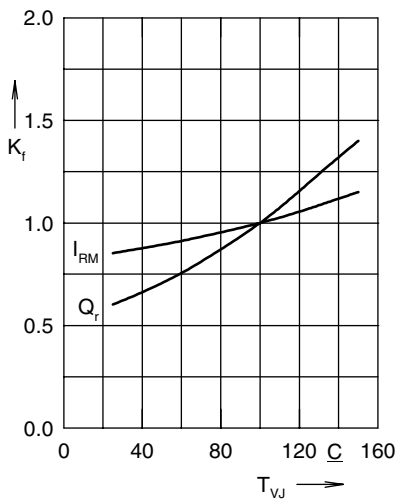


Fig. 4 Dynamic parameters Q_r , I_{RM} versus T_{VJ}

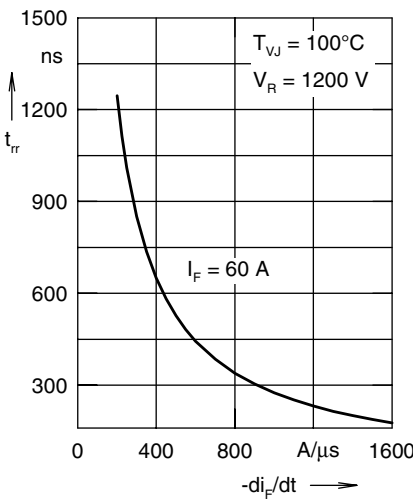


Fig. 5 Typ. recovery time t_{rr} versus $-di_F/dt$

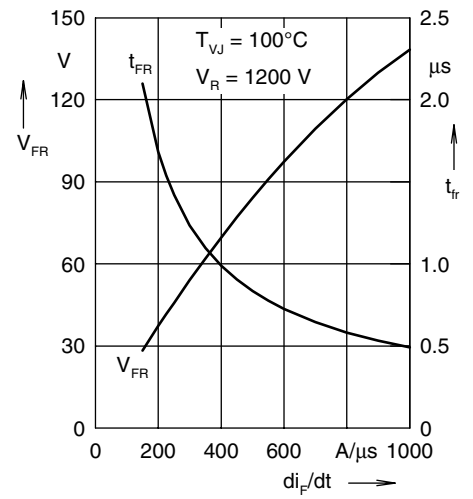


Fig. 6 Typ. peak forward voltage V_{FR} and t_{fr} versus di_F/dt

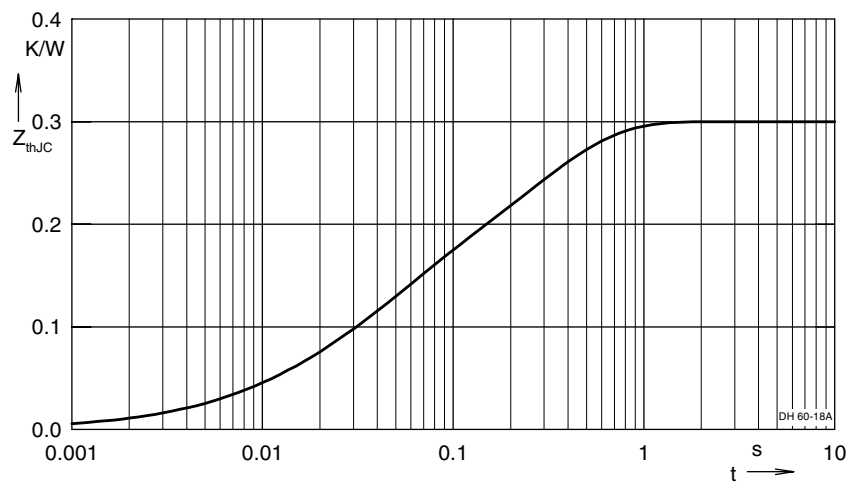


Fig. 7 Transient thermal resistance junction to case

NOTE: Fig. 2 to Fig. 6 shows typical values