

Sonic-FRD

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Single Diode

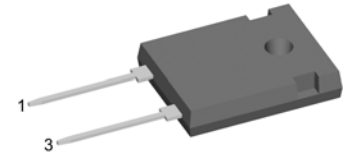
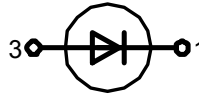
$$V_{RRM} = 1200 \text{ V}$$

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

$$t_{rr} = 75 \text{ ns}$$

Part number

DHG 20 I 1200HA



Backside: cathode

Features / Advantages:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I_{rm} -values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I_{rm} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Antisaturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in switch mode power supplies (SMPS)
- Uninterruptible power supplies (UPS)

Package:

- TO-247AD
- Industry standard outline
 - Epoxy meets UL 94V-0
 - RoHS compliant

Ratings

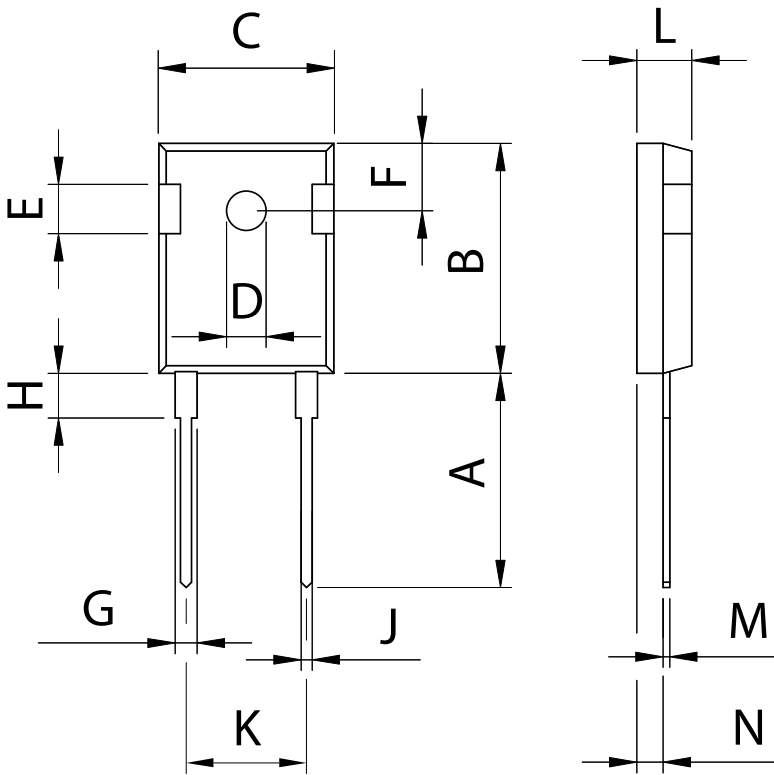
Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25 \text{ }^{\circ}\text{C}$			1200	V	
I_R	reverse current	$V_R = 1200 \text{ V}$			30	μA	
		$V_R = 1200 \text{ V}$			3	mA	
V_F	forward voltage	$I_F = 20 \text{ A}$			2.69	V	
		$I_F = 40 \text{ A}$			3.52	V	
		$I_F = 20 \text{ A}$	$T_{VJ} = 125 \text{ }^{\circ}\text{C}$			2.35	V
		$I_F = 40 \text{ A}$	$T_{VJ} = 125 \text{ }^{\circ}\text{C}$			3.29	V
I_{FAV}	average forward current	rectangular, $d = 0.5$			20	A	
V_{F0}	threshold voltage	} for power loss calculation only			1.60	V	
r_F	slope resistance				33.8	$\text{m}\Omega$	
R_{thJC}	thermal resistance junction to case				0.90	K/W	
T_{VJ}	virtual junction temperature		-55		150	$^{\circ}\text{C}$	
P_{tot}	total power dissipation	$T_C = 25 \text{ }^{\circ}\text{C}$			140	W	
I_{FSM}	max. forward surge current	$t_p = 10 \text{ ms (50 Hz), sine}$			135	A	
I_{RM}	max. reverse recovery current	$I_F = 20 \text{ A};$		19		A	
		$-di_F/dt = 750 \text{ A}/\mu\text{s}$	$T_{VJ} = 125 \text{ }^{\circ}\text{C}$			A	
t_{rr}	reverse recovery time	$V_R = 800 \text{ V}$	$T_{VJ} = 25 \text{ }^{\circ}\text{C}$	75		ns	
			$T_{VJ} = 125 \text{ }^{\circ}\text{C}$			ns	
C_J	junction capacitance	$V_R = 600 \text{ V}; f = 1 \text{ MHz}$	$T_{VJ} = 25 \text{ }^{\circ}\text{C}$	tbd		pF	
E_{AS}	non-repetitive avalanche energy	$I_{AS} = \text{tbd A}; L = 100 \mu\text{H}$	$T_{VJ} = 25 \text{ }^{\circ}\text{C}$		tbd	mJ	
I_{AR}	repetitive avalanche current	$V_A = 1.5 \cdot V_R \text{ typ.}; f = 10 \text{ kHz}$			tbd	A	

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per pin*			50	A
R_{thCH}	thermal resistance case to heatsink			0.25		K/W
M_D	mounting torque		0.8		1.2	Nm
F_C	mounting force with clip		20		120	N
T_{sta}	storage temperature		-55		150	°C
Weight				6		g

* Irms is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.

In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

Outlines TO-247AD



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