

Sonic-FRD

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

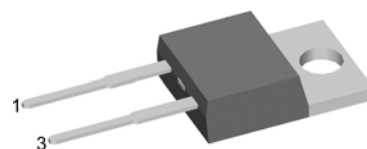
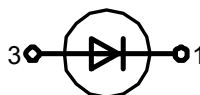
$$V_{RRM} = 600 \text{ V}$$

$$I_{FAV} = 5 \text{ A}$$

$$t_{rr} = 35 \text{ ns}$$

Part number

DHG 5 I 600PA



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-220AC
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

Ratings

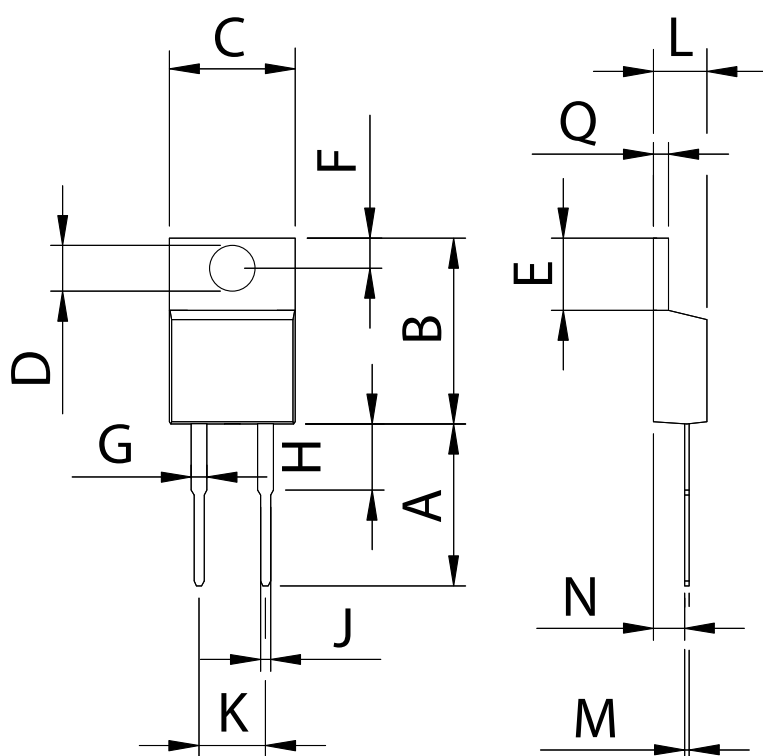
Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^\circ\text{C}$			600	V
I_R	reverse current	$V_R = 600 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$ $V_R = 600 \text{ V}$ $T_{VJ} = 125^\circ\text{C}$			10 1	μA mA
V_F	forward voltage	$I_F = 5 \text{ A}$ $I_F = 10 \text{ A}$ $T_{VJ} = 25^\circ\text{C}$ $I_F = 5 \text{ A}$ $I_F = 10 \text{ A}$ $T_{VJ} = 125^\circ\text{C}$			2.20 2.98 2.02 2.85	V V V V
I_{FAV}	average forward current	rectangular, $d = 0.5$ $T_C = 110^\circ\text{C}$			5	A
V_{F0}	threshold voltage	} for power loss calculation only $T_{VJ} = 150^\circ\text{C}$			1.31	V
r_F	slope resistance				133	m Ω
R_{thJC}	thermal resistance junction to case				3.15	K/W
T_{VJ}	virtual junction temperature		-55		150	$^\circ\text{C}$
P_{tot}	total power dissipation	$T_C = 25^\circ\text{C}$			40	W
I_{FSM}	max. forward surge current	$t_p = 10 \text{ ms (50 Hz), sine}$ $T_{VJ} = 45^\circ\text{C}$			40	A
I_{RM}	max. reverse recovery current	$I_F = 5 \text{ A};$ $-di_F/dt = 100 \text{ A}/\mu\text{s}$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		2		A A
t_{rr}	reverse recovery time	$V_R = 400 \text{ V}$ $T_{VJ} = 25^\circ\text{C}$ $T_{VJ} = 125^\circ\text{C}$		35		ns ns
C_J	junction capacitance	$V_R = 300 \text{ V}; f = 1 \text{ MHz}$ $T_{VJ} = 25^\circ\text{C}$		tbd		pF
E_{AS}	non-repetitive avalanche energy	$I_{AS} = \text{tbd A}; L = 100 \mu\text{H}$ $T_{VJ} = 25^\circ\text{C}$			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*			35	A
R_{thCH}	thermal resistance case to heatsink			0.50		K/W
M_D	mounting torque		0.4		0.6	Nm
F_C	mounting force with clip		20		60	N
T_{sta}	storage temperature		-55		150	°C
Weight				2		g

* I_{rms} 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-220AC



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	12.70	14.73	0.500	0.580
B	14.23	16.51	0.560	0.650
C	9.66	10.66	0.380	0.420
D	3.54	4.08	0.139	0.161
E	5.85	6.85	2.300	0.420
F	2.54	3.42	0.100	0.135
G	1.15	1.77	0.045	0.070
H	-	6.35	-	0.250
J	0.64	0.89	0.025	0.035
K	4.83	5.33	0.190	0.210
L	3.56	4.82	0.140	0.190
M	0.51	0.76	0.020	0.030
N	2.04	2.49	0.080	0.115
Q	0.64	1.39	0.025	0.055

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