advanced

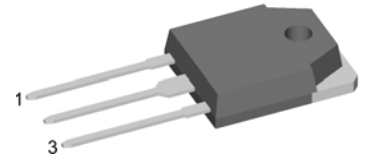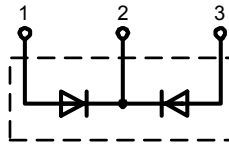## Sonic-FRD

High Performance Fast Recovery Diode
Low Loss and Soft Recovery
Common Cathode

V_{RRM} =   600 V
I_{FAV} = 2x 10 A
t_{rr} =   35 ns

Part number   *(Marking on product)*

DHG 20 C 600QB

Features / Advantages:

● Planar passivated chips
● Very low leakage current
● Very short recovery time
● Improved thermal behaviour
● Very low Irm-values
● Very soft recovery behaviour
● Avalanche voltage rated for reliable
  operation
● Soft reverse recovery for low EMI/RFI
● Low Irm 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-3P
● Industry standard outline
 - compatible with TO-247
● Epoxy meets UL 94V-0
● RoHS compliant

Symbol	Definition	Conditions			**Ratings** min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage			T_{VJ} = 25 °C			600	V
I_R	reverse current	V_R = 600 V		T_{VJ} = 25 °C			15	µA
		V_R = 600 V		T_{VJ} = 125 °C			1.5	mA
V_F	forward voltage	I_F = 10 A		T_{VJ} = 25 °C			2.35	V
		I_F = 20 A						V
		I_F = 10 A		T_{VJ} = 125 °C			2.20	V
		I_F = 20 A						V
I_{FAV}	average forward current	rectangular, d = 0.5		T_C = 100 °C			10	A
V_{F0}	threshold voltage	} for power loss calculation only		T_{VJ} = 150 °C			1.20	V
r_F	slope resistance						93	mΩ
R_{thJC}	thermal resistance junction to case						1.80	K/W
T_{VJ}	virtual junction temperature				-55		150	°C
P_{tot}	total power dissipation			T_C = 25 °C			70	W
I_{FSM}	max. forward surge current	t_p = 10 ms (50 Hz), sine		T_{VJ} = 45 °C			100	A
I_{RM}	max. reverse recovery current	I_F = 10 A;		T_{VJ} = 25 °C		4		A
				T_{VJ} = 125 °C				A
t_{rr}	reverse recovery time	-di$_F$/dt = 200 A/µs		T_{VJ} = 25 °C		35		ns
		V_R = 400 V		T_{VJ} = 125 °C				ns
C_J	junction capacitance	V_R = 300 V; f = 1 MHz		T_{VJ} = 25 °C				pF
E_{AS}	non-repetitive avalanche energy	I_{AS} = A; L = 100 µH		T_{VJ} = 25 °C			tbd	mJ
I_{AR}	repetitive avalanche current	V_A = 1.5·V_R typ.; f = 10 kHz					tbd	A

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advanced

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per pin*				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_{stg}	storage temperature		-55		150	°C
Weight				5		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-3P
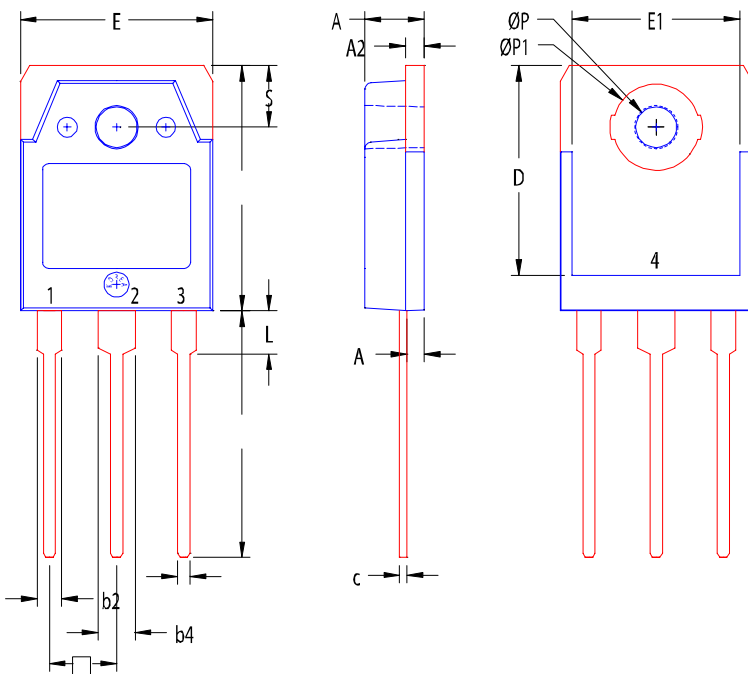
SYM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	.185	.193	4.70	4.90
A1	.051	.059	1.30	1.50
A2	.057	.065	1.45	1.65
b	.035	.045	0.90	1.15
b2	.075	.087	1.90	2.20
b4	.114	.126	2.90	3.20
c	.022	.031	0.55	0.80
D	.780	.791	19.80	20.10
D1	.665	.677	16.90	17.20
E	.610	.622	15.50	15.80
E1	.531	.539	13.50	13.70
e	.215 BSC		5.45 BSC	
L	.779	.795	19.80	20.20
L1	.134	.142	3.40	3.60
ØP	.126	.134	3.20	3.40
ØP1	.272	.280	6.90	7.10
S	.193	.201	4.90	5.10

1 - GATE
2 - DRAIN (COLLECTOR)
3 - SOURCE (EMITTER)
4 - DRAIN (COLLECTOR)

All metal area are tin plated.

IXYS reserves the right to change limits, conditions and dimensions. * Data according to IEC 60747 and per diode unless otherwise specified

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