

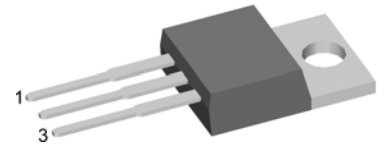
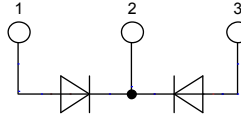
# Sonic Fast Recovery Diode

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

$V_{RRM} = 1200\text{ V}$   
 $I_{FAV} = 2 \times 10\text{ A}$   
 $t_{rr} = 200\text{ ns}$

Part number

**DHG 20 C 1200 PB**



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:

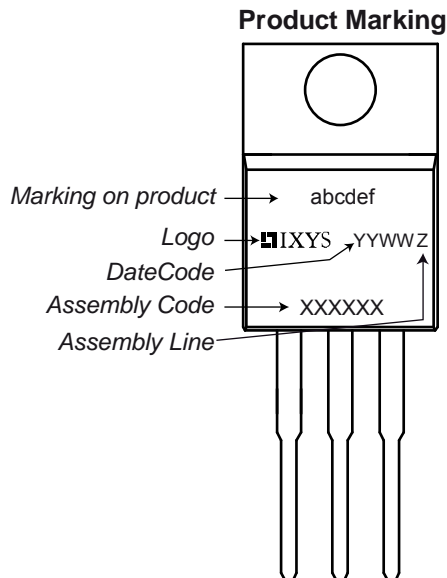
- Housing: TO-220
- Industry standard outline
- Epoxy meets UL 94V-0
- RoHS compliant

### Ratings

Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
$V_{RRM}$	max. repetitive reverse voltage	$T_{VJ} = 25^\circ\text{C}$			1200	V	
$I_R$	reverse current	$V_R = 1200\text{ V}$			10	$\mu\text{A}$	
		$V_R = 1200\text{ V}$			0.2	mA	
$V_F$	forward voltage	$I_F = 10\text{ A}$			2.22	V	
		$I_F = 20\text{ A}$			2.93	V	
		$I_F = 10\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			2.23	V
		$I_F = 20\text{ A}$	$T_{VJ} = 125^\circ\text{C}$			3.14	V
$I_{FAV}$	average forward current	rectangular $d = 0.5$	$T_C = 105^\circ\text{C}$		10	A	
$V_{F0}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^\circ\text{C}$		1.23	V	
$r_F$	slope resistance				90	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				1.50	K/W	
$T_{VJ}$	virtual junction temperature		-55		150	$^\circ\text{C}$	
$P_{tot}$	total power dissipation		$T_C = 25^\circ\text{C}$		85	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine	$T_{VJ} = 45^\circ\text{C}$		60	A	
$I_{RM}$	max. reverse recovery current		$T_{VJ} = 25^\circ\text{C}$		9	A	
		$I_F = 10\text{ A}; V_R = 600\text{ V}$	$T_{VJ} = 125^\circ\text{C}$		10.5	A	
$t_{rr}$	reverse recovery time	$-di_F/dt = 250\text{ A}/\mu\text{s}$	$T_{VJ} = 25^\circ\text{C}$		200	ns	
			$T_{VJ} = 125^\circ\text{C}$		350	ns	
$C_J$	junction capacitance	$V_R = 600\text{ V}; f = 1\text{ MHz}$	$T_{VJ} = 25^\circ\text{C}$		4	pF	

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			35	A
$R_{thCH}$	thermal resistance case to heatsink			0.50		K/W
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N

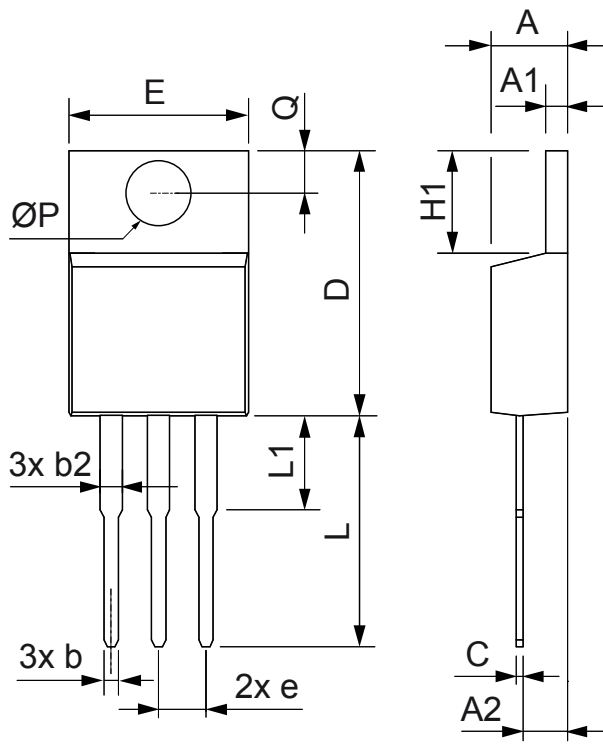
<sup>1)</sup>  $I_{RMS}$  is typically limited by the pin-to-chip resistance (1); or by the current capability of the chip (2).  
 In case of (1) and a common cathode/anode configuration with a non-isolated backside, the current capability can be increased by connecting the backside.


**Part number**

D = Diode  
 H = Sonic Fast Recovery Diode  
 G = extreme fast  
 20 = Current Rating [A]  
 C = Common Cathode  
 1200 = Reverse Voltage [V]  
 PB = TO-220AB (3)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG 20 C 1200 PB	DHG20C1200PB	Tube	50	505280

## Outlines TO-220



Dim.	Millimeter		Inches	
	Min.	Max.	Min.	Max.
A	4.32	4.82	0.170	0.190
A1	1.14	1.39	0.045	0.055
A2	2.29	2.79	0.090	0.110
b	0.64	1.01	0.025	0.040
b2	1.15	1.65	0.045	0.065
C	0.35	0.56	0.014	0.022
D	14.73	16.00	0.580	0.630
E	9.91	10.66	0.390	0.420
e	2.54	BSC	0.100	BSC
H1	5.85	6.85	0.230	0.270
L	12.70	13.97	0.500	0.550
L1	2.79	5.84	0.110	0.230
ØP	3.54	4.08	0.139	0.161
Q	2.54	3.18	0.100	0.125

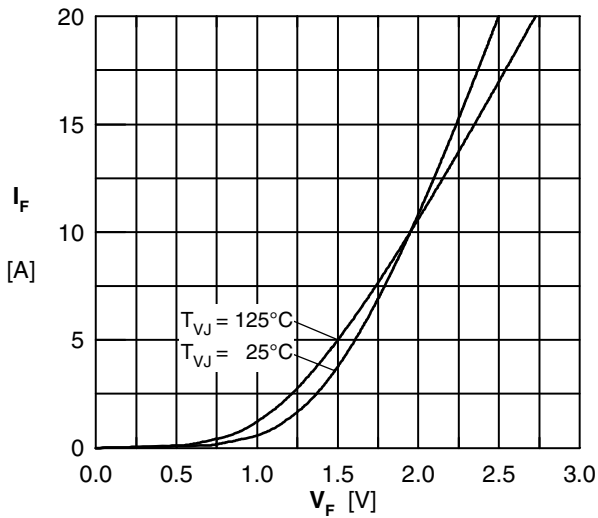


Fig. 1 Typ. forward characteristics

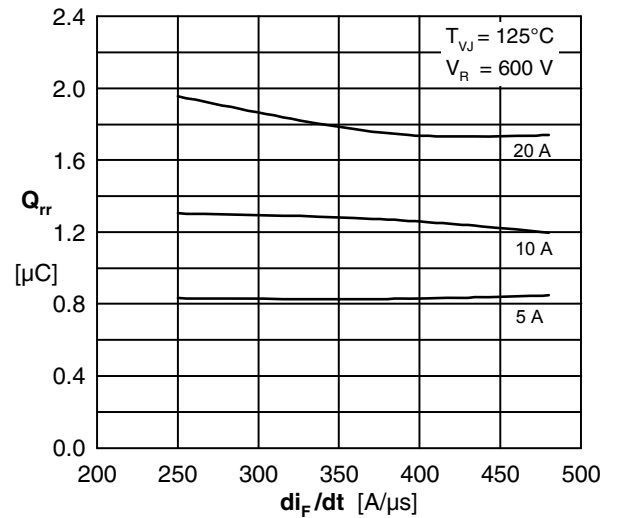


Fig. 2 Typical reverse recovery charge  $Q_{rr}$  versus  $di_F/dt$  (125°C)

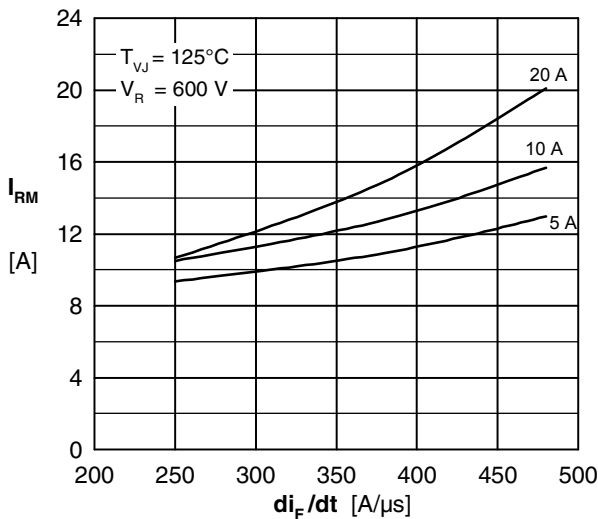


Fig. 3 Typical peak reverse current  $I_{RM}$  versus  $di_F/dt$  (125°C)

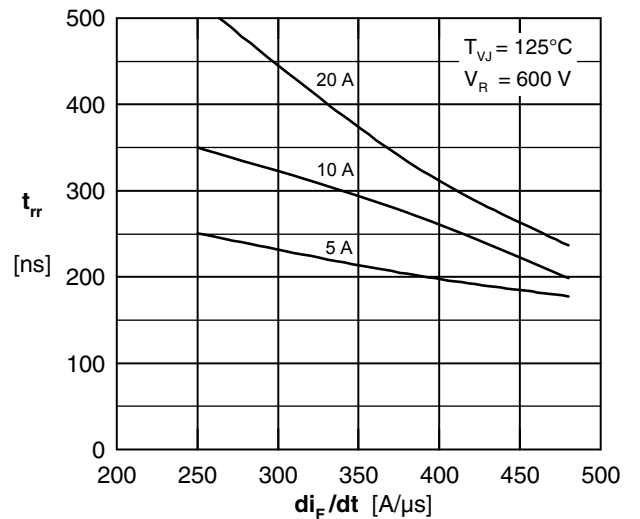


Fig. 4 Typ. recovery time  $t_{rr}$  vs.  $di/dt$  (125°C)

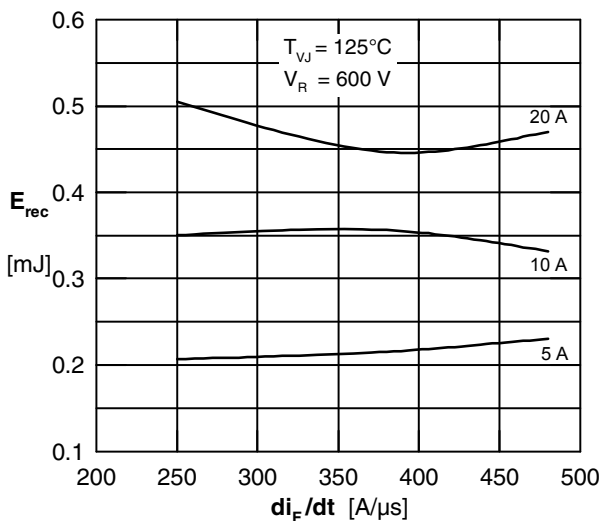


Fig. 5 Typ. recovery energy  $E_{rec}$  vs.  $di_F/dt$  (125°C)

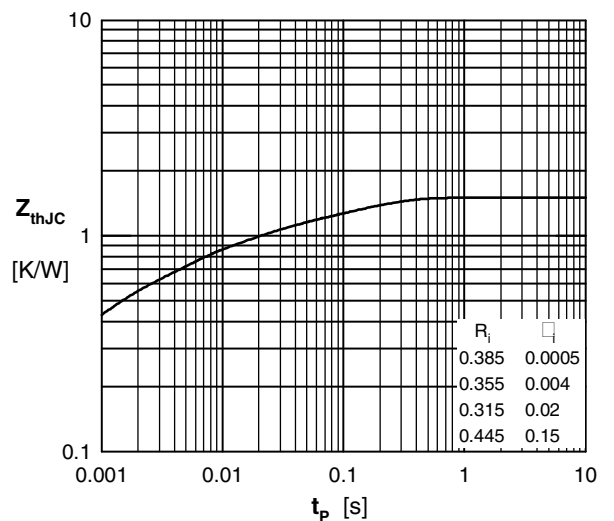


Fig. 6 Typ. transient thermal impedance