

Sonic Fast Recovery Diode

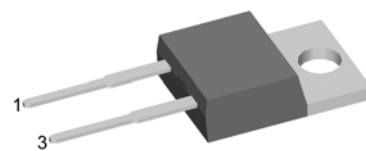
High Performance Fast Recovery Diode

Low Loss and Soft Recovery

Single Diode

Part number

DHG 20 I 1200 PA



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

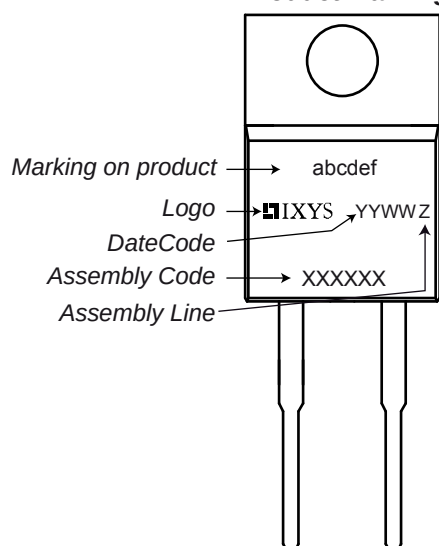
Ratings

Symbol	Definition	Conditions	min.	typ.	max.	Unit
V_{RRM}	max. repetitive reverse voltage	$T_{VJ} = 25^{\circ}\text{C}$			1200	V
I_R	reverse current	$V_R = 1200\text{ V}$ $T_{VJ} = 25^{\circ}\text{C}$			30	μA
		$V_R = 1200\text{ V}$ $T_{VJ} = 125^{\circ}\text{C}$			0.4	mA
V_F	forward voltage	$I_F = 20\text{ A}$ $T_{VJ} = 25^{\circ}\text{C}$			2.24	V
		$I_F = 40\text{ A}$			2.90	V
		$I_F = 20\text{ A}$ $T_{VJ} = 125^{\circ}\text{C}$			2.25	V
		$I_F = 40\text{ A}$			3.17	V
I_{FAV}	average forward current	rectangular $d = 0.5$ $T_C = 95^{\circ}\text{C}$			20	A
V_{FO}	threshold voltage	$T_{VJ} = 150^{\circ}\text{C}$ for power loss calculation only			1.25	V
r_F	slope resistance				45	m Ω
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	$T_C = 25^{\circ}\text{C}$			140	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine $T_{VJ} = 45^{\circ}\text{C}$			150	A
I_{RM}	max. reverse recovery current	$T_{VJ} = 25^{\circ}\text{C}$		15		A
		$I_F = 20\text{ A}; V_R = 600\text{ V}$ $T_{VJ} = 125^{\circ}\text{C}$		20		A
t_{rr}	reverse recovery time	$-di_F/dt = 400\text{ A}/\mu\text{s}$ $T_{VJ} = 25^{\circ}\text{C}$		200		ns
		$T_{VJ} = 125^{\circ}\text{C}$		350		ns
C_J	junction capacitance	$V_R = 600\text{ V}; f = 1\text{ MHz}$ $T_{VJ} = 25^{\circ}\text{C}$		8		pF

preliminary

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

Product Marking



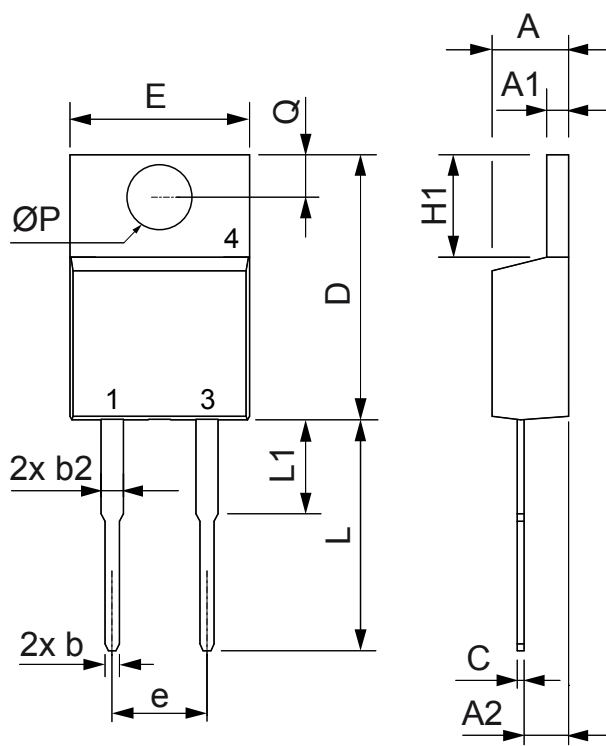
Part number

D = Diode
 H = Sonic Fast Recovery Diode
 G = extreme fast
 20 = Current Rating [A]
 I = Single Diode
 1200 = Reverse Voltage [V]
 PA = TO-220AC (2)

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG 20 I 1200 PA	DHG20I1200PA	Tube	50	504934

Similar Part	Package	Voltage Class
DHG20I1200HA	TO-247AD (2)	1200

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	5.08	BSC	0.200	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

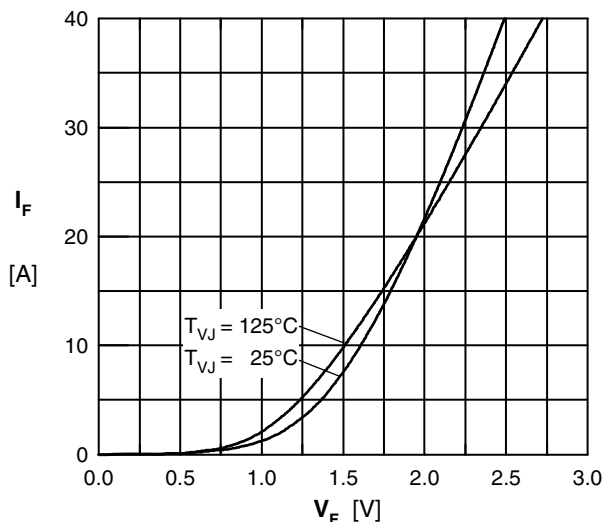


Fig. 1 Typ. Forward current versus V_F

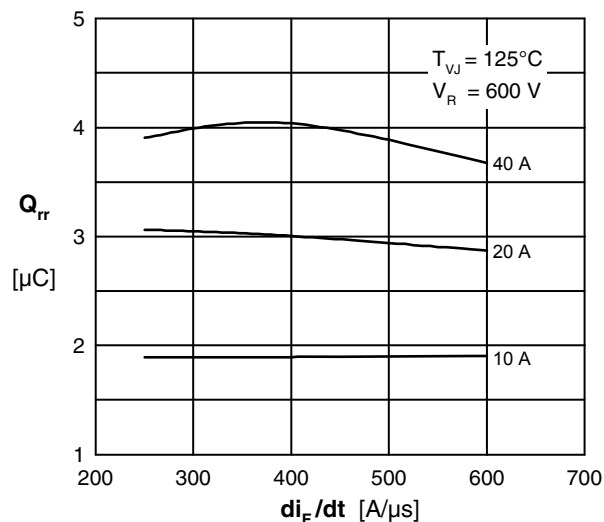


Fig. 2 Typ. reverse recov.charge Q_{rr} vs. di/dt

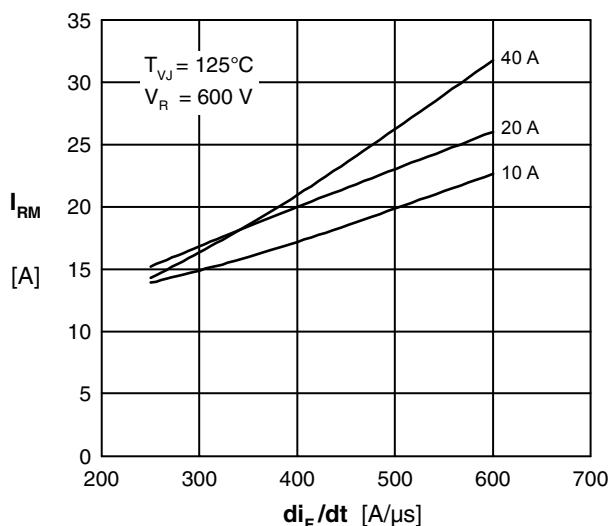


Fig. 3 Typ. peak reverse current I_{RM} vs. di/dt

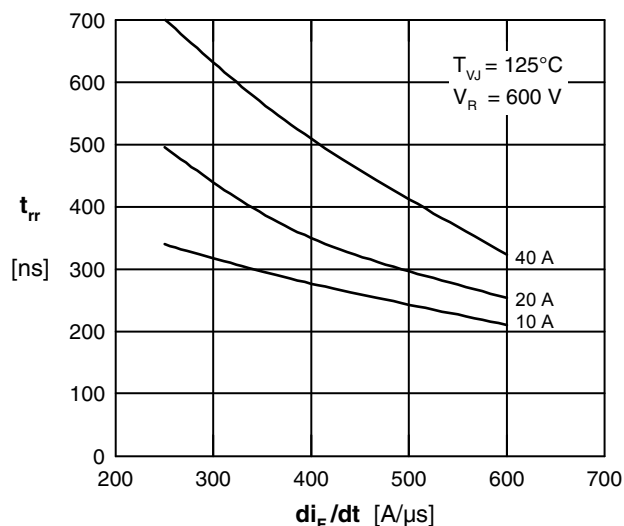


Fig. 4 Typ. recovery time t_{rr} versus di/dt

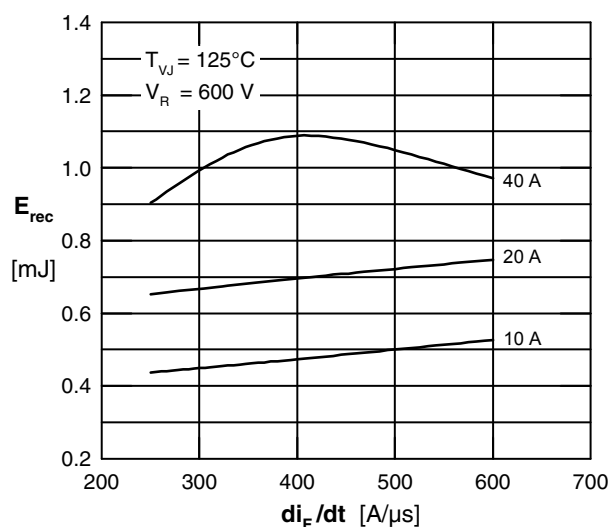


Fig. 5 Typ. recovery energy E_{rec} versus di/dt

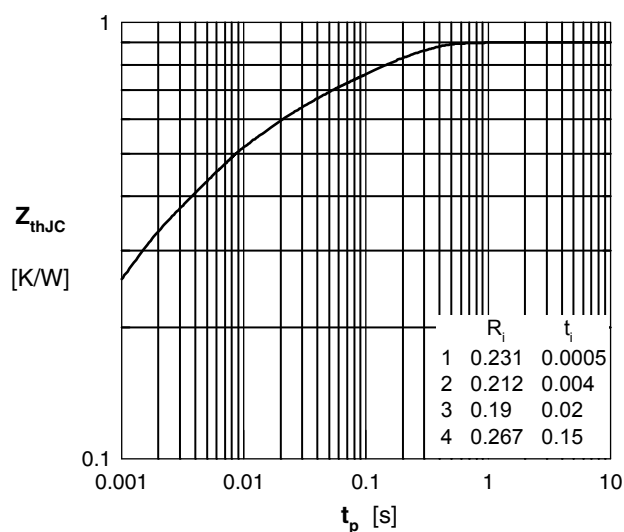


Fig. 6 Typ. transient thermal impedance