

preliminary

Sonic Fast Recovery Diode

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

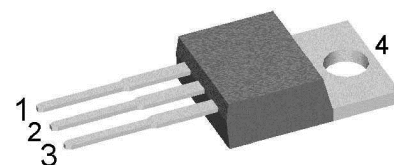
$$I_{FAV} = 2 \times 5 \text{ A}$$

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

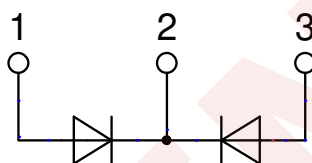
High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Common Cathode

Part number

DHG10C600PB



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-220

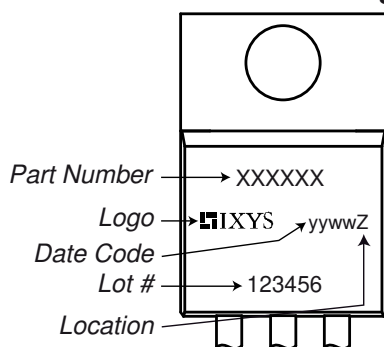
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0

Disclaimer Notice

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Fast Diode				Ratings			
Symbol	Definition	Conditions		min.	typ.	max.	Unit
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				600	V
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}\text{C}$				600	V
I_R	reverse current, drain current	$V_R = 600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$			10	μA
		$V_R = 600\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$			1	mA
V_F	forward voltage drop	$I_F = 5\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$			2.21	V
		$I_F = 10\text{ A}$				3.07	V
		$I_F = 5\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$			2.17	V
		$I_F = 10\text{ A}$				3.13	V
I_{FAV}	average forward current	$T_C = 105^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}\text{C}$			5	A
V_{F0}	threshold voltage	} for power loss calculation only		$T_{VJ} = 150^{\circ}\text{C}$		1.14	V
r_F	slope resistance					185	m Ω
R_{thJC}	thermal resistance junction to case					3.15	K/W
R_{thCH}	thermal resistance case to heatsink				0.5		K/W
P_{tot}	total power dissipation	$T_C = 25^{\circ}\text{C}$				40	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$		$T_{VJ} = 45^{\circ}\text{C}$		40	A
C_J	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$		$T_{VJ} = 25^{\circ}\text{C}$		3	pF
I_{RM}	max. reverse recovery current	$I_F = 5\text{ A}; V_R = 400\text{ V}$ $-di_F/dt = 100\text{ A}/\mu\text{s}$		$T_{VJ} = 25^{\circ}\text{C}$		2	A
				$T_{VJ} = \text{ }^{\circ}\text{C}$		tbd	A
t_{rr}	reverse recovery time			$T_{VJ} = 25^{\circ}\text{C}$		35	ns
				$T_{VJ} = \text{ }^{\circ}\text{C}$		tbd	ns

Package TO-220			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
I_{RMS}	RMS current	per terminal ¹⁾			35	A
T_{VJ}	virtual junction temperature		-55		150	°C
T_{op}	operation temperature		-55		125	°C
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

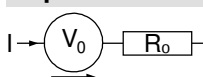
Product Marking

Part description

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

Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG10C600PB	DHG10C600PB	Tube	50	505294

Equivalent Circuits for Simulation

* on die level

 $T_{VJ} = 150^{\circ}\text{C}$

Fast Diode
 $V_{0\max}$ threshold voltage

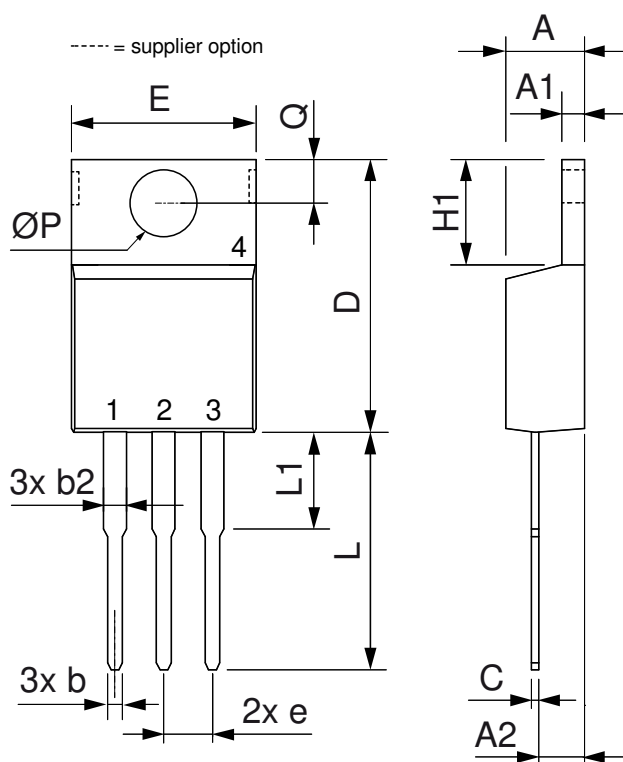
1.14

V

 $R_{0\max}$ slope resistance *

182

mΩ

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

