



preliminary

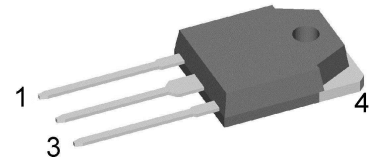
# Sonic Fast Recovery Diode

$V_{RRM} = 600\text{ V}$   
 $I_{FAV} = 2 \times 10\text{ A}$   
 $t_{rr} = 35\text{ ns}$

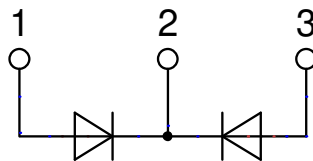
High Performance Fast Recovery Diode  
 Low Loss and Soft Recovery  
 Common Cathode

Part number

**DHG20C600QB**



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-3P

- Industry standard outline compatible with TO-247
- RoHS compliant
- Epoxy meets UL 94V-0

### Disclaimer Notice

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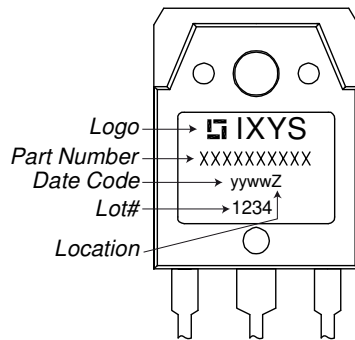
Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
$I_R$	reverse current, drain current	$V_R = 600 V$	$T_{VJ} = 25^{\circ}C$		15	$\mu A$	
		$V_R = 600 V$	$T_{VJ} = 125^{\circ}C$		1.2	mA	
$V_F$	forward voltage drop	$I_F = 10 A$	$T_{VJ} = 25^{\circ}C$		2.22	V	
		$I_F = 20 A$			3.12	V	
		$I_F = 10 A$	$T_{VJ} = 125^{\circ}C$		2.17	V	
		$I_F = 20 A$			3.27	V	
$I_{FAV}$	average forward current	$T_C = 95^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}C$		10	A	
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}C$		1.04	V	
$r_F$	slope resistance				104	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				1.8	K/W	
$R_{thCH}$	thermal resistance case to heatsink			0.3		K/W	
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		70	W	
$I_{FSM}$	max. forward surge current	$t = 10 \text{ ms}; (50 \text{ Hz}), \text{ sine}; V_R = 0 \text{ V}$	$T_{VJ} = 45^{\circ}C$		80	A	
$C_J$	junction capacitance	$V_R = 400 \text{ V} \quad f = 1 \text{ MHz}$	$T_{VJ} = 25^{\circ}C$		6	pF	
$I_{RM}$	max. reverse recovery current	} $I_F = 10 \text{ A}; V_R = 400 \text{ V}$ $-di_F / dt = 200 \text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}C$		4	A	
			$T_{VJ} = \text{ }^{\circ}C$		tbd	A	
$t_{rr}$	reverse recovery time		$T_{VJ} = 25^{\circ}C$		35	ns	
			$T_{VJ} = \text{ }^{\circ}C$		tbd	ns	



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Package TO-3P			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal <sup>1)</sup>			50	A
$T_{VJ}$	virtual junction temperature		-55		150	°C
$T_{op}$	operation temperature		-55		125	°C
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				5		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

**Product Marking**



**Part description**

- D = Diode
- H = Sonic Fast Recovery Diode
- G = extreme fast
- 20 = Current Rating [A]
- C = Common Cathode
- 600 = Reverse Voltage [V]
- QB = TO-3P (3)

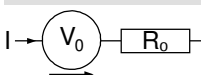
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG20C600QB	DHG20C600QB	Tube	30	503856

Similar Part	Package	Voltage class
DHG20C600PB	TO-220AB (3)	600

**Equivalent Circuits for Simulation**

*\* on die level*

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

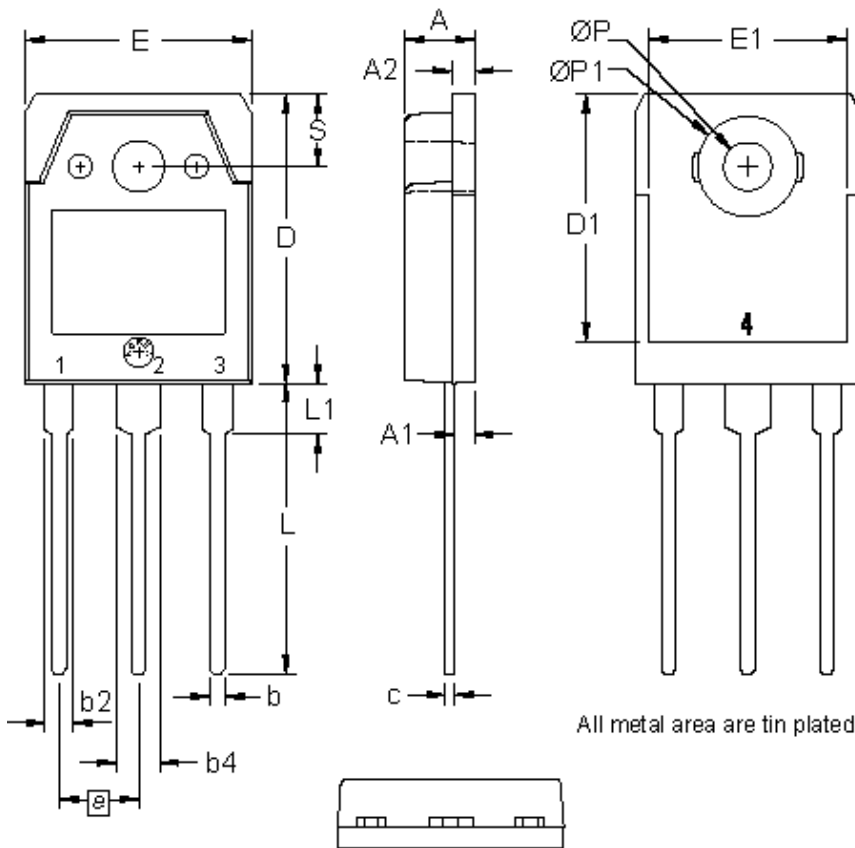


**Fast Diode**

$V_{0\ max}$	threshold voltage	1.04	V
$R_{0\ max}$	slope resistance *	101	mΩ



**Outlines TO-3P**



Dim.	Millimeter		Inches	
	min	max	min	max
A	4.70	4.90	0.185	0.193
A1	1.30	1.50	0.051	0.059
A2	1.45	1.65	0.057	0.065
b	0.90	1.15	0.035	0.045
b2	1.90	2.20	0.075	0.087
b4	2.90	3.20	0.114	0.126
c	0.55	0.80	0.022	0.031
D	19.80	20.10	0.780	0.791
D1	16.90	17.20	0.665	0.677
E	15.50	15.80	0.610	0.622
E1	13.50	13.70	0.531	0.539
e	5.45 BSC		0.215 BSC	
L	19.80	20.20	0.780	0.795
L1	3.40	3.60	0.134	0.142
Ø P	3.20	3.40	0.126	0.134
ØP1	6.90	7.10	0.272	0.280
S	4.90	5.10	0.193	0.201

