



preliminary

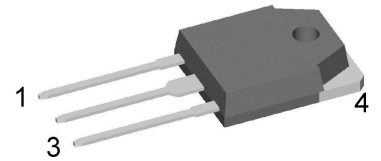
Sonic Fast Recovery Diode

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

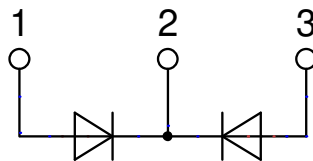
High Performance Fast Recovery Diode
 Low Loss and Soft Recovery
 Common Cathode

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

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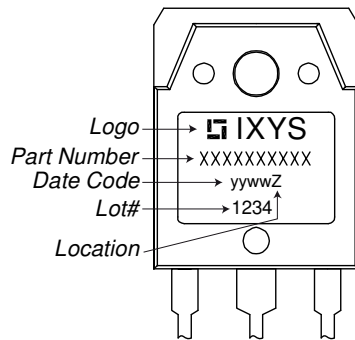
Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
V_{RSM}	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
V_{RRM}	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
I_R	reverse current, drain current	$V_R = 600 V$	$T_{VJ} = 25^{\circ}C$		15	μA	
		$V_R = 600 V$	$T_{VJ} = 125^{\circ}C$		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 Ω	
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	$t = 10 ms; (50 Hz), sine; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		80	A	
C_J	junction capacitance	$V_R = 400 V$ $f = 1 MHz$	$T_{VJ} = 25^{\circ}C$		6	pF	
I_{RM}	max. reverse recovery current	} $I_F = 10 A; V_R = 400 V$ $-di_F / dt = 200 A/\mu s$	$T_{VJ} = 25^{\circ}C$		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 ¹⁾			50	A
T_{VJ}	virtual junction temperature		-55		150	°C
T_{op}	operation temperature		-55		125	°C
T_{stg}	storage temperature		-55		150	°C
Weight				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*

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

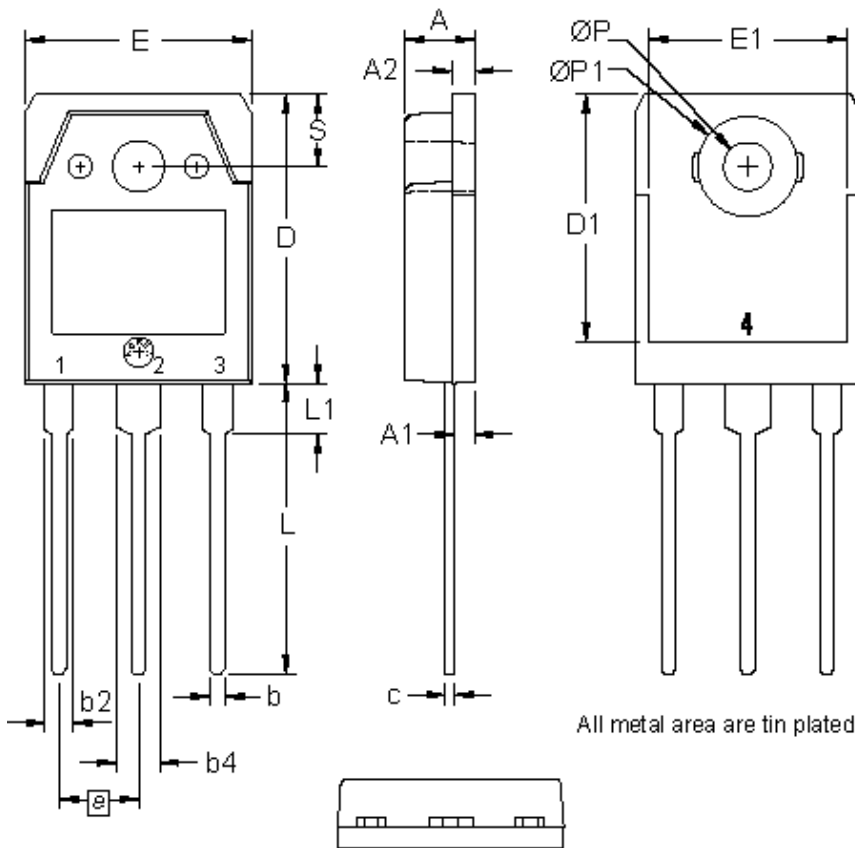


Fast Diode

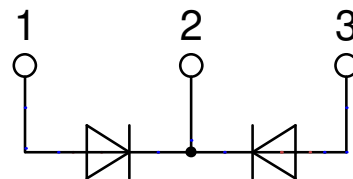
$V_{0\ max}$	threshold voltage	1.04	V
$R_{0\ max}$	slope resistance *	101	mΩ



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



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