



preliminary

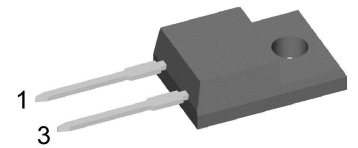
# Sonic Fast Recovery Diode

$V_{RRM}$	=	<b>600 V</b>
$I_{FAV}$	=	<b>5 A</b>
$t_{rr}$	=	<b>35 ns</b>

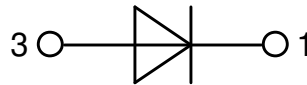
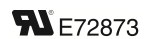
High Performance Fast Recovery Diode  
Low Loss and Soft Recovery  
Single Diode

Part number

**DHG5I600PM**



Backside: isolated



### 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-220FP

- Isolation Voltage: 2500 V~
- Industry standard outline
- RoHS compliant
- Epoxy meets UL 94V-0
- Soldering pins for PCB mounting
- Base plate: Plastic overmolded tab
- Reduced weight

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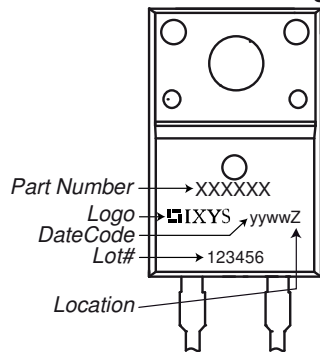


Fast Diode				Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit	
$V_{RSM}$	max. non-repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
$V_{RRM}$	max. repetitive reverse blocking voltage	$T_{VJ} = 25^{\circ}C$			600	V	
$I_R$	reverse current, drain current	$V_R = 600 V$	$T_{VJ} = 25^{\circ}C$		10	$\mu A$	
		$V_R = 600 V$	$T_{VJ} = 125^{\circ}C$		1	mA	
$V_F$	forward voltage drop	$I_F = 5 A$	$T_{VJ} = 25^{\circ}C$		2.21	V	
		$I_F = 10 A$			3.07	V	
		$I_F = 5 A$	$T_{VJ} = 125^{\circ}C$		2.17	V	
		$I_F = 10 A$			3.13	V	
$I_{FAV}$	average forward current	$T_C = 85^{\circ}C$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}C$		5	A	
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}C$		1.14	V	
$r_F$	slope resistance				185	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				4.2	K/W	
$R_{thCH}$	thermal resistance case to heatsink			0.5		K/W	
$P_{tot}$	total power dissipation		$T_C = 25^{\circ}C$		30	W	
$I_{FSM}$	max. forward surge current	$t = 10 ms; (50 Hz), sine; V_R = 0 V$	$T_{VJ} = 45^{\circ}C$		40	A	
$C_J$	junction capacitance	$V_R = 400 V f = 1 MHz$	$T_{VJ} = 25^{\circ}C$		3	pF	
$I_{RM}$	max. reverse recovery current	} $I_F = 5 A; V_R = 400 V$ $-di_F / dt = 100 A/\mu s$	$T_{VJ} = 25^{\circ}C$		2	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	



Package TO-220FP		Ratings				
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			35	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>				2		g
$M_D$	mounting torque		0.4		0.6	Nm
$F_C$	mounting force with clip		20		60	N
$d_{Spp/App}$	creepage distance on surface   striking distance through air	terminal to terminal	3.2	2.7		mm
$d_{Spb/Apb}$		terminal to backside	2.5	2.5		mm
$V_{ISOL}$	isolation voltage	t = 1 second	2500			V
		t = 1 minute	2100			V

**Product Marking**



**Part description**

- D = Diode
- H = Sonic Fast Recovery Diode
- G = extreme fast
- 5 = Current Rating [A]
- I = Single Diode
- 600 = Reverse Voltage [V]
- PM = TO-220ACFP (2)

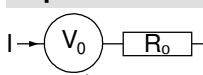
Ordering	Ordering Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG5I600PM	DHG5I600PM	Tube	50	504026

Similar Part	Package	Voltage class
DHG5I600PA	TO-220AC (2)	600

**Equivalent Circuits for Simulation**

\* on die level

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

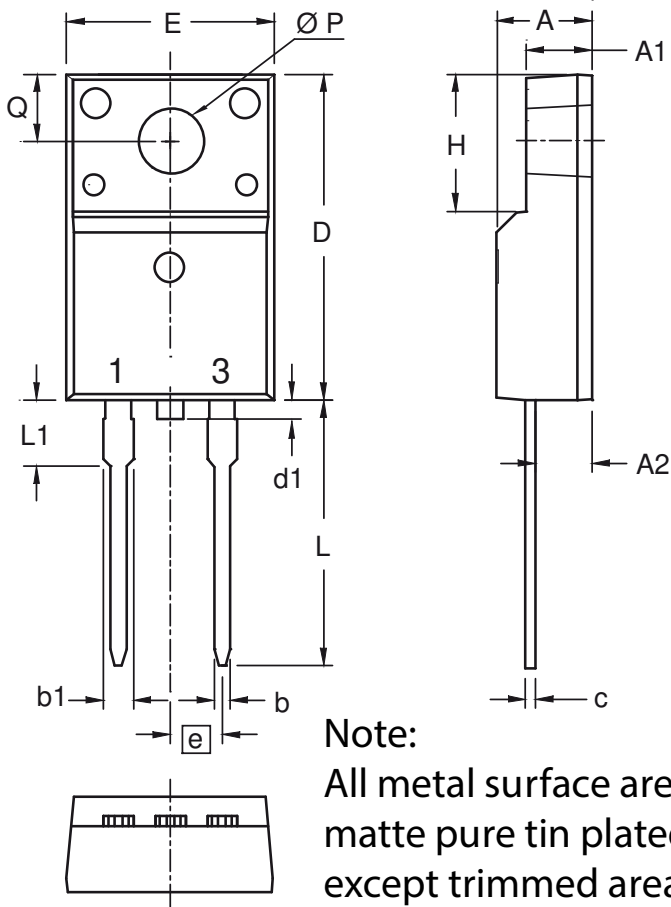


**Fast Diode**

$V_{0\ max}$	threshold voltage	1.14	V
$R_{0\ max}$	slope resistance *	182	mΩ



**Outlines TO-220FP**



Dim.	Millimeters		Inches	
	min	max	min	max
A	4.50	4.90	0.177	0.193
A1	2.34	2.74	0.092	0.108
A2	2.56	2.96	0.101	0.117
b	0.70	0.90	0.028	0.035
b1	1.27	1.47	0.050	0.058
c	0.45	0.60	0.018	0.024
D	15.67	16.07	0.617	0.633
d1	0	1.10	0	0.043
E	9.96	10.36	0.392	0.408
e	2.54 BSC		0.100 BSC	
H	6.48	6.88	0.255	0.271
L	12.68	13.28	0.499	0.523
L1	3.03	3.43	0.119	0.135
ØP	3.08	3.28	0.121	0.129
Q	3.20	3.40	0.126	0.134



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