

## Sonic Fast Recovery Diode

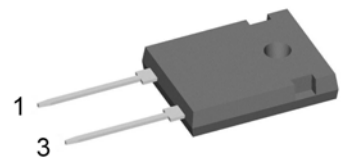
advanced

$V_{RRM}$	=	600V
$I_{FAV}$	=	60A
$t_{rr}$	=	35ns

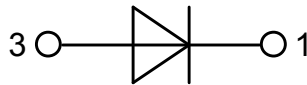
High Performance Fast Recovery Diode  
Low Loss and Soft Recovery  
Single Diode

Part number

DHG60I600HA



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)

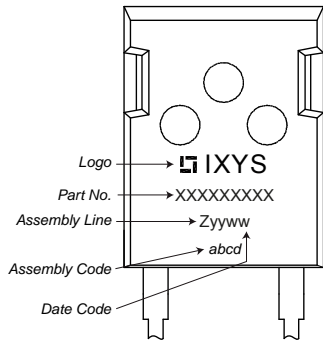
### Package: TO-247

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

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	$V_R = 600\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$		200	$\mu\text{A}$	
		$V_R = 600\text{ V}$	$T_{VJ} = 125^{\circ}\text{C}$		4	mA	
$V_F$	forward voltage drop	$I_F = 60\text{ A}$	$T_{VJ} = 25^{\circ}\text{C}$		2.39	V	
					3.30	V	
		$I_F = 60\text{ A}$	$T_{VJ} = 125^{\circ}\text{C}$		2.41	V	
					3.50	V	
$I_{FAV}$	average forward current	$T_C = 85^{\circ}\text{C}$ rectangular $d = 0.5$	$T_{VJ} = 150^{\circ}\text{C}$		60	A	
$V_{FO}$	threshold voltage	} for power loss calculation only	$T_{VJ} = 150^{\circ}\text{C}$		1.20	V	
$r_F$	slope resistance				19.5	m $\Omega$	
$R_{thJC}$	thermal resistance junction to case				0.3	K/W	
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W	
$P_{tot}$	total power dissipation	$T_C = 25^{\circ}\text{C}$			415	W	
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}; (50\text{ Hz}), \text{ sine}; V_R = 0\text{ V}$	$T_{VJ} = 45^{\circ}\text{C}$		430	A	
$C_J$	junction capacitance	$V_R = 400\text{ V}$ $f = 1\text{ MHz}$	$T_{VJ} = 25^{\circ}\text{C}$		47	pF	
$I_{RM}$	max. reverse recovery current	} $I_F = 60\text{ A}; V_R = 400\text{ V}$	$T_{VJ} = 25^{\circ}\text{C}$		24	A	
			$T_{VJ} = 125^{\circ}\text{C}$		tbd	A	
$t_{rr}$	reverse recovery time	} $-di_F/dt = 1200\text{ A}/\mu\text{s}$	$T_{VJ} = 25^{\circ}\text{C}$		35	ns	
			$T_{VJ} = 125^{\circ}\text{C}$		tbd	ns	

Package TO-247			Ratings			
Symbol	Definition	Conditions	min.	typ.	max.	Unit
$I_{RMS}$	RMS current	per terminal			70	A
$T_{stg}$	storage temperature		-55		150	°C
$T_{vj}$	virtual junction temperature		-55		150	°C
<b>Weight</b>				6		g
$M_D$	mounting torque		0.8		1.2	Nm
$F_C$	mounting force with clip		20		120	N

### Product Marking



### Part number

- D = Diode
- H = Sonic Fast Recovery Diode
- G = extreme fast
- 60 = Current Rating [A]
- I = Single Diode
- 600 = Reverse Voltage [V]
- HA = TO-247AD (2)

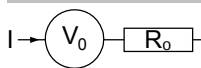
Ordering	Part Number	Marking on Product	Delivery Mode	Quantity	Code No.
Standard	DHG60I600HA	DHG60I600HA	Tube	30	510214

Similar Part	Package	Voltage class
DPH30IS600HI	ISOPLUS247 (2)	600
DSEP60-06A	TO-247AD (2)	600
DSEP60-06AT	TO-268AA (D3Pak) (2)	600

### Equivalent Circuits for Simulation

\* on die level

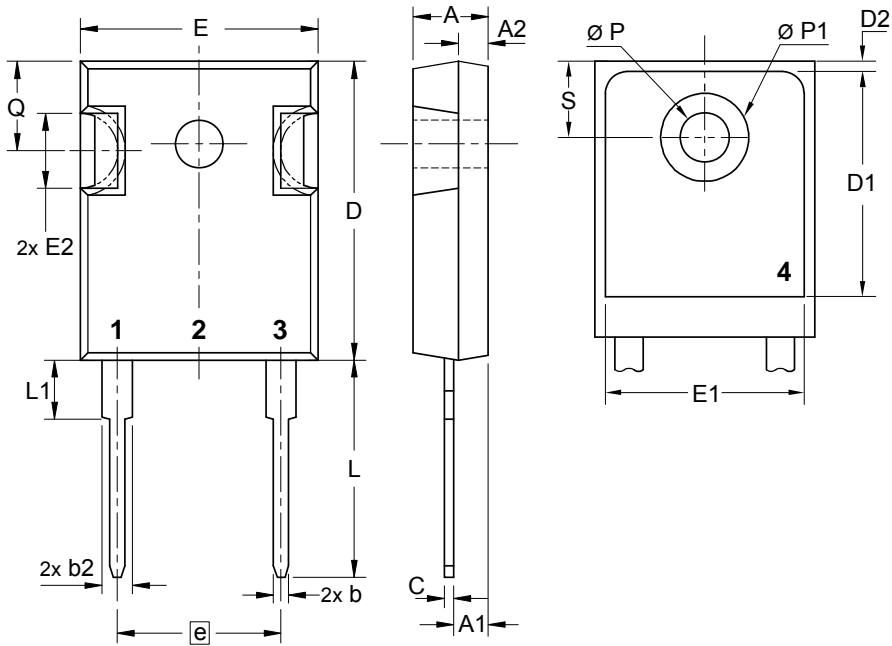
$T_{vj} = 150\text{ °C}$



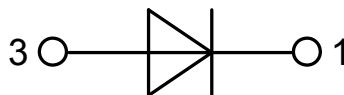
**Fast Diode**

$V_{0\ max}$	threshold voltage	1.2	V
$R_{0\ max}$	slope resistance *	17	mΩ

Outlines TO-247



Sym.	Inches		Millimeter	
	min.	max.	min.	max.
A	0.185	0.209	4.70	5.30
A1	0.087	0.102	2.21	2.59
A2	0.059	0.098	1.50	2.49
D	0.819	0.845	20.79	21.45
E	0.610	0.640	15.48	16.24
E2	0.170	0.216	4.31	5.48
e	0.430 BSC		10.92 BSC	
L	0.780	0.800	19.80	20.30
L1	-	0.177	-	4.49
Ø P	0.140	0.144	3.55	3.65
Q	0.212	0.244	5.38	6.19
S	0.242 BSC		6.14 BSC	
b	0.039	0.055	0.99	1.40
b2	0.065	0.094	1.65	2.39
b4	0.102	0.135	2.59	3.43
c	0.015	0.035	0.38	0.89
D1	0.515	-	13.07	-
D2	0.020	0.053	0.51	1.35
E1	0.530	-	13.45	-
Ø P1	-	0.29	-	7.39



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