

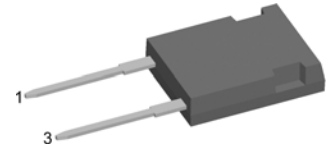
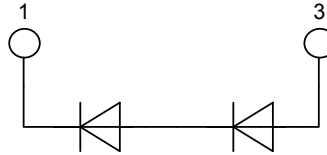
# HiPerDynFRED<sup>2</sup>

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

**V<sub>RRM</sub> = 600 V**  
**I<sub>FAV</sub> = 30 A**  
**t<sub>rr</sub> = 35 ns**

Part number

**DPH 30 IS 600 HI**



Backside: isolated

E72873

**Features / Advantages:**

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behaviour
- Very low I<sub>rm</sub>-values
- Very soft recovery behaviour
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Low I<sub>rm</sub> 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)

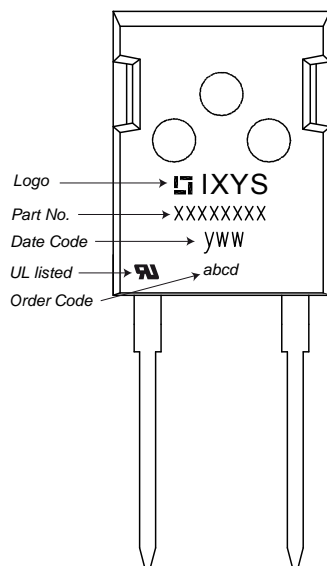
**Package:**

- Housing: ISOPLUS247
- Industry standard outline
- DCB isolated backside
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

**Ratings**

Symbol	Definition	Conditions	Ratings			Unit	
			min.	typ.	max.		
V <sub>RRM</sub>	max. repetitive reverse voltage	T <sub>VJ</sub> = 25 °C			600	V	
I <sub>R</sub>	reverse current	V <sub>R</sub> = 600 V			1	μA	
		V <sub>R</sub> = 600 V			0.2	mA	
V <sub>F</sub>	forward voltage	I <sub>F</sub> = 30 A			2.48	V	
		I <sub>F</sub> = 60 A			3.02	V	
		I <sub>F</sub> = 30 A	T <sub>VJ</sub> = 150 °C			1.89	V
		I <sub>F</sub> = 60 A	T <sub>VJ</sub> = 150 °C			2.45	V
I <sub>FAV</sub>	average forward current	rectangular d = 0.5			30	A	
V <sub>F0</sub>	threshold voltage	} for power loss calculation only			1.10	V	
r <sub>F</sub>	slope resistance				12.6	mΩ	
R <sub>thJC</sub>	thermal resistance junction to case				0.55	K/W	
T <sub>VJ</sub>	virtual junction temperature		-55		175	°C	
P <sub>tot</sub>	total power dissipation	T <sub>C</sub> = 25 °C			285	W	
I <sub>FSM</sub>	max. forward surge current	t = 10 ms (50 Hz), sine			450	A	
I <sub>RM</sub>	max. reverse recovery current	T <sub>VJ</sub> = 25 °C			3	A	
		I <sub>F</sub> = 30 A; V <sub>R</sub> = 400 V			8	A	
t <sub>rr</sub>	reverse recovery time	-di <sub>F</sub> /dt = 200 A/μs			35	ns	
		T <sub>VJ</sub> = 125 °C			65	ns	
C <sub>J</sub>	junction capacitance	V <sub>R</sub> = 400 V; f = 1 MHz			30	pF	

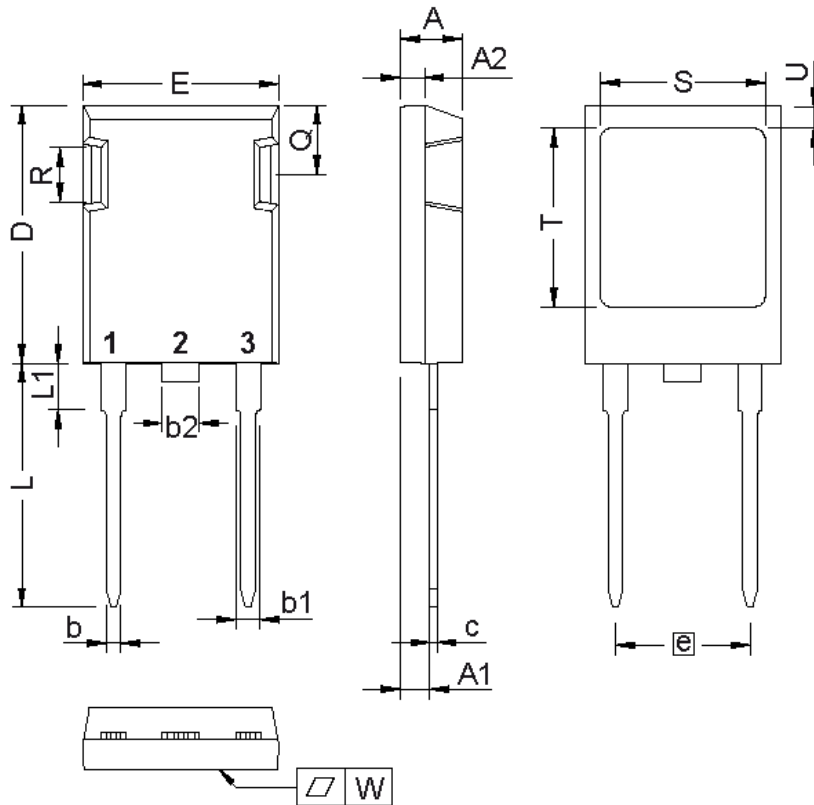
Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per terminal			70	A
$R_{thCH}$	thermal resistance case to heatsink			0.25		K/W
$T_{stg}$	storage temperature		-55		150	°C
<b>Weight</b>				6		g
$F_C$	mounting force with clip		20		120	N
$V_{ISOL}$	isolation voltage	t = 1 second	3600			V
		t = 1 minute	3000			V
$d_{Spp/APP}$	creepage   striking distance on surface   through air	terminal to terminal	5.5			mm
$d_{Spb/APb}$	creepage   striking distance on surface   through air	terminal to backside	5.5			mm

**Product Marking**

**Part number**

- D = Diode
- P = HiPerFRED
- H = HiPerDyn
- 30 = Current Rating [A]
- IS = Single Diode
- 600 = Reverse Voltage [V]
- HI = ISOPLUS247 (2)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPH 30 IS 600 HI	DPH30IS600HI	Tube	30	506235

Similar Part	Package	Voltage Class
DHG60I600HA	TO-247AD (2)	600
DSEP60-06A	TO-247AD (2)	600
DSEP60-06AT	TO-268AA (D3Pak)	600

**Outlines ISOPLUS247**


Dim.	Millimeter		Inches	
	min	max	min	max
A	4.83	5.21	0.190	0.205
A1	2.29	2.54	0.090	0.100
A2	1.91	2.16	0.075	0.085
b	1.14	1.40	0.045	0.055
b1	1.91	2.15	0.075	0.085
b2	2.92	3.20	0.115	0.126
c	0.61	0.83	0.024	0.033
D	20.80	21.34	0.819	0.840
E	15.75	16.13	0.620	0.635
e	10.90 BSC		0.430 BSC	
L	19.81	20.60	0.780	0.811
L1	3.81	4.38	0.150	0.172
L2	0.00	2.54	0.000	0.100
Q	5.59	6.20	0.220	0.244
R	4.32	4.85	0.170	0.191
S	13.21	13.72	0.520	0.540
T	15.75	16.26	0.620	0.640
U	1.65	2.03	0.065	0.080
W	-	0.10	-	0.004

Die konvexe Form des Substrates ist typ. < 0.04 mm über der Kunststoffoberfläche der Bauteilunterseite  
 The convex bow of substrate is typ. < 0.04 mm over plastic surface level of device bottom side

Die Gehäuseabmessungen entsprechen dem Typ TO-247 AD gemäß JEDEC außer Schraubloch und  $L_{max}$ .  
 This drawing will meet all dimensions requirement of JEDEC outline TO-247 AD except screw hole and except  $L_{max}$ .

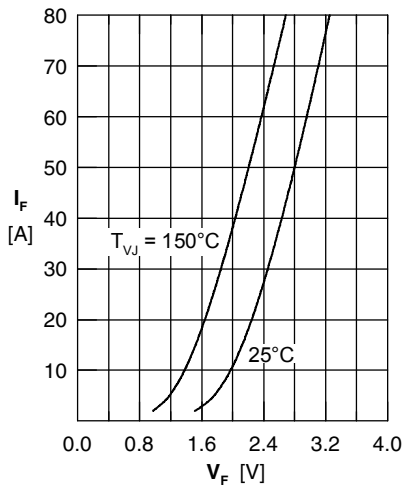


Fig. 1 Forward current  $I_F$  versus forward voltage  $V_F$

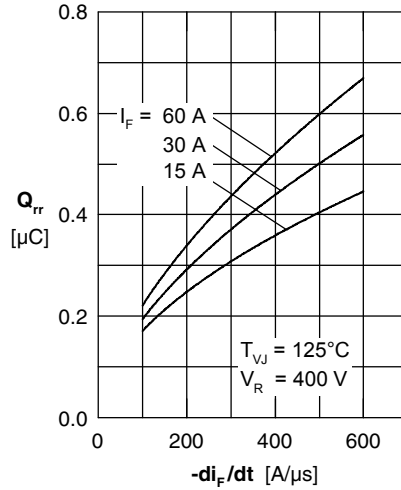


Fig. 2 Typ. reverse recovery charge  $Q_{rr}$  versus  $-di_F/dt$

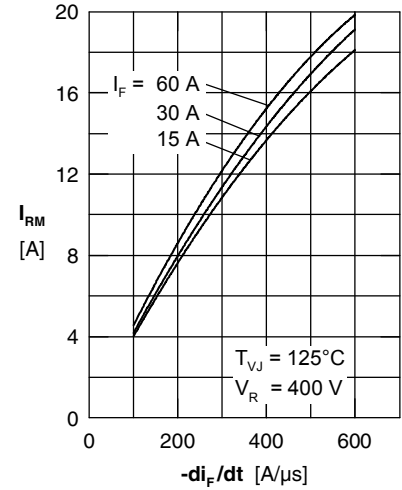


Fig. 3 Typ. reverse recovery current  $I_{RM}$  versus  $-di_F/dt$

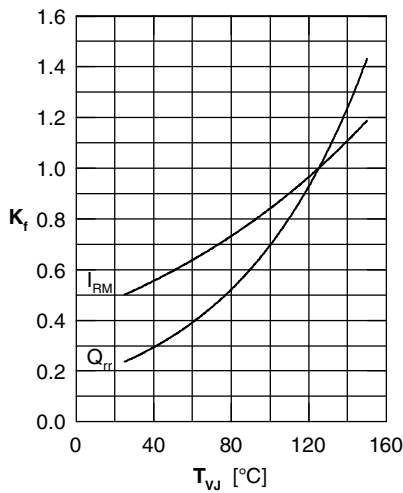


Fig. 4 Dynamic parameters  $Q_{rr}$ ,  $I_{RM}$  versus  $T_{VJ}$

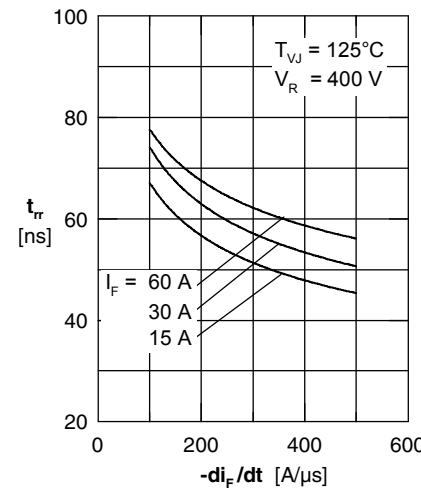


Fig. 5 Typ. reverse recovery time  $t_{rr}$  versus  $-di_F/dt$

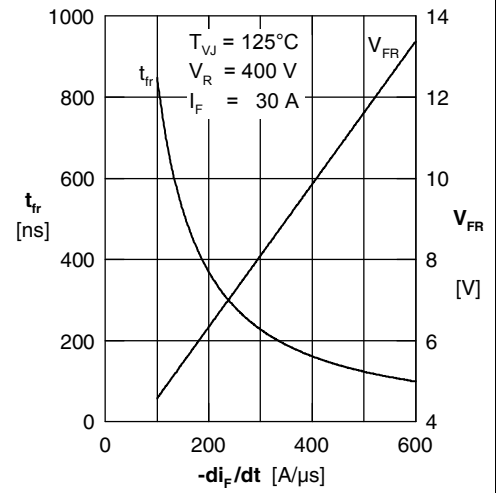


Fig. 6 Typ. forward recovery voltage  $V_{FR}$  & forward recovery time  $t_{fr}$  vs.  $di_F/dt$

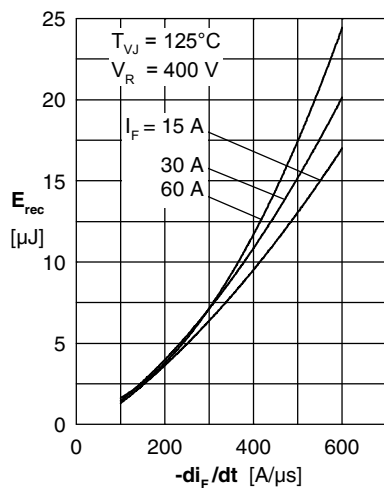


Fig. 7 Typ. recovery energy  $E_{rec}$  versus  $-di_F/dt$

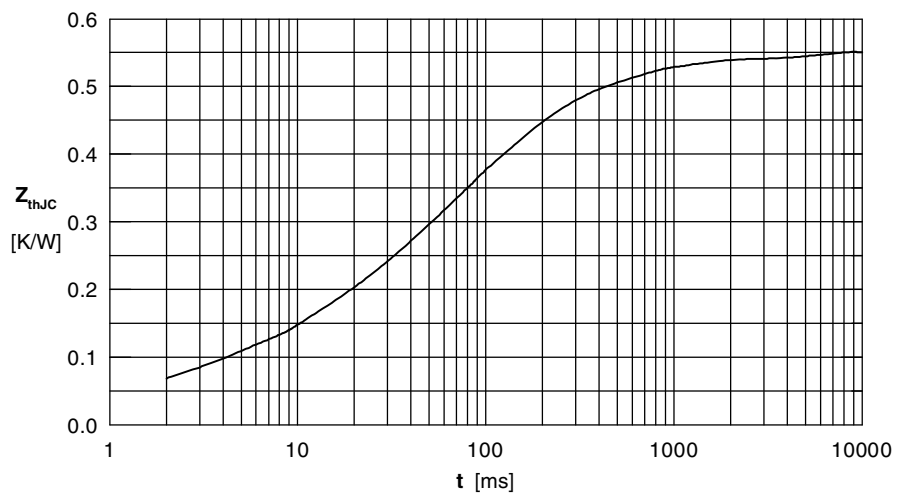


Fig. 8 Transient thermal impedance junction to case