

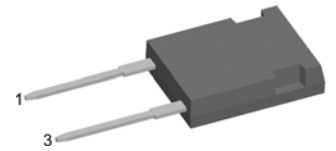
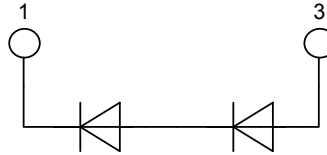
HiPerDynFRED²

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

$V_{RRM} = 600\text{ V}$
 $I_{FAV} = 30\text{ A}$
 $t_{rr} = 35\text{ ns}$

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_{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)

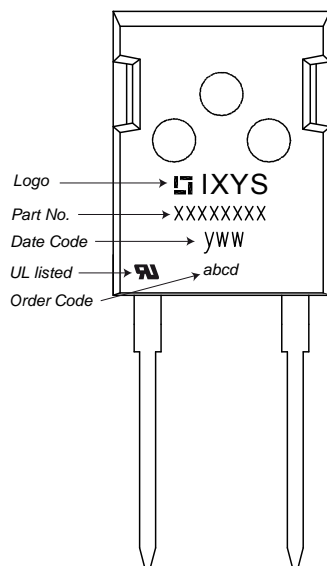
Package:

- 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_{RRM}	max. repetitive reverse voltage				600	V
I_R	reverse current	$V_R = 600\text{ V}$			1	μA
		$V_R = 600\text{ V}$			0.2	mA
V_F	forward voltage	$I_F = 30\text{ A}$			2.48	V
		$I_F = 60\text{ A}$			3.02	V
		$I_F = 30\text{ A}$			1.89	V
		$I_F = 60\text{ A}$			2.45	V
I_{FAV}	average forward current	rectangular $d = 0.5$			30	A
V_{F0}	threshold voltage	} for power loss calculation only			1.10	V
r_F	slope resistance				12.6	m Ω
R_{thJC}	thermal resistance junction to case				0.55	K/W
T_{VJ}	virtual junction temperature		-55		175	$^{\circ}\text{C}$
P_{tot}	total power dissipation				285	W
I_{FSM}	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			450	A
I_{RM}	max. reverse recovery current				3	A
		$I_F = 30\text{ A}; V_R = 400\text{ V}$			8	A
t_{rr}	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$			35	ns
					65	ns
C_J	junction capacitance	$V_R = 400\text{ V}; f = 1\text{ MHz}$			30	pF

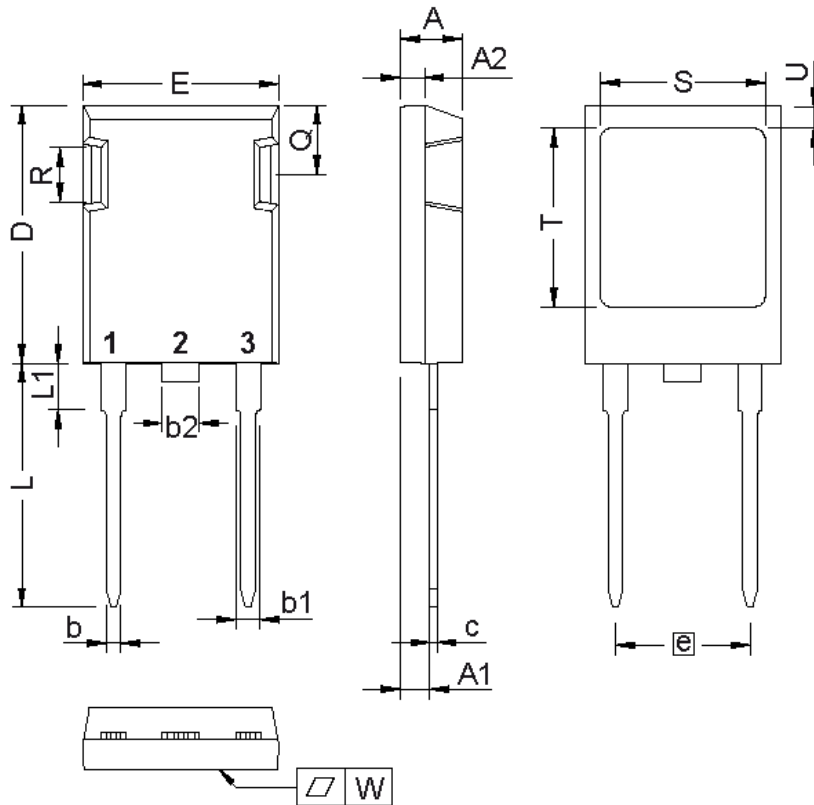
Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
I_{RMS}	RMS current	per terminal			70	A
R_{thCH}	thermal resistance case to heatsink			0.25		K/W
T_{stg}	storage temperature		-55		150	°C
Weight				6		g
F_C	mounting force with clip		20		120	N
V_{ISOL}	isolation voltage	t = 1 second	3600			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} .

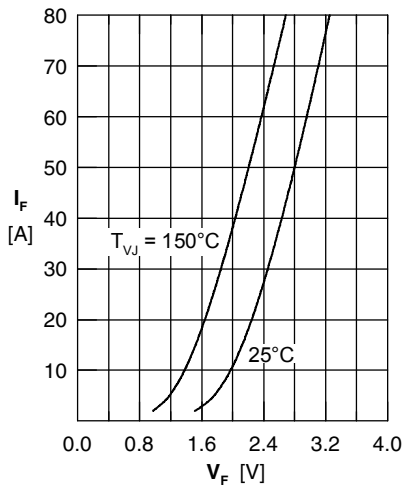


Fig. 1 Forward current I_F versus forward voltage V_F

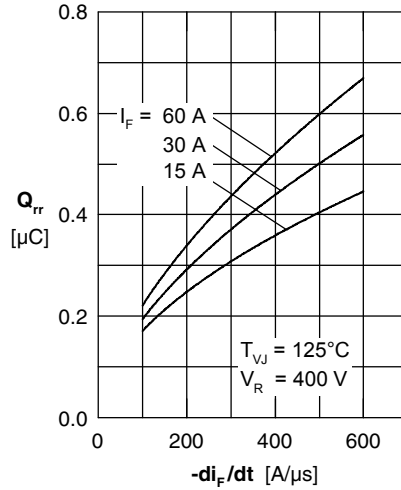


Fig. 2 Typ. reverse recovery charge Q_{rr} versus $-di_F/dt$

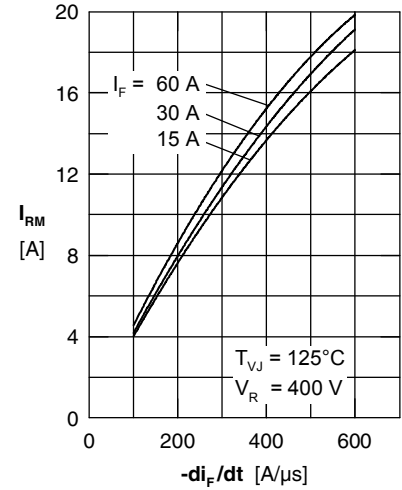


Fig. 3 Typ. reverse recovery current I_{RM} versus $-di_F/dt$

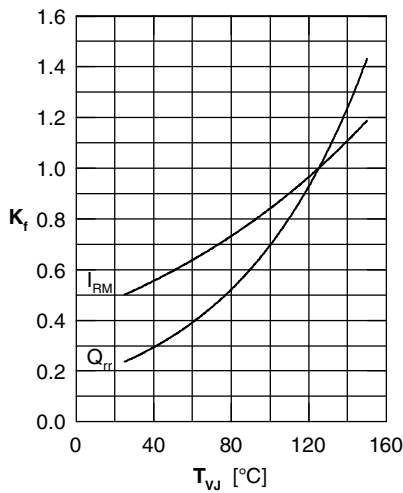


Fig. 4 Dynamic parameters Q_{rr} , I_{RM} versus T_{VJ}

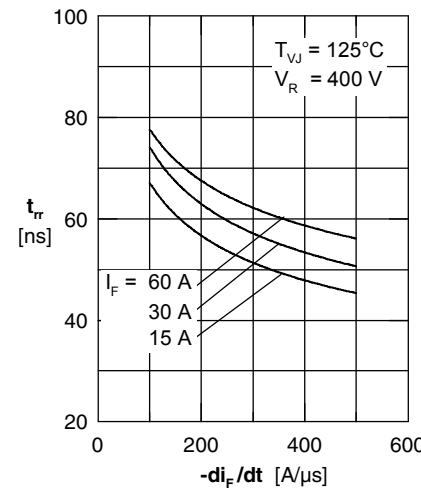


Fig. 5 Typ. reverse recovery time t_{rr} versus $-di_F/dt$

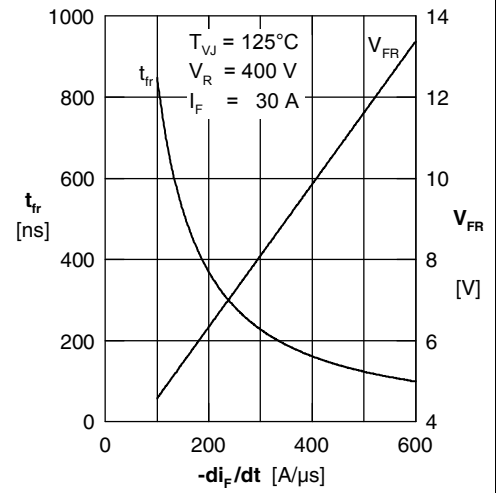


Fig. 6 Typ. forward recovery voltage V_{FR} & forward recovery time t_{fr} vs. di_F/dt

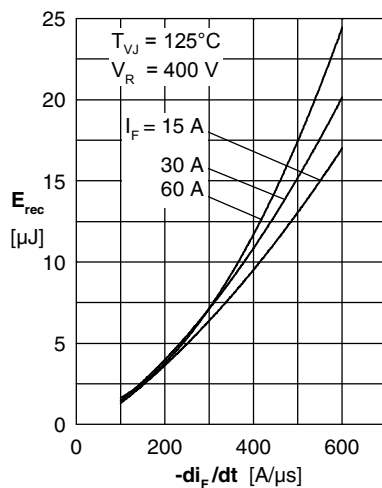


Fig. 7 Typ. recovery energy E_{rec} versus $-di_F/dt$

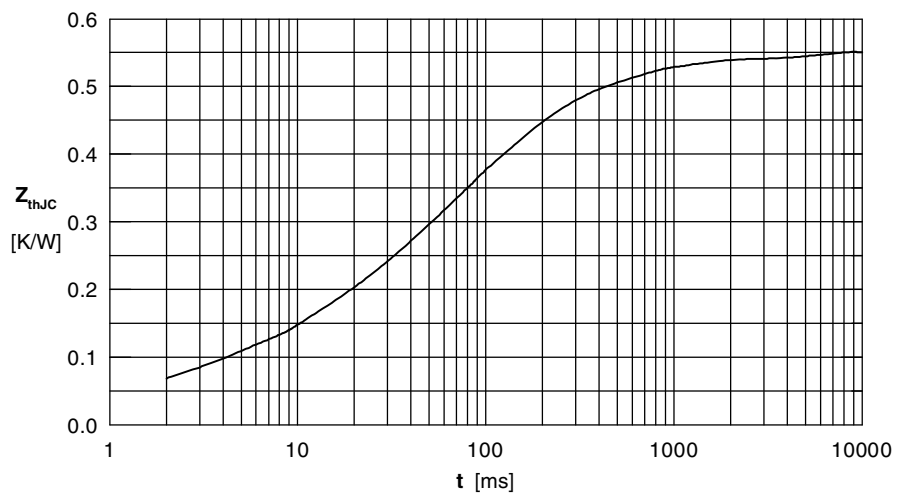


Fig. 8 Transient thermal impedance junction to case