

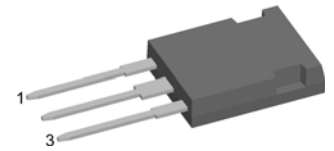
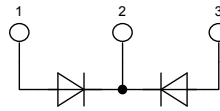
# HiPerFRED<sup>2</sup>

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

$V_{RRM} = 300\text{ V}$   
 $I_{FAV} = 2 \times 30\text{ A}$   
 $t_{rr} = 35\text{ ns}$

Part number

**DPG 60 C 300 HJ**



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:

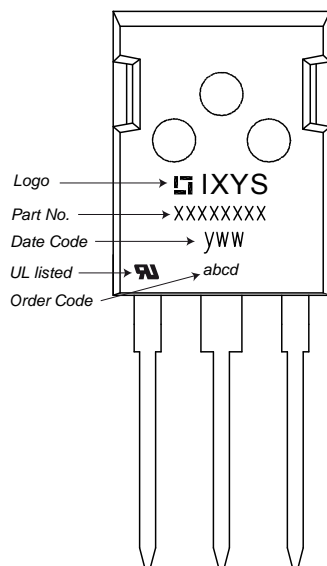
- Housing: ISOPLUS247
- Industry standard outline
- DCB isolated backside
- Isolation Voltage 3000 V
- Epoxy meets UL 94V-0
- RoHS compliant

### Ratings

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$V_{RRM}$	max. repetitive reverse voltage				300	V
$I_R$	reverse current	$V_R = 300\text{ V}$			1	$\mu\text{A}$
		$V_R = 300\text{ V}$			0.2	mA
$V_F$	forward voltage	$I_F = 30\text{ A}$			1.26	V
		$I_F = 60\text{ A}$			1.54	V
		$I_F = 30\text{ A}$			0.96	V
		$I_F = 60\text{ A}$			1.26	V
$I_{FAV}$	average forward current	rectangular $d = 0.5$			30	A
$V_{F0}$	threshold voltage	} for power loss calculation only			0.61	V
$r_F$	slope resistance				9.6	m $\Omega$
$R_{thJC}$	thermal resistance junction to case				1.05	K/W
$T_{VJ}$	virtual junction temperature		-55		175	$^{\circ}\text{C}$
$P_{tot}$	total power dissipation				145	W
$I_{FSM}$	max. forward surge current	$t = 10\text{ ms}$ (50 Hz), sine			450	A
$I_{RM}$	max. reverse recovery current				3	A
		$I_F = 30\text{ A}; V_R = 200\text{ V}$			8.5	A
$t_{rr}$	reverse recovery time	$-di_F/dt = 200\text{ A}/\mu\text{s}$			35	ns
					65	ns
$C_J$	junction capacitance	$V_R = 150\text{ V}; f = 1\text{ MHz}$			60	pF

Symbol	Definition	Conditions	Ratings			Unit
			min.	typ.	max.	
$I_{RMS}$	RMS current	per pin <sup>1)</sup>			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
$d_s$	creepage distance on surface					mm
$d_A$	striking distance through air					mm

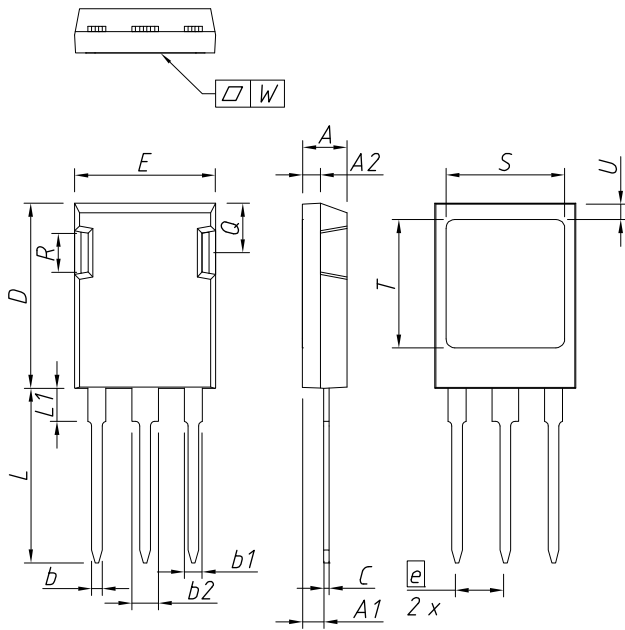
<sup>1)</sup>  $I_{RMS}$  is typically limited by: 1. pin-to-chip resistance; or by 2. current capability of the chip.  
 In case of 1, a common cathode/anode configuration and a non-isolated backside, the whole current capability can be used by connecting the backside.

**Product Marking**

**Part number**

- D = Diode
- P = HiPerFRED
- G = extreme fast
- 60 = Current Rating [A]
- C = Common Cathode
- 300 = Reverse Voltage [V]
- HJ = ISOPLUS247 (3)

Ordering	Part Name	Marking on Product	Delivering Mode	Base Qty	Code Key
Standard	DPG 60 C 300 HJ	DPG60C300HJ	Tube	30	505494

Similar Part	Package	Voltage Class
DPG60C300HB	TO-247AD (3)	300
DPG60C300QB	TO-3P (3)	300
DPG60C300PC	TO-263AB (D2Pak)	300
DPF60C300HB	TO-247AD (3)	300
DPG80C300HB	TO-247AD (3)	300

**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	5,45 BSC		0,215 BSC	
L	19,81	20,60	0,780	0,811
L1	3,81	4,38	0,150	0,172
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  $L_{max}$ .

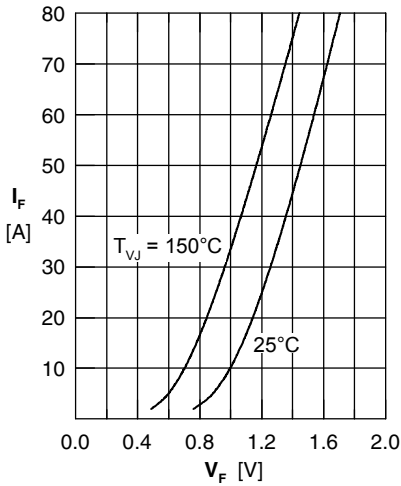


Fig. 1 Forward current  $I_F$  versus forward voltage  $V_F$

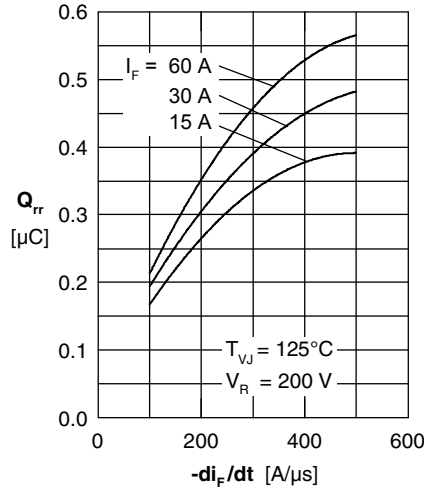


Fig. 2 Typ. reverse recovery charge  $Q_{rr}$  versus  $-di_F/dt$

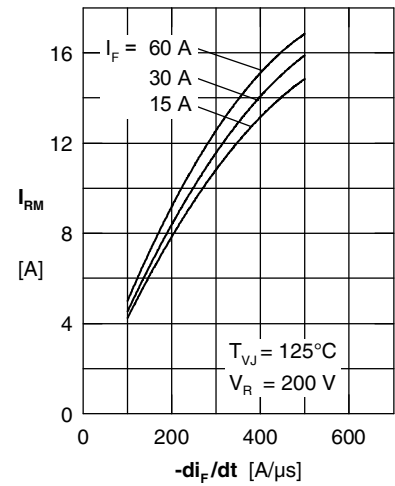


Fig. 3 Typ. reverse recovery current  $I_{RM}$  versus  $-di_F/dt$

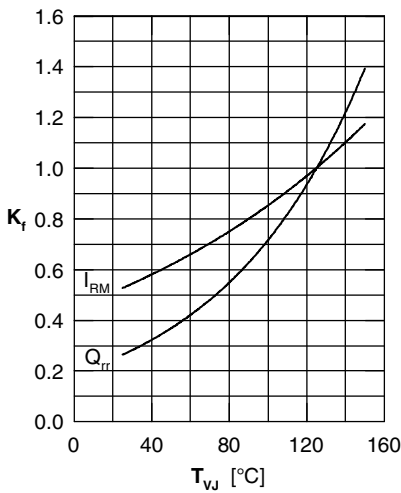


Fig. 4 Dynamic parameters  $Q_{rr}$ ,  $I_{RM}$  versus  $T_{VJ}$

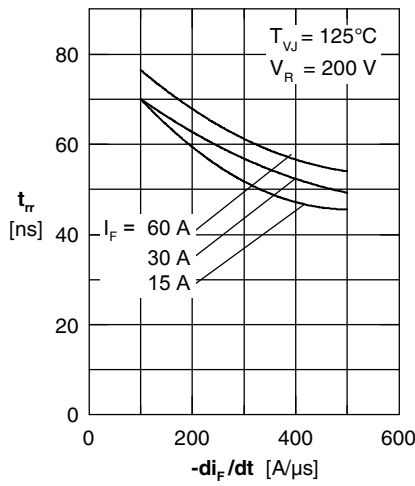


Fig. 5 Typ. reverse recovery time  $t_{rr}$  versus  $-di_F/dt$

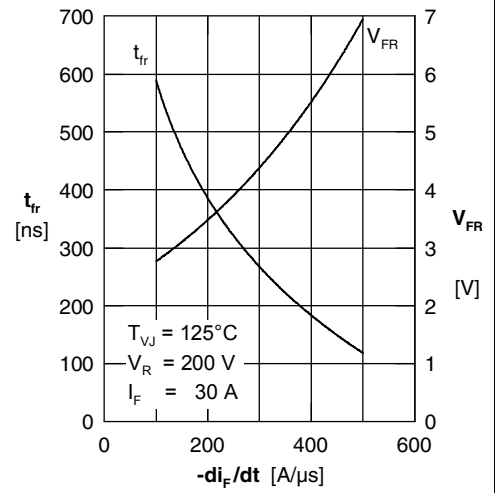


Fig. 6 Typ. forward recovery voltage  $V_{FR}$  & forward recovery time  $t_{fr}$  vs.  $di_F/dt$

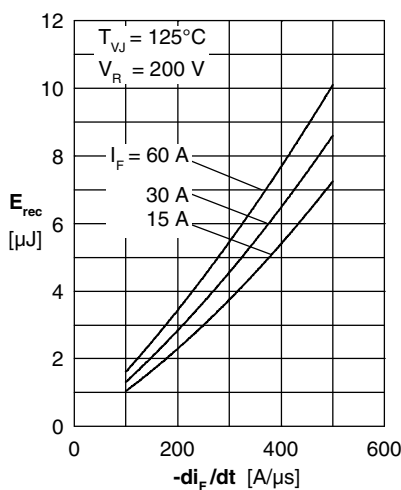


Fig. 7 Typ. recovery energy  $E_{rec}$  versus  $-di_F/dt$

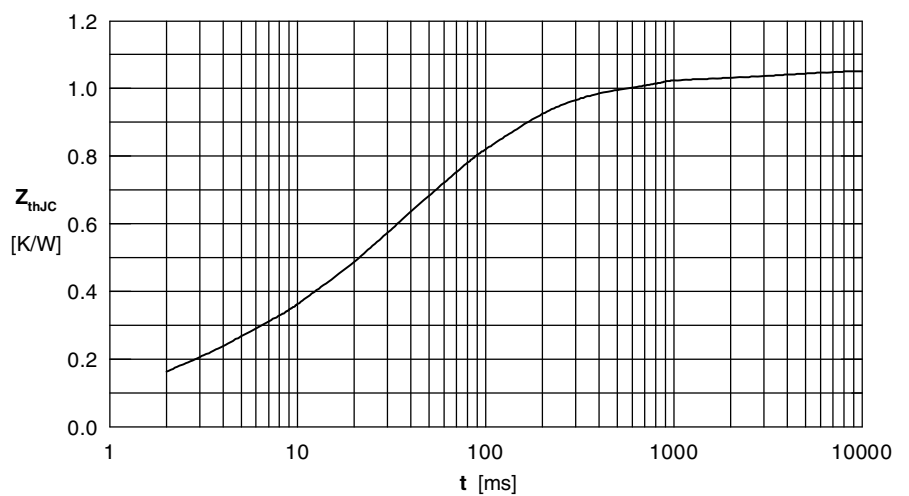


Fig. 8 Transient thermal impedance junction to case