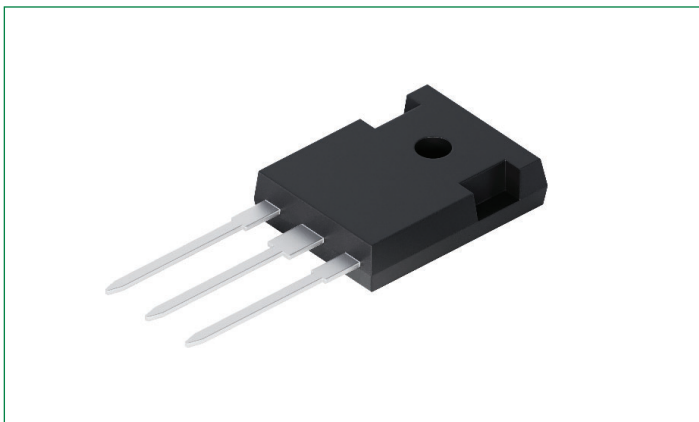


DPF120C600HB

600 V, 2 x 60 A High Performance Fast Recovery Diode

RoHS



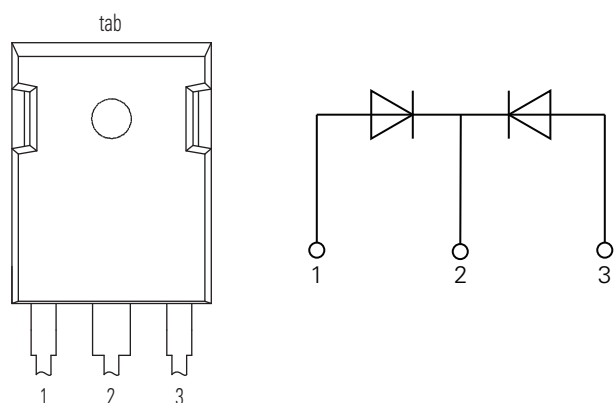
Description:

This 600 V, 2 x 60 A general purpose, power switching diode utilizes a diode array with common cathode configuration assembled in a TO-247 package.

This device belongs to the HiPerFRED (High-Performance Fast Recovery Diode) series that features planar passivated chips, very low leakage current, and very short recovery time. These features make the HiPerFRED series suitable for high-frequency applications such as battery chargers, PFC, and high-frequency output rectifiers.

Littelfuse power switching diodes can be integrated with other power semiconductors to provide complete power solutions for a wide range of applications.

Pinout Diagram



1: Anode; **2:** Cathode; **3:** Anode; **tab:** Cathode

Features:

- Planar passivated chips
- Very low leakage current
- Very short recovery time
- Improved thermal behavior
- Very low I_{RM} values
- Very soft recovery behavior
- Avalanche voltage rated for reliable operation
- Soft reverse recovery for low EMI/RFI
- Epoxy meets UL 94V-0
- Low I_{RM} reduces:
 - Power dissipation within the diode
 - Turn-on loss in the commutating switch

Applications:

- Antiparallel diode for high frequency switching devices
- Anti-saturation diode
- Snubber diode
- Free wheeling diode
- Rectifiers in Switch Mode Power Supplies (SMPS)
- Uninterruptable Power Supplies (UPS)

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
I_{FAV}	2 x 60	A
t_{rr}	40	ns

Maximum Ratings

Symbol	Characteristics	Conditions	Value	Units
V_{RRM}	Repetitive Reverse Blocking Voltage	$T_{VJ} = 25^{\circ}\text{C}$	600	V
I_{RMS}	RMS Current	per terminal	70	A
I_{FAV}	Average Forward Current	$T_C = 95^{\circ}\text{C}, T_{VJ} = 175^{\circ}\text{C};$ rectangular $d = 0.5$	60	A
I_{FSM}	Forward Surge Current	$t = 10\text{ ms}; (50\text{ Hz}),$ sine; $V_R = 0\text{ V}, T_{VJ} = 45^{\circ}\text{C}$	500	A
T_{stg}	Storage Temperature	–	–55 to +150	$^{\circ}\text{C}$
T_{OP}	Operation Temperature	–	–55 to +150	$^{\circ}\text{C}$
T_{VJ}	Virtual Junction Temperature	–	–55 to +175	$^{\circ}\text{C}$
P_{tot}	Total Power Dissipation	$T_C = 25^{\circ}\text{C}$	214	W

Thermal Specifications

Symbol	Characteristic	Value			Unit
		Min.	Typ.	Max.	
R_{thJC}	Maximum Thermal Resistance, Junction to Case	–	–	0.70	$^{\circ}\text{C}/\text{W}$
R_{thCH}	Maximum Thermal Resistance, Case to Heatsink	–	0.25	–	$^{\circ}\text{C}/\text{W}$

Electrical Characteristics

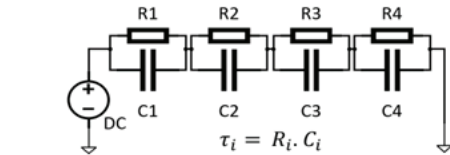
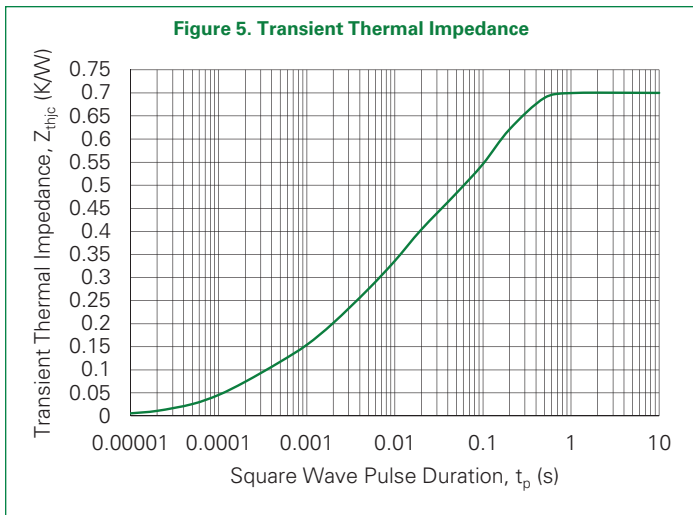
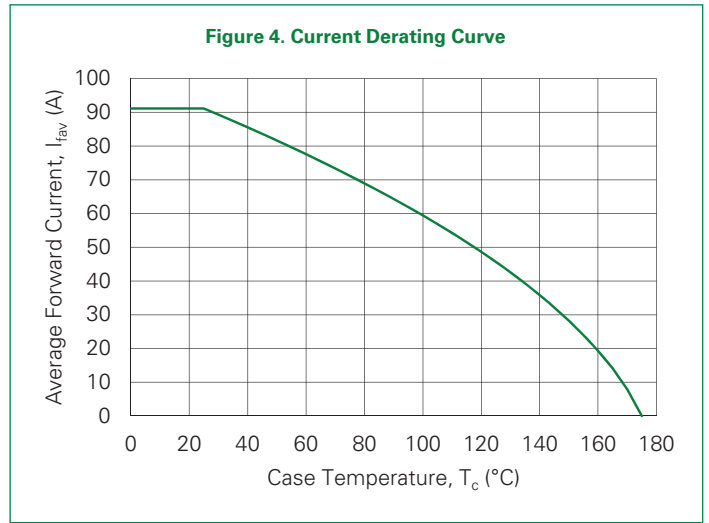
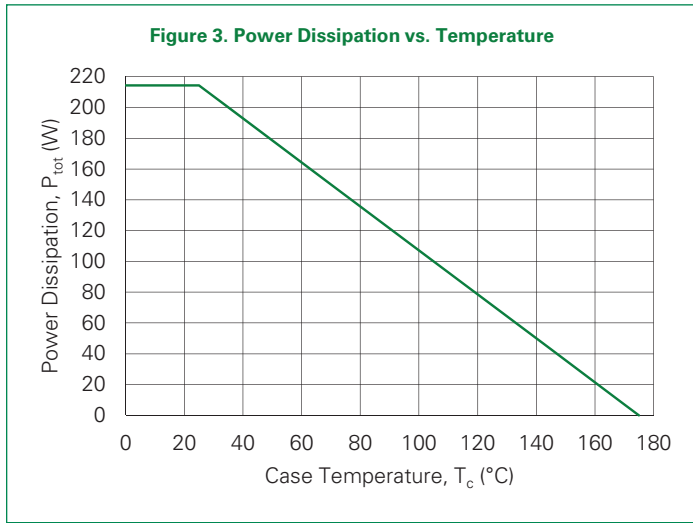
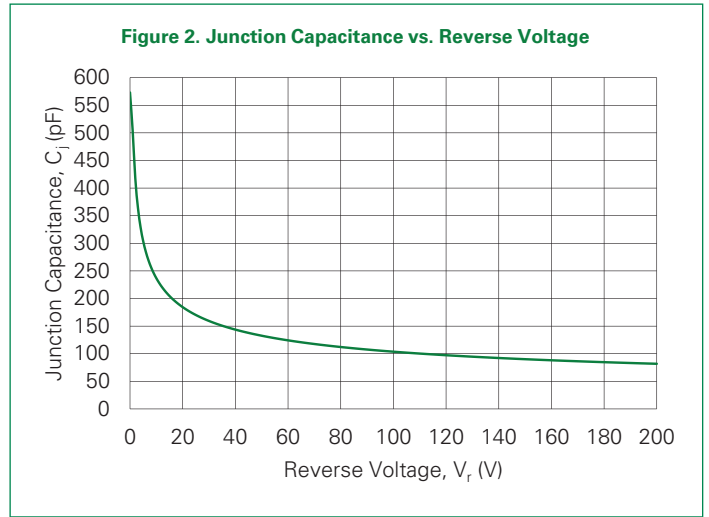
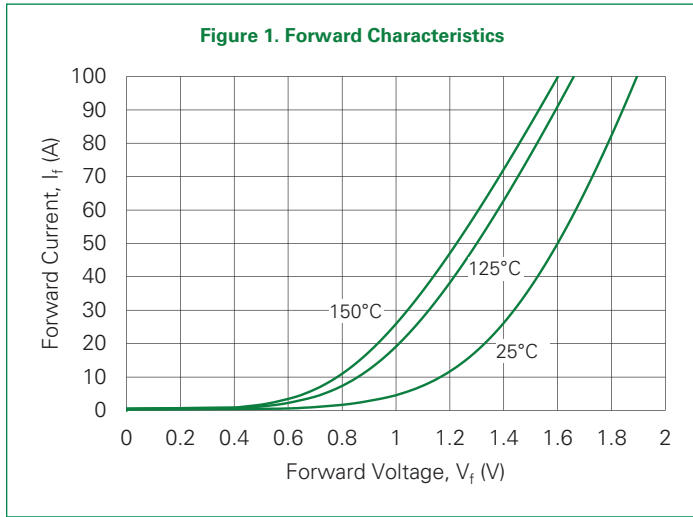
Static Characteristics

Symbol	Characteristics	Conditions	Value			Units	
			Min.	Typ.	Max.		
I_R	Reverse Leakage Current	$T_{VJ} = 25^{\circ}\text{C}$	$V_R = V_{RRM}$	–	–	20	μA
		$T_{VJ} = 125^{\circ}\text{C}$		–	150	600	
V_F	Forward Voltage	$T_{VJ} = 25^{\circ}\text{C}$	$I_F = 50\text{ A}$ $I_F = 100\text{ A}$	–	1.6	1.9	V
				$T_{VJ} = 125^{\circ}\text{C}$	–	1.3	
		$T_{VJ} = 125^{\circ}\text{C}$			–	1.66	
				–	–	–	
V_{FO}	Threshold Voltage	$T_{VJ} = 175^{\circ}\text{C}$	–	–	0.78	V	
r_F	Slope Resistance		–	–	8.7	$\text{m}\Omega$	
C_J	Junction Capacitance	$V_R = 200\text{ V}$	–	82	–	pF	

Dynamic Characteristics

Symbol	Characteristics	Conditions	Value			Units	
			Min.	Typ.	Max.		
Q_{rr}	Reverse Recovery Charge	$T_{VJ} = 25^{\circ}\text{C}$	–	0.5	–	μC	
		$T_{VJ} = 125^{\circ}\text{C}$	–	1.9	–		
I_{RM}	Reverse Recovery Current	$T_{VJ} = 25^{\circ}\text{C}$	$I_F = 50\text{ A}; V_R = 300\text{ V}$ $di/dt = 800\text{ A}/\mu\text{s}$	–	20	–	A
		$T_{VJ} = 125^{\circ}\text{C}$		–	37	–	
t_{rr}	Reverse Recovery Time	$T_{VJ} = 25^{\circ}\text{C}$		–	40	–	ns
		$T_{VJ} = 125^{\circ}\text{C}$		–	90	–	

Characteristic Curves



$$Zth(t) = \sum_i R_i [1 - e^{-\frac{t}{\tau_i}}]$$

i	1	2	3	4
R_i	0.078	0.116	0.206	0.3
T_j	0.00016	0.0015	0.011	0.15

Figure 6. Reverse Recovery Charge vs. di/dt

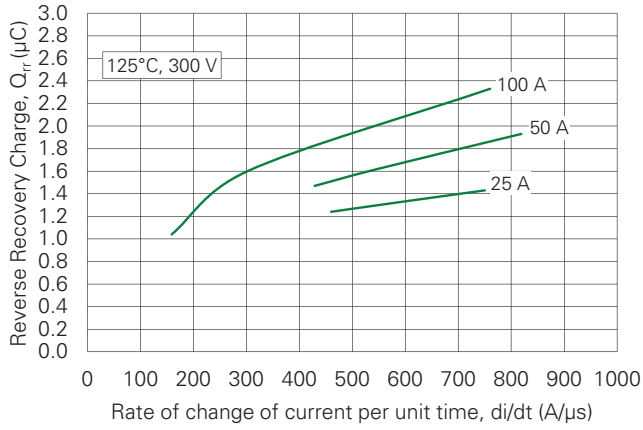


Figure 7. Reverse Recovery Current vs. di/dt

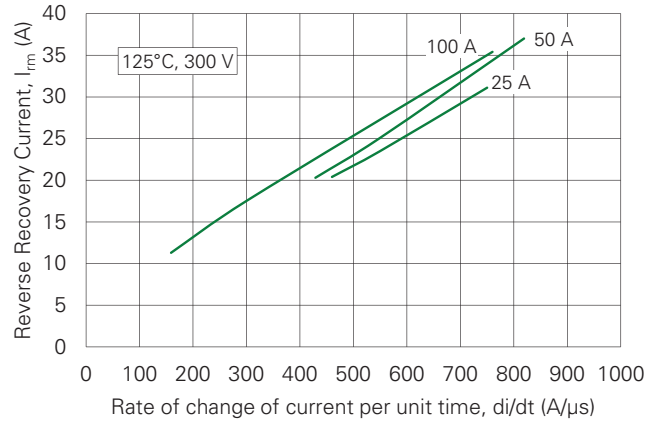


Figure 8. Reverse Recovery Time vs. di/dt

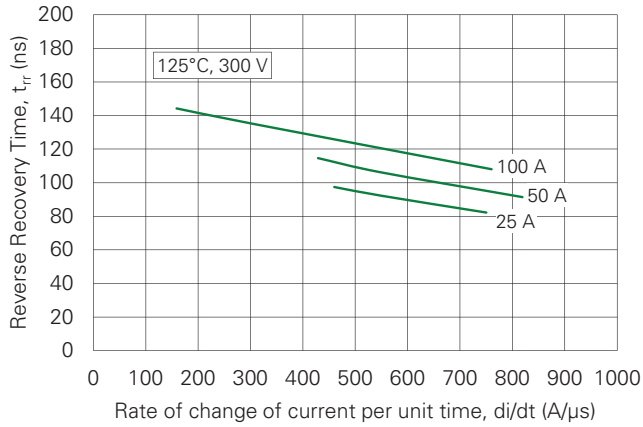


Figure 9. Recovery Characteristics vs. Temperature

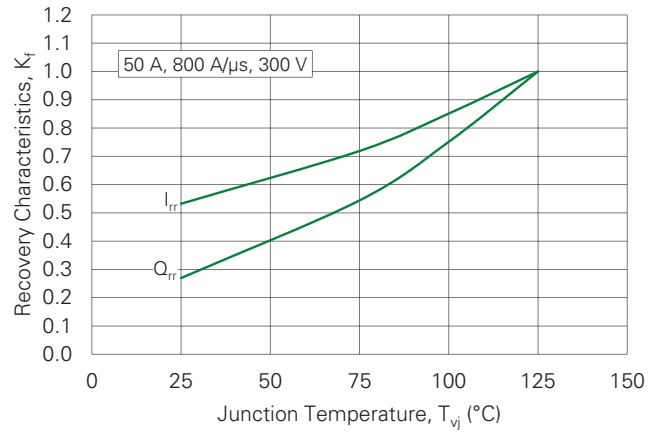
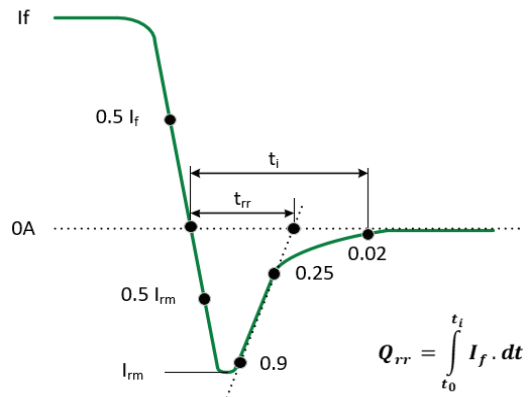
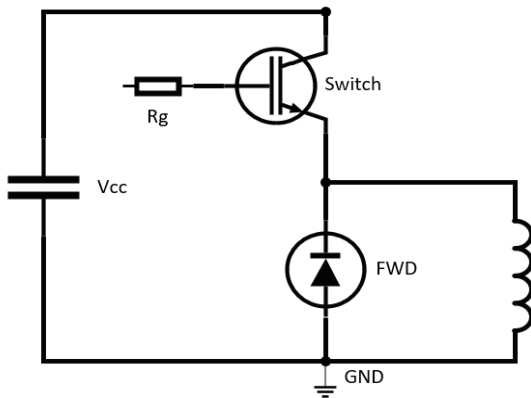
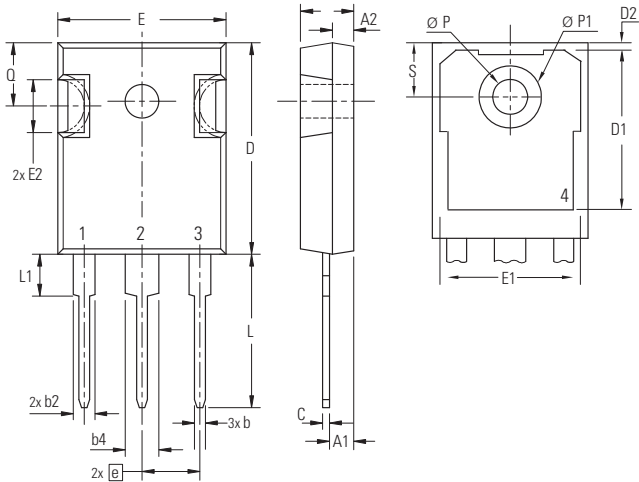


Figure 10. Test Circuit and Waveform Definition

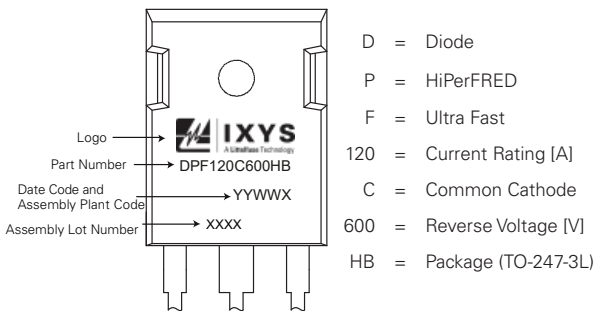


Part Outline Drawing (TO-247-3L)



Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
c	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	-	0.515	-
D2	0.51	1.35	0.020	0.053
e	5.45 BSC		0.215 BSC	
E	15.48	16.24	0.610	0.640
E1	13.45	-	0.530	-
E2	4.31	5.48	0.170	0.216
L	19.80	20.30	0.780	0.800
L1	-	4.49	-	0.177
Q	5.38	6.19	0.212	0.244
S	6.14 BSC		0.242 BSC	
ØP	3.55	3.65	0.140	0.144
ØP1	-	7.39	-	0.29

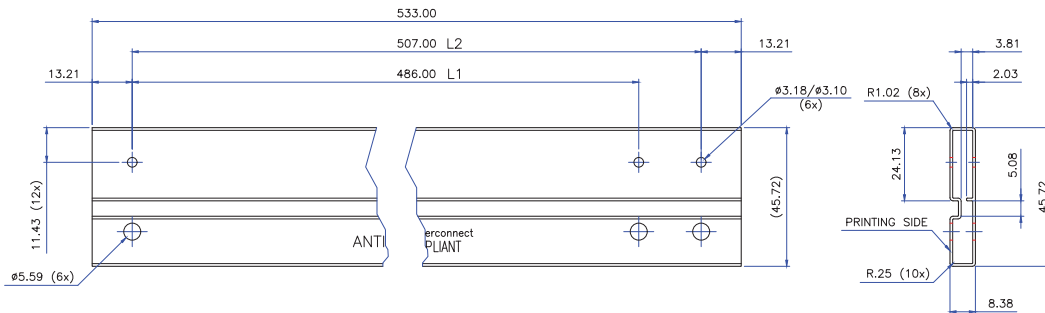
Part Numbering and Marking



Packing Options

Part Number	Marking	Packing Mode	M.O.Q.
DPF120C600HB	DPF120C600HB	Tube (30 pcs)	300

Packing Specifications (Tube Option)



Disclaimer Notice

Information furnished is believed to be accurate and reliable. However, users should independently evaluate the suitability of and test each product selected for their own applications. Littelfuse products are not designed for, and may not be used in, all applications. Read complete Disclaimer Notice at <http://www.littelfuse.com/disclaimer-electronics>.



Part of:

