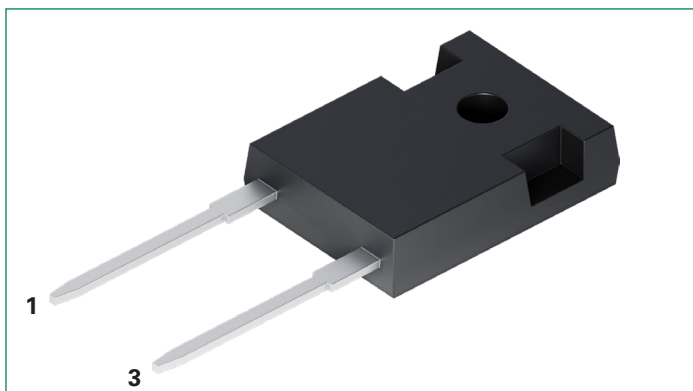


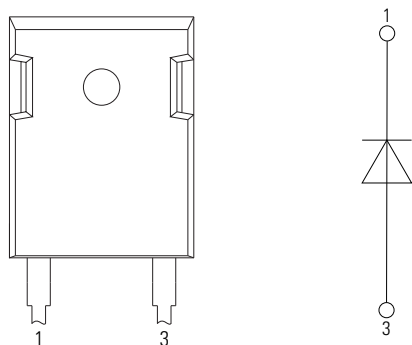
DPU60I600HA

600 V, 60 A Fast Recovery Diode

RoHS



Pinout Diagram (TO-247-2L)



1: Cathode; **3:** Anode; **Backside:** Cathode

Description

This 600 V, 60 A general-purpose, fast recovery power diode features a single chip in a TO-247 package.

Features

- Planar passivated chip
- Reverse leakage current, $I_R \leq 20 \mu\text{A} @ 25^\circ\text{C}$
- Low thermal resistance, $R_{th(j-c)} = 0.24 \text{ K/W}$
- Typical reverse recovery time, $t_{rr} = 38 \text{ ns}$

Benefits

- Supports high current operation
- Low standby losses
- Reduced switching losses

Applications

- Stable long-term reliability
- Switch Mode Power Supplies (SMPS)
- Maximum Power Point Tracking (MPPT) solar inverters

Package TO-247-2L

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

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
$I_{F(AV)}$	60	A
$t_{rr} @ I_F = 1 \text{ A}$	38	ns

Maximum Ratings

Symbol	Characteristics	Condition	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	$T_{vj} = 25\text{ }^{\circ}\text{C}$	600	V
$I_{F(AV)}$	Average Forward Current	$T_c = 130\text{ }^{\circ}\text{C}$, $T_{vj} = 150\text{ }^{\circ}\text{C}$, rectangular, $d = 0.5$	60	A
I_{FSM}	Non-repetitive Surge Forward Current	$t_p = 10\text{ ms}$, (50 Hz), half sine wave, $V_R = 0\text{ V}$, $T_{vj} = 45\text{ }^{\circ}\text{C}$	650	A
P_{tot}	Total Power Dissipation	$T_c = 25\text{ }^{\circ}\text{C}$	560	W
T_{vj}	Virtual Junction Temperature Range	–	–55 to +150	$^{\circ}\text{C}$
T_{stg}	Storage Temperature Range	–	–55 to +150	$^{\circ}\text{C}$

Electrical Characteristics – Static

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
I_R	Reverse Current	$V_R = 600\text{ V}$, $T_{vj} = 25\text{ }^{\circ}\text{C}$	–	–	20	μA
		$V_R = 600\text{ V}$, $T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	7	mA
V_F	Forward Voltage	$I_F = 60\text{ A}$; $T_{vj} = 25\text{ }^{\circ}\text{C}$	–	1.55	1.7	V
		$I_F = 120\text{ A}$; $T_{vj} = 25\text{ }^{\circ}\text{C}$	–	–	2.00	
		$I_F = 60\text{ A}$; $T_{vj} = 150\text{ }^{\circ}\text{C}$	–	1.25	1.35	
		$I_F = 120\text{ A}$; $T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	1.75	
$V_{(TO)}$	Threshold Voltage	$T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	0.5	V
r_T	Slope Resistance	$T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	12.6	m Ω

Electrical Characteristics – Dynamic ($T_{vj} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
C_j	Junction Capacitance	$V_R = 600\text{ V}$, $f = 1\text{ MHz}$	–	60	–	pF
t_{rr}	Reverse Recovery Time	$I_F = 1\text{ A}$, $V_R = 30\text{ V}$, $-di_F/dt = 200\text{ A}/\mu\text{s}$	–	38	–	ns
		$I_F = 60\text{ A}$, $V_R = 300\text{ V}$, $-di_F/dt = 200\text{ A}/\mu\text{s}$	–	100	–	
I_{rrm}	Peak Reverse Recovery Current	$I_F = 60\text{ A}$, $V_R = 300\text{ V}$, $-di_F/dt = 200\text{ A}/\mu\text{s}$	–	7.7	–	A

Thermal Specifications

Symbol	Characteristics	Value			Units
		Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	–	–	0.24	K/W

Package TO-247-2L

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
G	Weight	–	–	6	–	g
M_s	Mounting Torque for Screw to Heatsink	–	0.8	–	1.2	Nm
F	Mounting Force	With Clip	20	–	120	N
T_{op}	Operating Temperature	–	–55	–	125	$^{\circ}\text{C}$

Characteristic Curves

Fig. 1. Typical Forward Characteristics

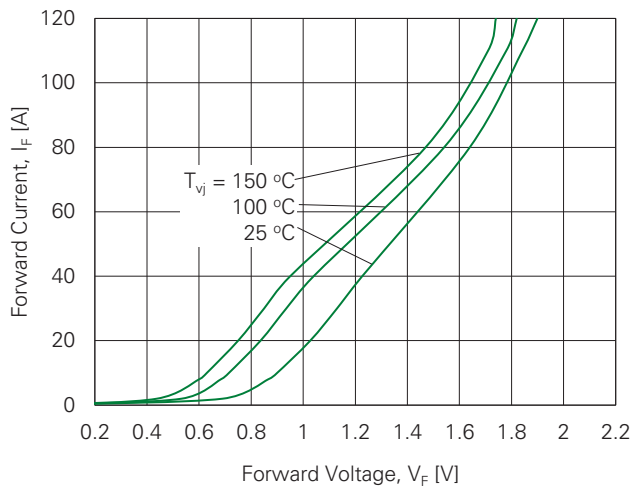


Fig. 2. Typical Reverse Recovery Charge vs. Diode Current Slope

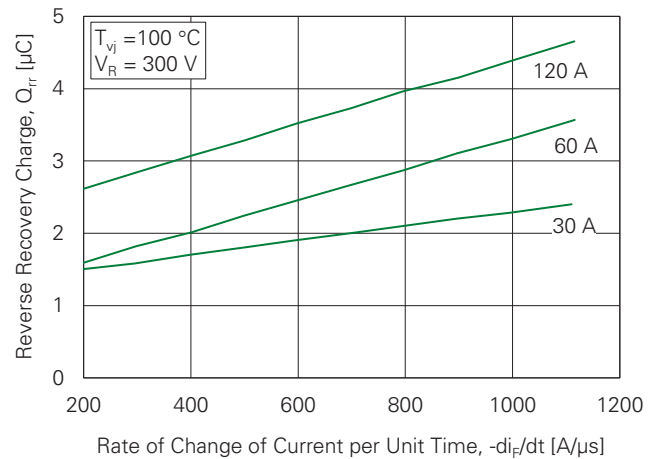


Fig. 3. Typical Peak Reverse Recovery Current vs. Diode Current Slope

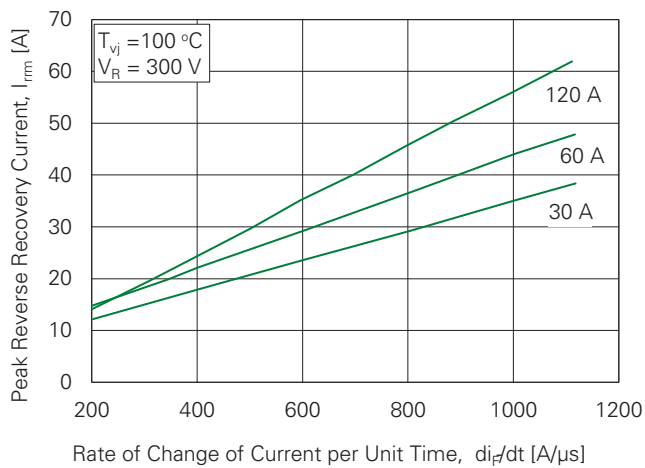


Fig. 4. Typical Reverse Recovery Time vs. Diode Current Slope

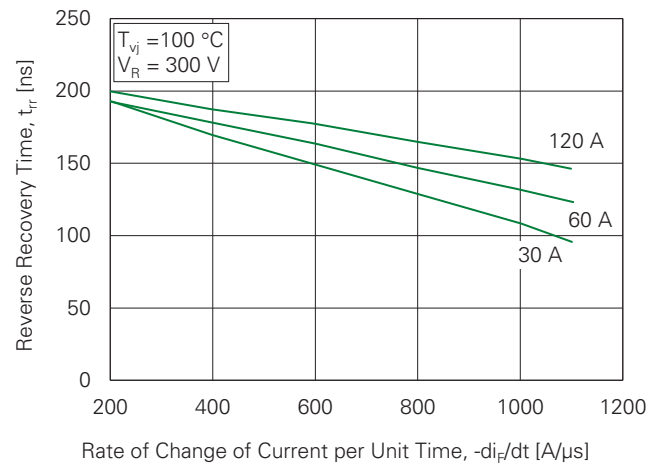
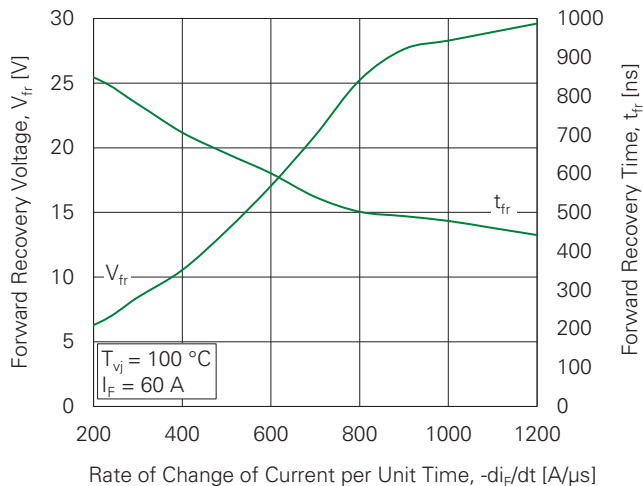
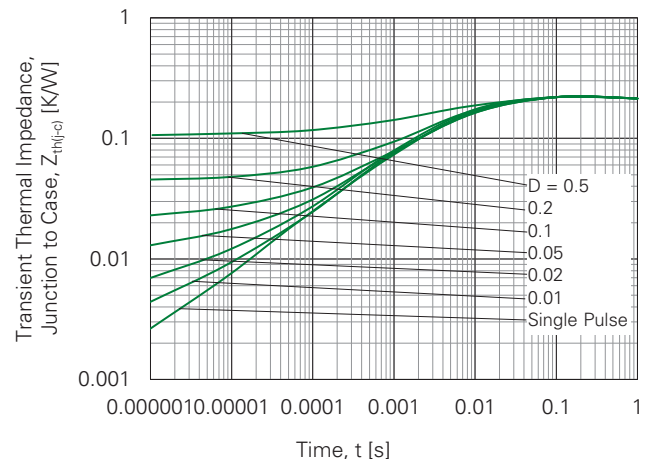
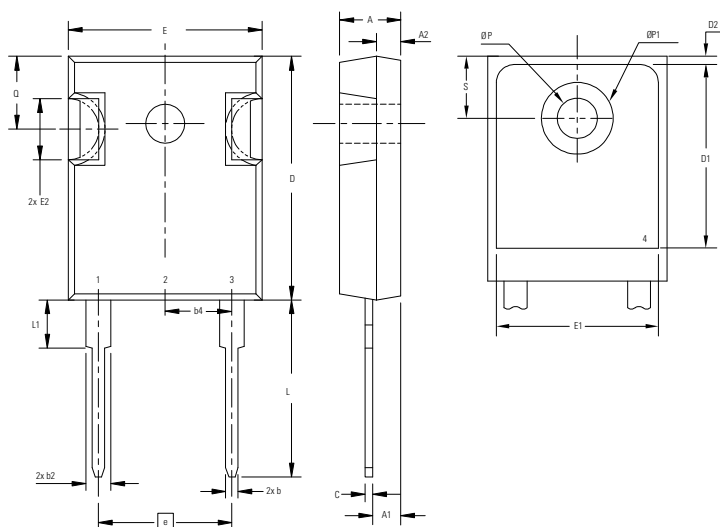
Fig. 5. Typical Forward Voltage V_{fr} and t_{fr} vs. $-di_F/dt$ 

Fig. 6. Typical Transient Thermal Impedance, Junction to Case



Part Outline Drawing TO-247-2L

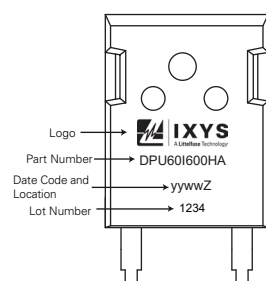


Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max.
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
C	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	—	0.515	—
D2	0.51	1.35	0.020	0.053
E	15.48	16.24	0.610	0.640
E1	13.45	—	0.530	—
E2	4.31	5.48	0.170	0.216
e	10.92 BSC		0.430 BSC	
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

Ordering Information

Part Number	Marking	Packing Mode
DPU60I600HA	DPU60I600HA	Tube (30 pcs)

Part Numbering and Marking



D	=	Diode
P	=	FRED
U	=	Ultra Fast
60	=	Current Rating (A)
I	=	Single Part Diode
600	=	Voltage Rating (V)
HA	=	Package (TO-247-2L)

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Part of:

