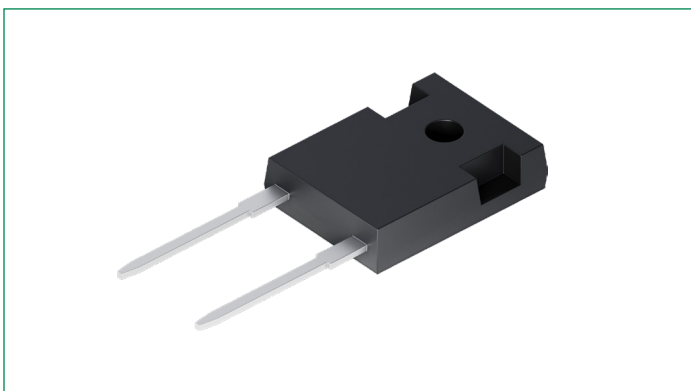


DPS30I600HA

600 V, 30 A Fast Recovery Diode

RoHS



Description

This 600 V, 30 A general-purpose, power fast recovery diode features a single chip in a TO-247 package.

Features

- Reverse leakage current, $I_R \leq 10 \mu\text{A}$ @ 25 °C
- Efficient heat transfer; $R_{th(j-c)}$ is 0.45 K/W
- Typical recovery time is 38 ns

Benefits

- Stable long-term reliability
- Higher current-handling capability
- Optimized for higher switching frequencies

Applications

- Power factor control
- Switch mode power supplies (SMPS)
- Maximum Power Point Tracking (MPPT) solar inverters

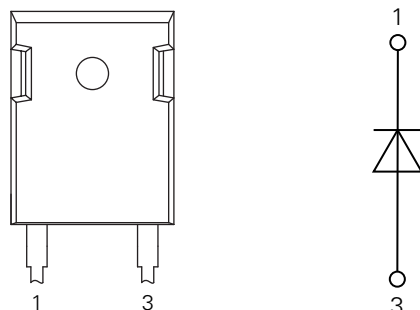
Package

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

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
$I_{F(AV)}$	30	A
t_{rr}	38	ns

Pinout Diagram (TO-247)



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

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, $d = 0.5$	30	A
I_{FSM}	Non-repetitive Forward Surge Current	$t_p = 10\text{ ms}$, $f = 50\text{ Hz}$, half sine wave, $V_R = 0\text{ V}$	450	A
P_{tot}	Total Power Dissipation	$T_c = 25\text{ }^{\circ}\text{C}$	278	W
T_{vj}	Virtual Junction Temperature Range	–	–55 to +150	$^{\circ}\text{C}$
T_{op}	Operating Temperature Range	–	–55 to +125	$^{\circ}\text{C}$
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	$V_R = 600\text{ V}, T_{vj} = 25\text{ }^{\circ}\text{C}$	–	–	10	μA
		$V_R = 600\text{ V}, T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	5	mA
V_F	Forward Voltage	$I_F = 30\text{ A}$; Pulse, $T_{vj} = 25\text{ }^{\circ}\text{C}$	–	1.35	1.45	V
		$I_F = 60\text{ A}$; Pulse, $T_{vj} = 25\text{ }^{\circ}\text{C}$	–	–	1.68	
		$I_F = 30\text{ A}$; Pulse, $T_{vj} = 150\text{ }^{\circ}\text{C}$	–	1.18	1.25	
		$I_F = 60\text{ A}$; Pulse, $T_{vj} = 150\text{ }^{\circ}\text{C}$	–	–	1.35	
$V_{(FO)}$	Threshold Voltage	–	–	0.58	V	
r_F	Slope Resistance	–	–	13.3	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	$V_R = 600\text{ V}, f = 1\text{ MHz}$	–	37	–	pF
t_{rr}	Reverse Recovery Time	$I_F = 0.5\text{ A}, I_R = 1\text{ A}, I_{rr} = 0.25\text{ A}$	–	60	80	ns
		$I_F = 1\text{ A}, V_R = 30\text{ V}, -di_F/dt = 200\text{ A}/\mu\text{s}$	–	38	–	
		$I_F = 30\text{ A}, V_R = 300\text{ V}, -di_F/dt = 200\text{ A}/\mu\text{s}$	–	120	–	
I_{rm}	Peak Reverse Recovery Current	$I_F = 30\text{ A}, V_R = 300\text{ V}, -di_F/dt = 200\text{ A}/\mu\text{s}$	–	5.1	–	A

Thermal Specifications

Symbol	Characteristics	Value			Units
		Min.	Typ.	Max.	
$R_{th(j-c)}$	Thermal Resistance, Junction to Case	–	–	0.45	K/W

Package TO-247-2L

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
G	Weight	–	–	6	–	g
M_d	Mounting Torque	–	0.8	–	1.2	Nm
F_C	Mounting Force	–	20	–	120	N

Characteristic Curves

Figure 1. Typical Forward Characteristics

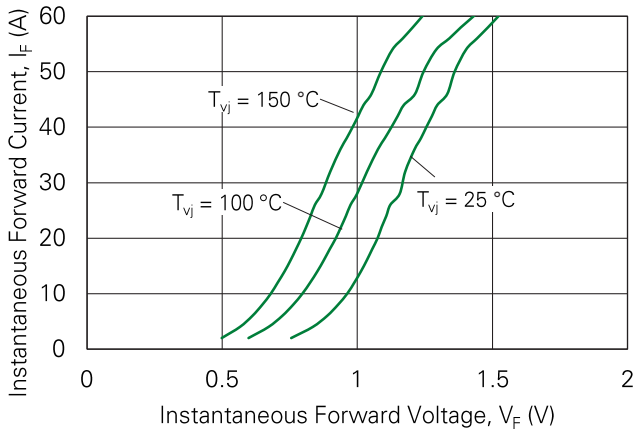


Figure 2. Typical Reverse Recovery Charge vs. $-di_F/dt$

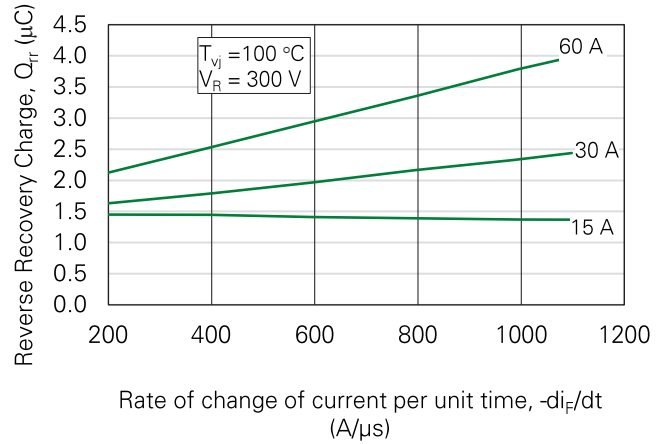


Figure 3. Typical Peak Reverse Recovery Current vs. $-di_F/dt$

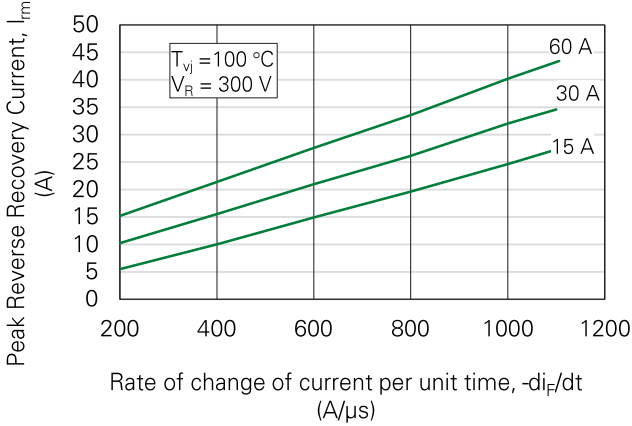


Figure 4. Typical Recovery Time vs. $-di_F/dt$

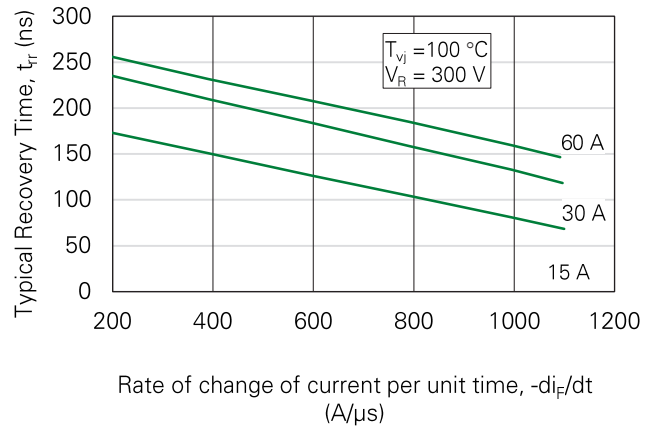


Figure 5. Typical Forward Recovery Voltage vs. Diode Current Slope

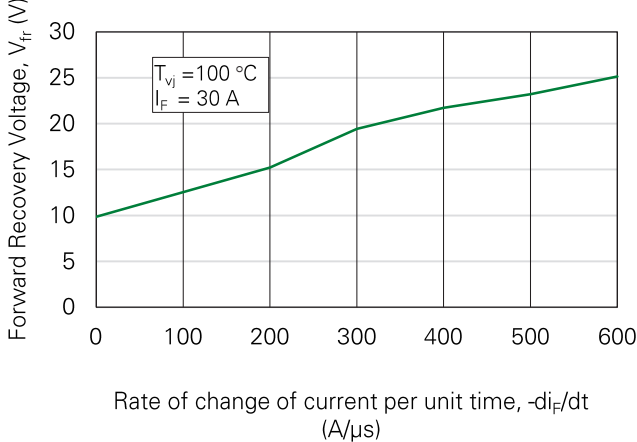
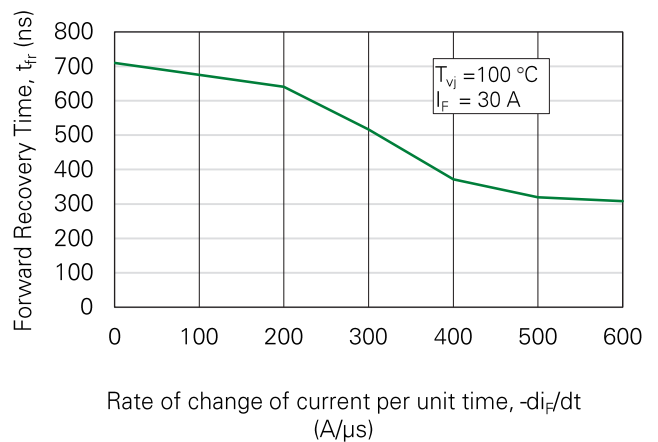
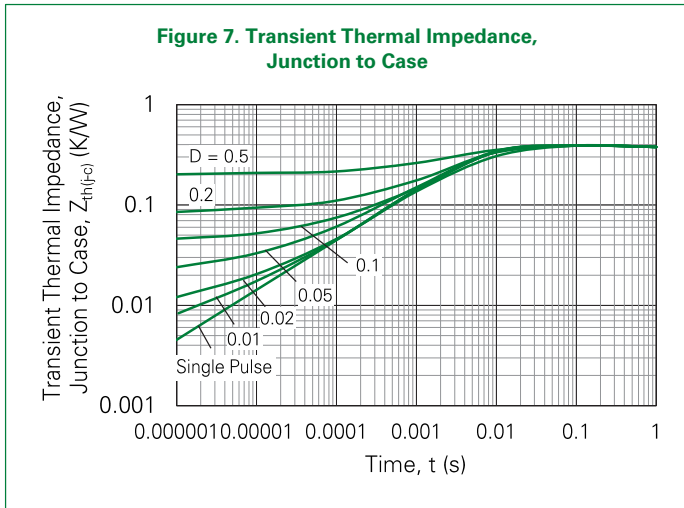


Figure 6. Typical Forward Recovery Time vs. Diode Current Slope

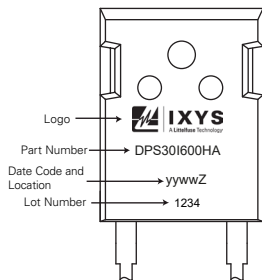




Packing Options

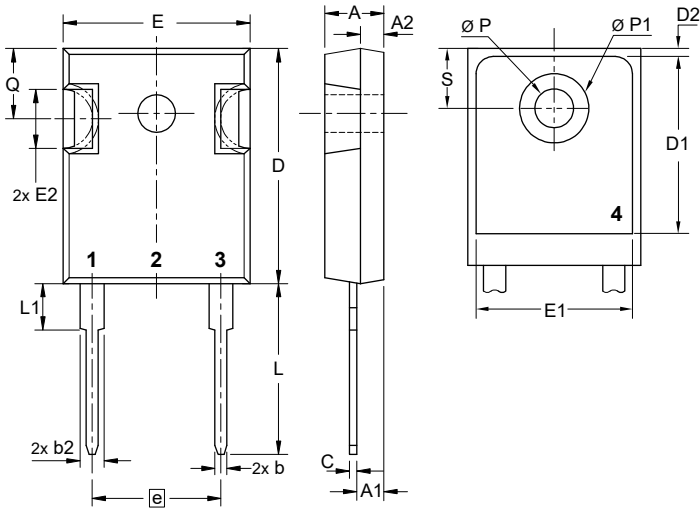
Part Number	Marking	Packing Mode
DPS30I600HA	DPS30I600HA	Tube (30 pcs)

Part Numbering and Marking



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

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	6.14BSC		0.242 BSC	
ØP	3.55	3.65	0.140	0.144
ØP1	-	7.39	-	0.29

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