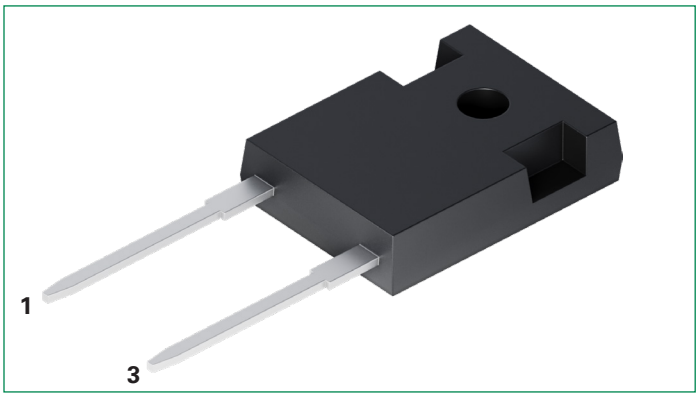
DPS30I600HA

600 V, 30 A Fast Recovery Diode

RoHS



Description

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

Features

- Reverse leakage current, $I_R \leq 10$ µA @ 25 °C
- Thermal resistance; $R_{th(j-c)}$ is 0.45 K/W
- Typical recovery time is 38 ns @ $I_F = 1$ A

Benefits

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

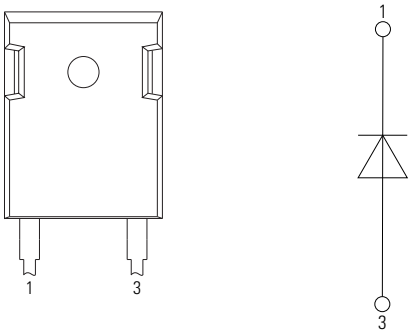
Applications

- 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

Pinout Diagram (TO-247)



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

Product Summary

Characteristic	Value	Unit
V_{RRM}	600	V
$I_{F(AV)}$	30	A
t_{rr} @ $I_F = 1$ A	38	ns

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Maximum Ratings

Symbol	Characteristics	Condition	Value	Units
V_{RRM}	Repetitive Peak Reverse Voltage	T_{vj} = 25 °C	600	V
$I_{F(AV)}$	Average Forward Current	T_c = 130 °C, T_{vj} = 150 °C, rectangular, d = 0.5	30	A
I_{FSM}	Non-repetitive Surge Forward Current	t_p = 10 ms, f = 50 Hz, half sine wave, V_R = 0 V	450	A
P_{tot}	Total Power Dissipation	T_c = 25 °C	278	W
T_{vj}	Virtual Junction Temperature Range	–	–55 to +150	°C
T_{stg}	Storage Temperature Range	–	–55 to +150	°C

Electrical Characteristics – Static

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
I_R	Reverse Current	V_R = 600 V, T_{vj} = 25 °C	–	–	10	µA
		V_R = 600 V, T_{vj} = 150 °C	–	–	5	mA
V_F	Forward Voltage	I_F = 30 A; T_{vj} = 25 °C	–	1.35	1.45	V
		I_F = 60 A; T_{vj} = 25 °C	–	–	1.68	
		I_F = 30 A; T_{vj} = 150 °C	–	1.18	1.25	
		I_F = 60 A; T_{vj} = 150 °C	–	–	1.35	
$V_{(TO)}$	Threshold Voltage	T_{vj} = 150 °C	–	–	0.58	V
r_T	Slope Resistance	T_{vj} = 150 °C	–	–	13.3	mΩ

Electrical Characteristics – Dynamic (T_{vj} = 25 °C, unless otherwise specified)

Symbol	Characteristics	Conditions	Value			Units
			Min.	Typ.	Max.	
C_j	Junction Capacitance	V_R = 600 V, f = 1 MHz	–	37	–	pF
t_{rr}	Reverse Recovery Time	I_F = 1 A, V_R = 300 V, $-di_F/dt$ = 200 A/µs	–	38	–	ns
		I_F = 30 A, V_R = 300 V, $-di_F/dt$ = 200 A/µs	–	120	–	
I_{RRM}	Peak Reverse Recovery Current	I_F = 30 A, V_R = 300 V, $-di_F/dt$ = 200 A/µs	–	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	Mounting Force	–	20	–	120	N
T_{op}	Operating Temperature Range	–	-55	–	+125	°C

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Characteristic Curves

Fig. 1. Typical Forward Characteristics

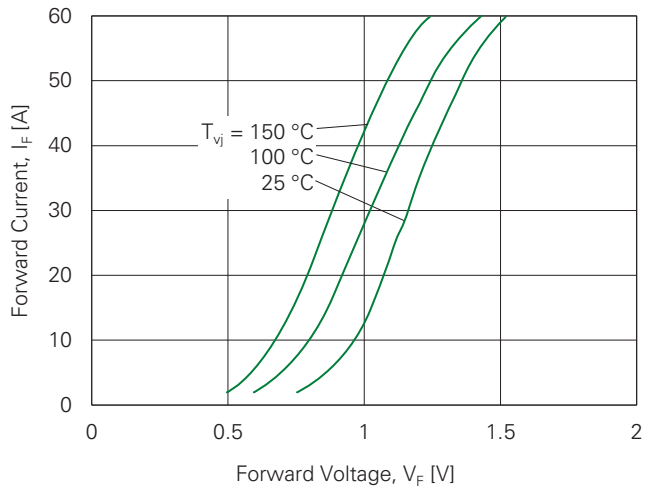


Fig. 2. Typical Reverse Recovery Charge vs. Diode Current Slope

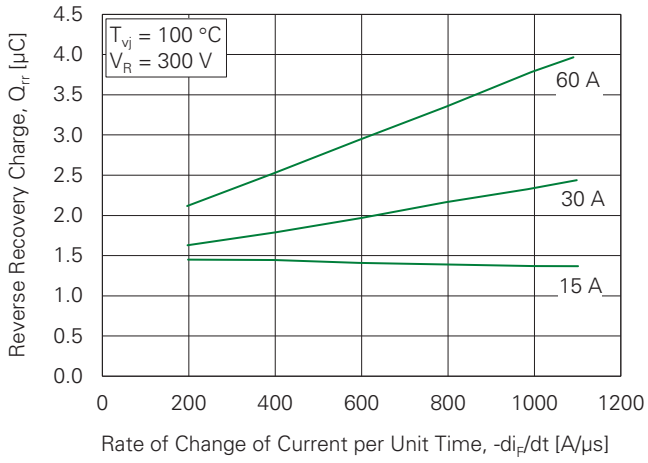


Fig. 3. Typical Reverse Recovery Current vs. Diode Current Slope

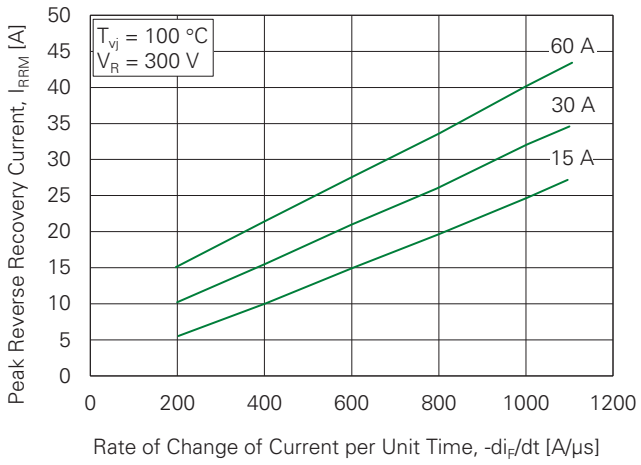


Fig. 4. Typical Reverse Recovery Time vs. Diode Current Slope

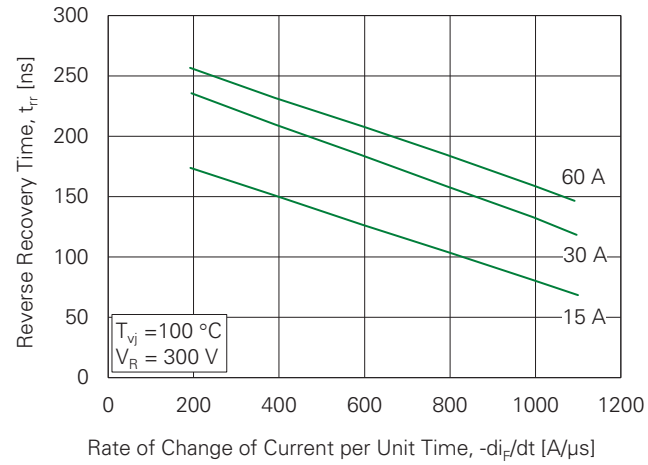


Fig. 5. Typical Forward Voltage V_{fr} and t_{fr} vs -di_F/dt

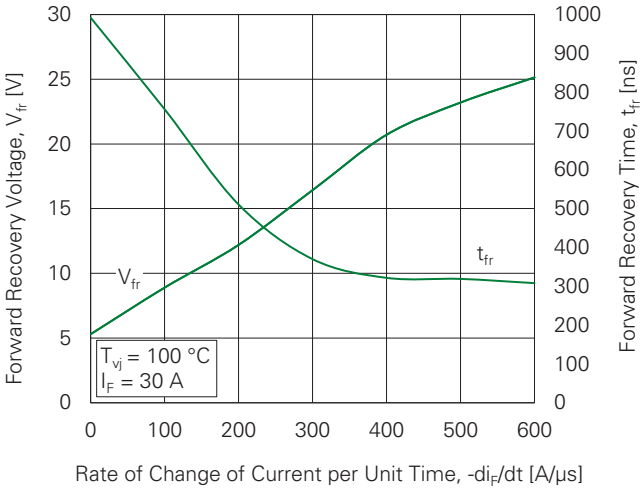
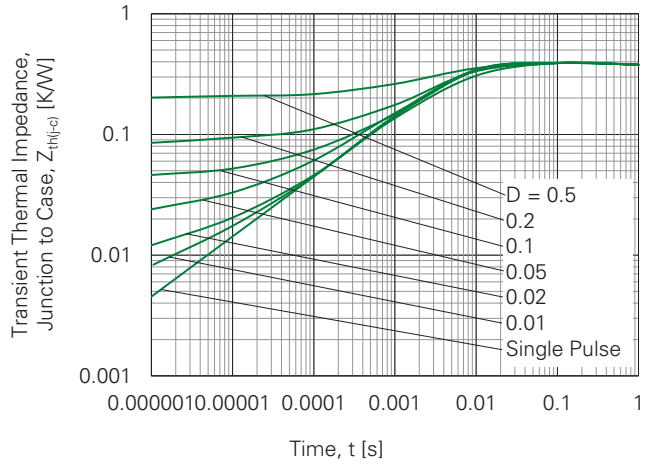
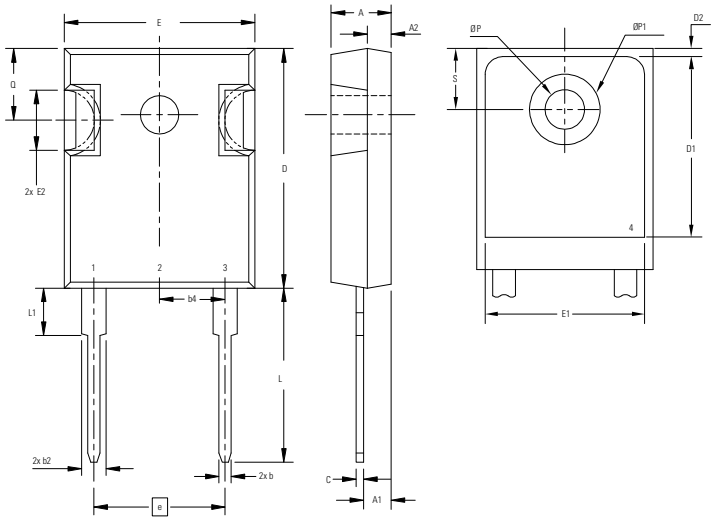


Fig. 6. Typical Transient Thermal Impedance, Junction to Case



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Part Outline Drawing TO-247-2L

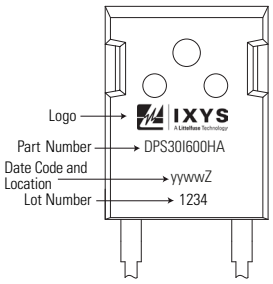


Symbol	Millimeters		Inches	
	Min.	Max.	Min.	Max
A	4.70	5.30	0.185	0.209
A1	2.21	2.59	0.087	0.102
A2	1.50	2.49	0.059	0.098
b	0.99	1.40	0.039	0.055
b2	1.65	2.39	0.065	0.094
b4	2.59	3.43	0.102	0.135
C	0.38	0.89	0.015	0.035
D	20.79	21.45	0.819	0.845
D1	13.07	–	0.515	–
D2	0.51	1.35	0.020	0.053
E	15.48	16.24	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

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)

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