



Features

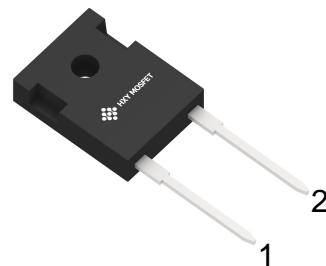
- 1.2kV Schottky Rectifier
- Zero Reverse Recovery Current
- High-Frequency Operation
- Temperature-Independent Switching
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F
- Increased Creepage/Clearance Distance

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

Applications

- Switch Mode Power Supplies (SMPS)
- Boost diodes in PFC or DC/DC stages
- Free Wheeling Diodes in Inverter stages
- AC/DC converters



TO-247-2L



Part Number	Package	Qty(PCS)
HWN101200WQ	TO247-2L	30

Maximum Ratings ($T_c=25^\circ\text{C}$ unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1300	V		
V_R	DC Peak Reverse Voltage	1200	V		
I_F	Continuous Forward Current	31.5 15 10	A	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=155^\circ\text{C}$	Fig. 3
I_{FRM}	Repetitive Peak Forward Surge Current	46 30	A	$T_c=25^\circ\text{C}, t_p=10\text{ ms, Half Sine Pulse}$ $T_c=110^\circ\text{C}, t_p=10\text{ ms, Half Sine Pulse}$	
I_{FSM}	Non-Repetitive Forward Surge Current	67 59	A	$T_c=25^\circ\text{C}, t_p=10\text{ ms, Half Sine Pulse}$ $T_c=110^\circ\text{C}, t_p=10\text{ ms, Half Sine Pulse}$	Fig. 8
$I_{F,Max}$	Non-Repetitive Peak Forward Current	750 620	A	$T_c=25^\circ\text{C}, t_p=10\text{ ms, Pulse}$ $T_c=110^\circ\text{C}, t_p=10\text{ ms, Pulse}$	Fig. 8
P_{tot}	Power Dissipation	153 66	W	$T_c=25^\circ\text{C}$ $T_c=110^\circ\text{C}$	Fig. 4
dV/dt	Diode dV/dt ruggedness	200	V/ns	$V_R=0-960\text{V}$	
$\int i^2 dt$	$i^2 t$ value	22.5 17.5	A ² s	$T_c=25^\circ\text{C}, t_p=10\text{ ms}$ $T_c=110^\circ\text{C}, t_p=10\text{ ms}$	
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		
	TO-247 Mounting Torque	1 8.8	Nm lbf-in	M3 Screw 6-32 Screw	



Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.5 2.2	1.8 3	V	$I_F = 10 \text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 10 \text{ A}$ $T_J = 175^\circ\text{C}$	Fig. 1
I_R	Reverse Current	30 55	250 350	μA	$V_R = 1200 \text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200 \text{ V}$ $T_J = 175^\circ\text{C}$	Fig. 2
Q_C	Total Capacitive Charge	52		nC	$V_R = 800 \text{ V}$, $I_F = 10\text{A}$ $dI/dt = 200 \text{ A}/\mu\text{s}$ $T_J = 25^\circ\text{C}$	Fig. 5
C	Total Capacitance	754 45 38		pF	$V_R = 0 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$ $V_R = 400 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$ $V_R = 800 \text{ V}$, $T_J = 25^\circ\text{C}$, $f = 1 \text{ MHz}$	Fig. 6
E_c	Capacitance Stored Energy	14.5		μJ	$V_R = 800 \text{ V}$	Fig. 7

Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.98	$^\circ\text{C}/\text{W}$	Fig. 9

Typical Performance

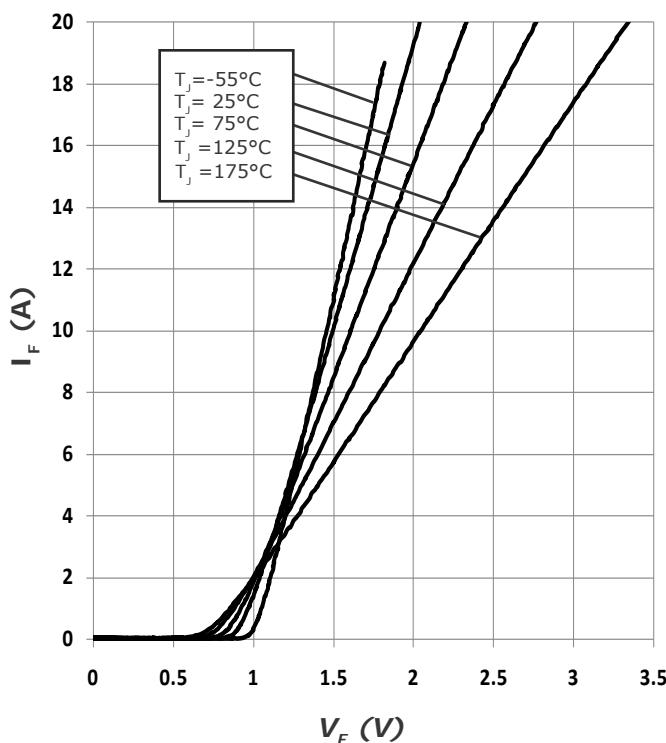


Figure 1. Forward Characteristics

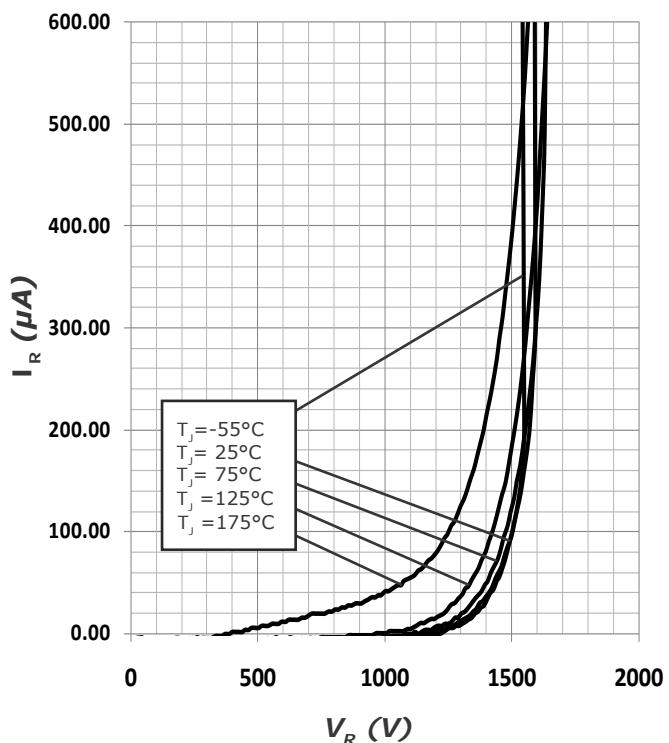
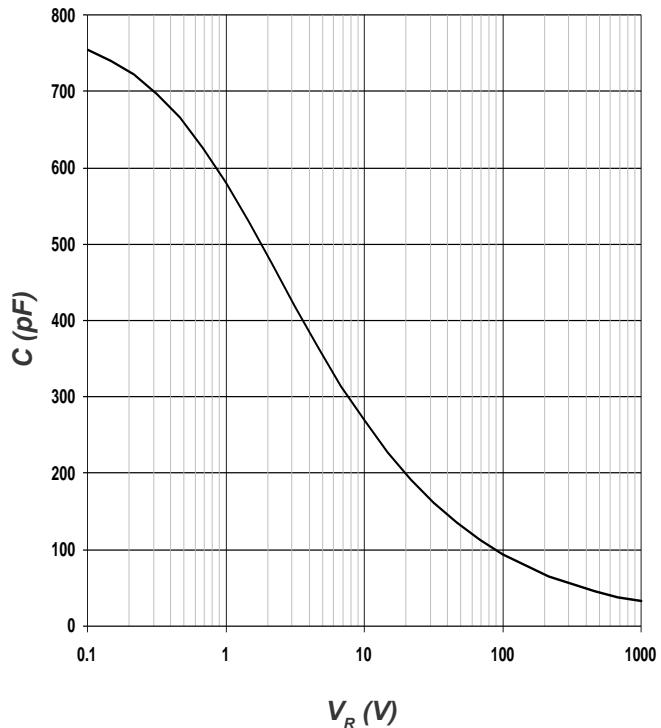
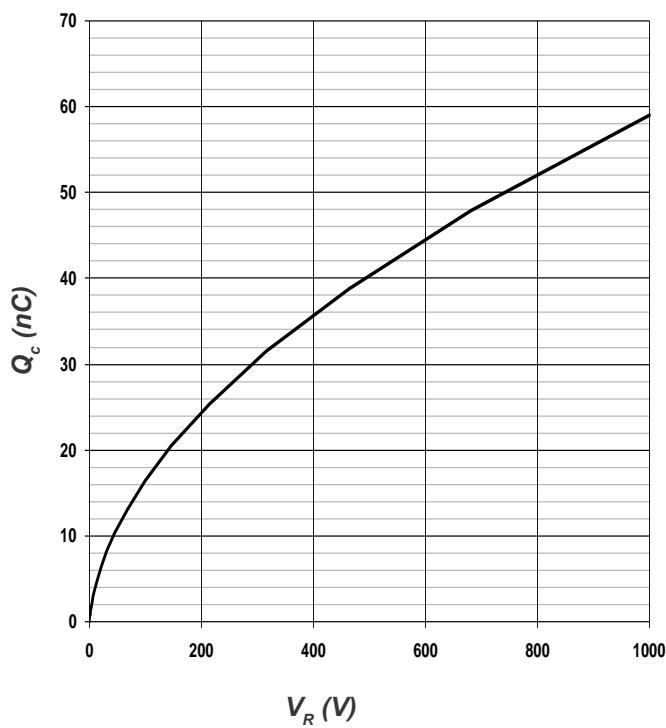
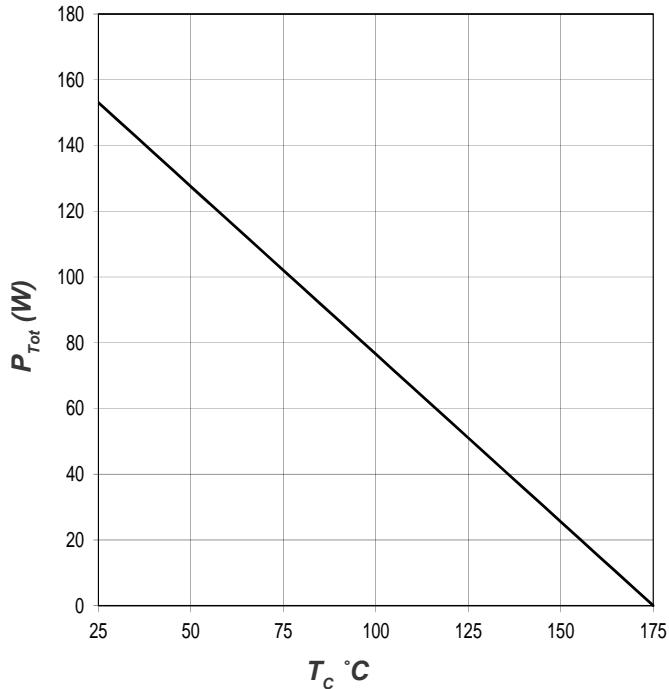
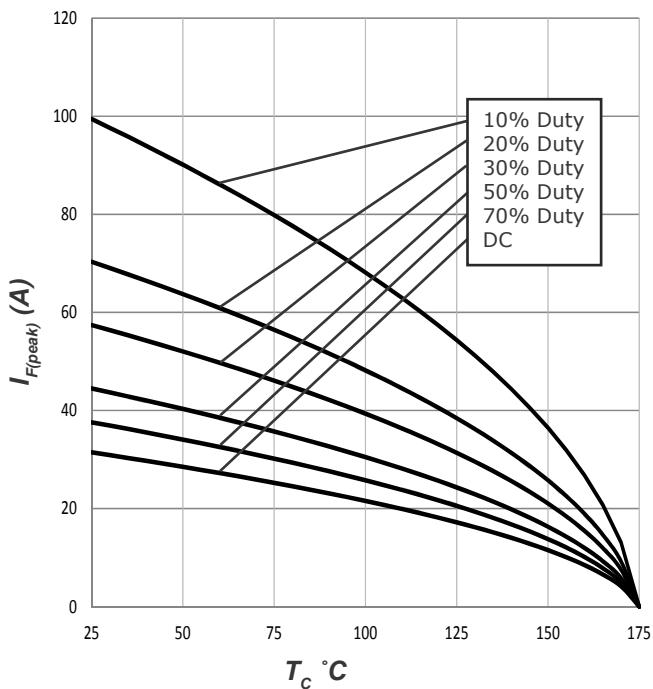


Figure 2. Reverse Characteristics



Typical Performance





Typical Performance

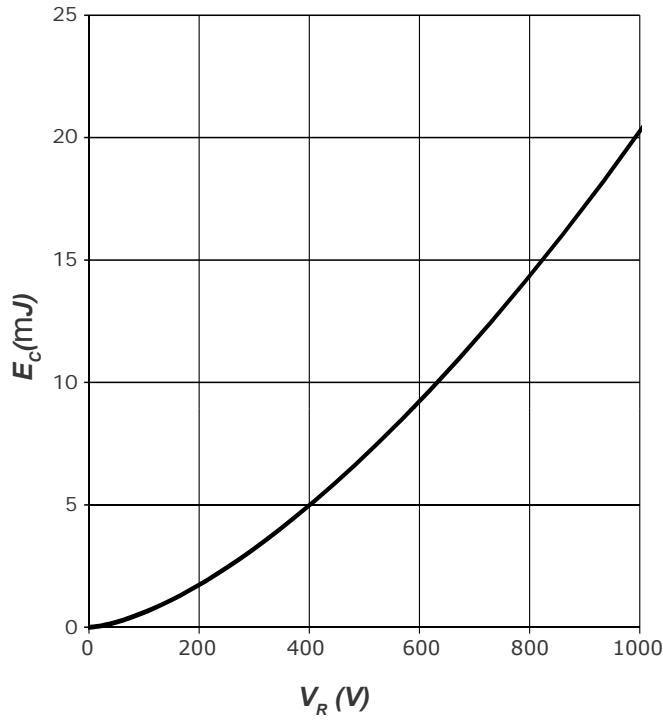


Figure 7. Typical Capacitance Stored Energy

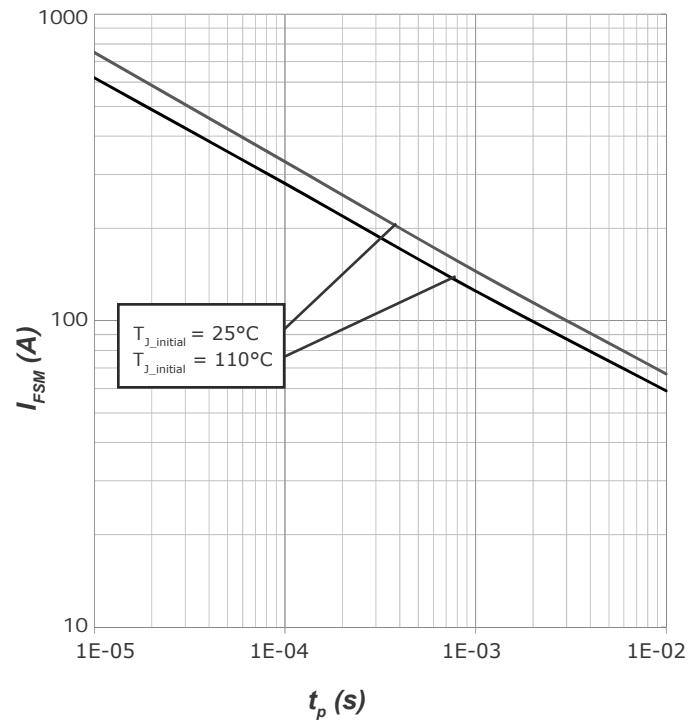


Figure 8. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

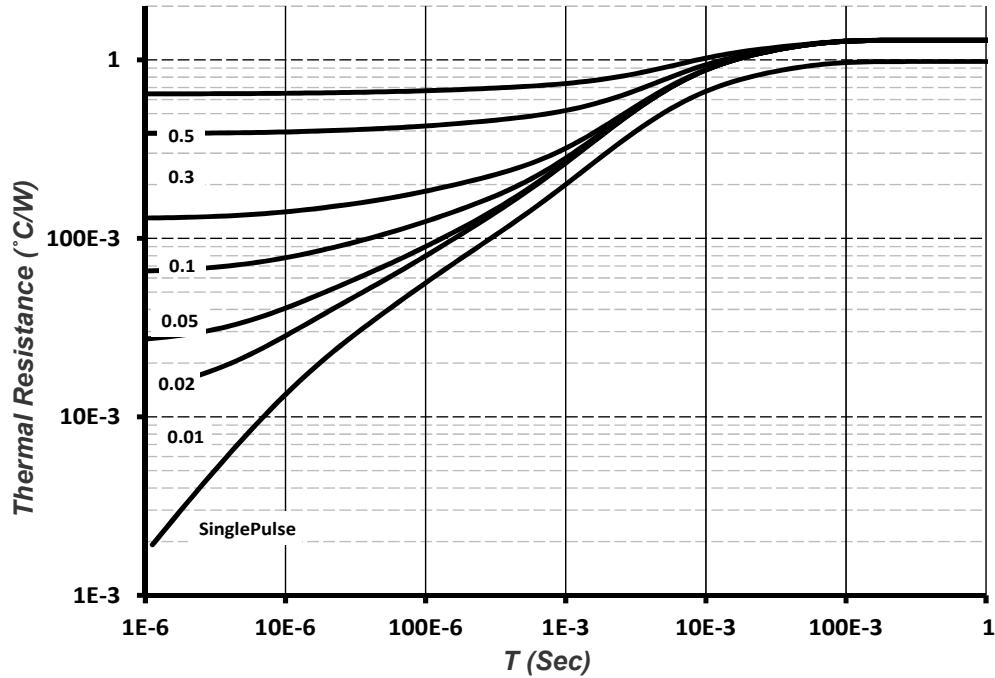
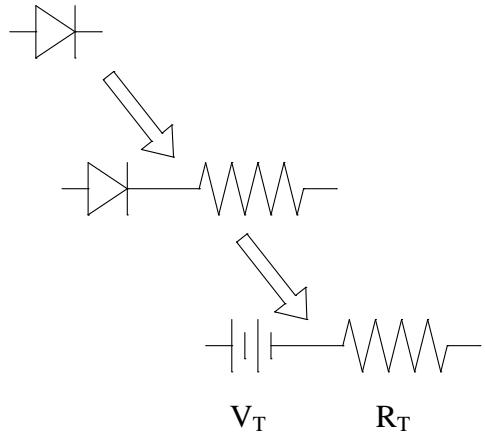


Figure 9. Transient Thermal Impedance



Diode Model



$$V_{fT} = V_T + I_f * R_T$$

$$V_T = 0.98 + (T_J^* - 1.71 * 10^{-3})$$
$$R_T = 0.040 + (T_J^* 5.32 * 10^{-4})$$

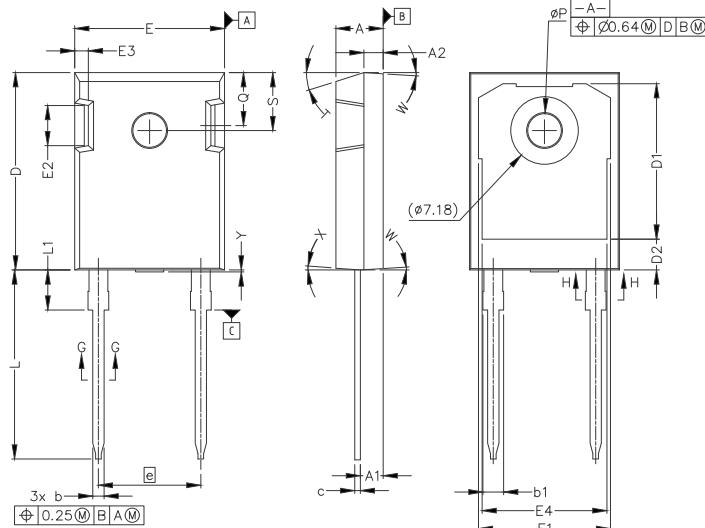
Note: T_J = Diode Junction Temperature In Degrees Celsius,
valid from 25°C to 175°C



Package Dimensions

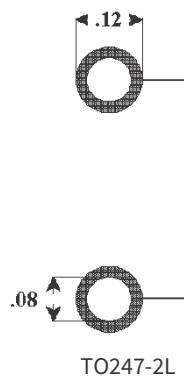
Package: TO247-2L

All dimensions in mm.



SYM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.83	5.21	.190	.205
A1	2.29	2.54	.090	.100
A2	1.91	2.16	.075	.085
b'	1.07	1.28	.042	.050
b	1.07	1.33	.042	.052
b1	1.91	2.41	.075	.095
b2	1.91	2.16	.075	.085
c'	0.55	0.65	.022	.026
c	0.55	0.68	.022	.027
D	20.80	21.10	.819	.831
D1	16.25	17.35	.640	.683
D2	2.86	3.16	.112	.124
E	15.75	16.13	.620	.635
E1	13.10	14.15	.516	.557
E2	3.68	5.10	.145	.201
E3	1.00	1.90	.039	.075
E4	12.38	13.43	.487	.529
e	10.88	BSC	.428	BSC
L	19.81	20.32	.780	.800
L1	4.10	4.40	.161	.173
ϕP	3.51	3.65	.138	.144
Q	5.49	6.00	.216	.236
S	6.04	6.30	.238	.248
T	17.5° REF.			
W	3.5° REF.			
X	4° REF.			
Y	0	0.50	0	0.020

Recommended Solder Pad Layout



TO247-2L

all units are in inches



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