



## Features

- 1200-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$

## Benefits

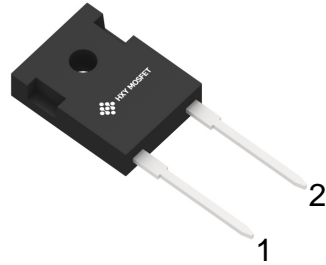
- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

## Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives



Part Number	Package	Qty(PCS)
S4D30120H	TO-247-2L	30



TO-247-2L



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

Symbol	Parameter	Value	Unit	Test Conditions
$V_{RRM}$	Repetitive Peak Reverse Voltage	1200	V	
$V_{RSM}$	Surge Peak Reverse Voltage	1200	V	
$I_F$	Continuous Forward Current	75.4 36.1 30	A	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=146^\circ\text{C}$
$I_{FRM}$	Repetitive Peak Forward Surge Current	100	A	$T_C=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	200	A	$T_C=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$P_{tot}$	Power Dissipation	357 155	W	$T_C=25^\circ\text{C}$ $T_C=110^\circ\text{C}$
$T_J, T_{stg}$	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$	
	TO-220 Mounting Torque	1	Nm	M3 Screw
$\int i^2 dt$	$i^2 dt$ value	200	$\text{A}^2\text{s}$	$T_C=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave



## Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$V_{DC}$	DC Blocking Voltage	1200			V	
$V_F$	Forward Voltage		1.5 2.18	1.7 2.5	V	$I_F = 30\text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 30\text{ A}$ $T_J = 175^\circ\text{C}$
$I_R$	Reverse Current		6.8 46.12	50 200	$\mu\text{A}$	$V_R = 1200\text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200\text{ V}$ $T_J = 175^\circ\text{C}$
$Q_C$	Total Capacitive Charge		122		nC	$V_R = 800\text{ V}$ $T_J = 25^\circ\text{C}$
C	Total Capacitance		1829 115 91		pF	$V_R = 0\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 400\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$ $V_R = 800\text{ V}$ , $T_J = 25^\circ\text{C}$ , $f = 1\text{ MHz}$
$E_C$	Capacitance Stored Energy		63		$\mu\text{J}$	$V_R = 800\text{ V}$

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.42	$^\circ\text{C/W}$

## Typical Performance

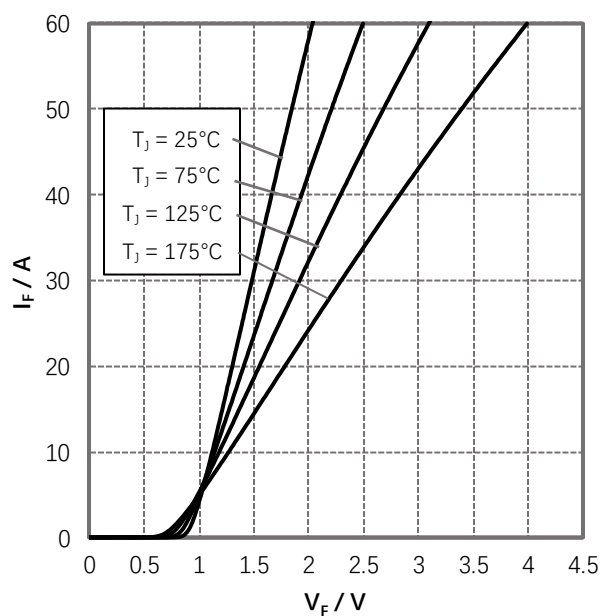


Figure 1. Forward Characteristics

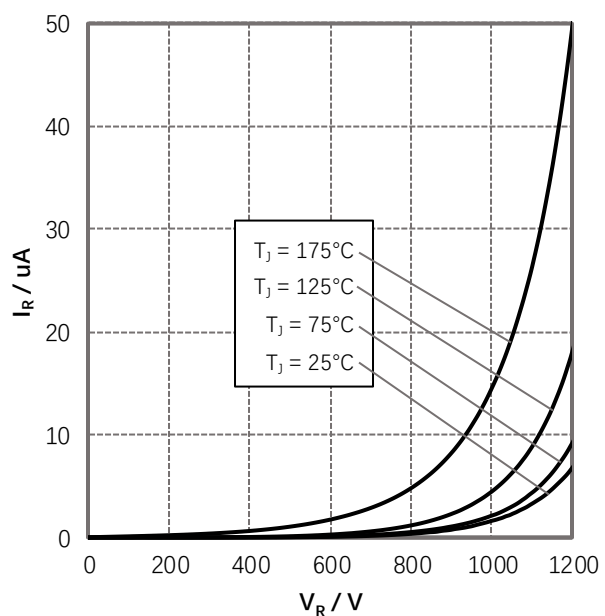


Figure 2. Reverse Characteristics

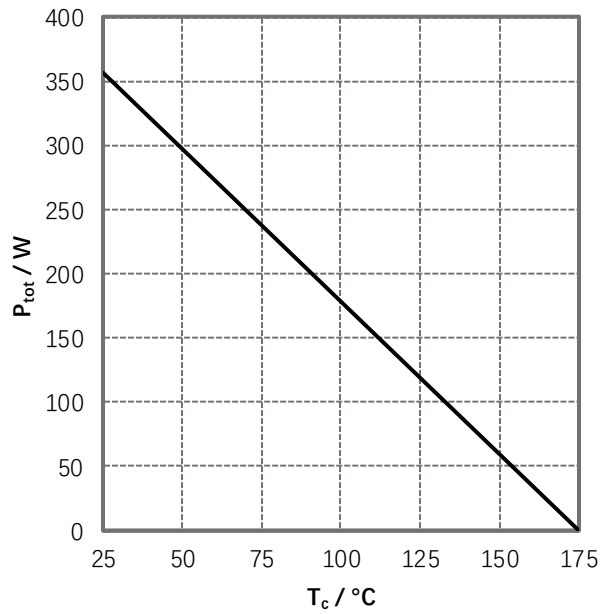


Figure 3. Power Derating

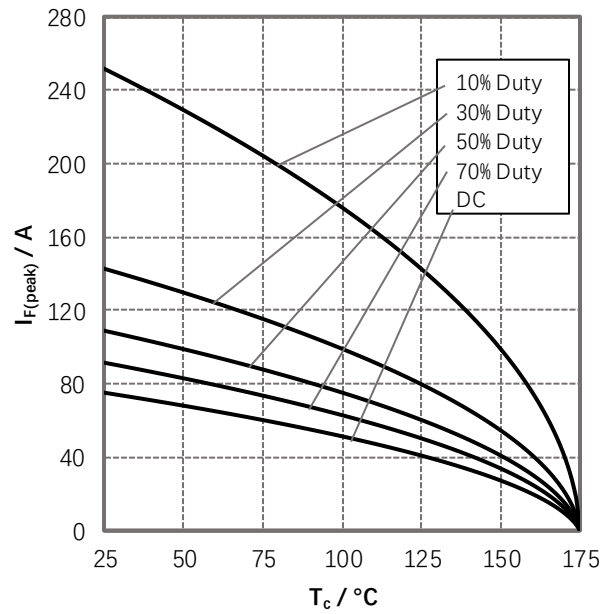


Figure 4. Current Derating

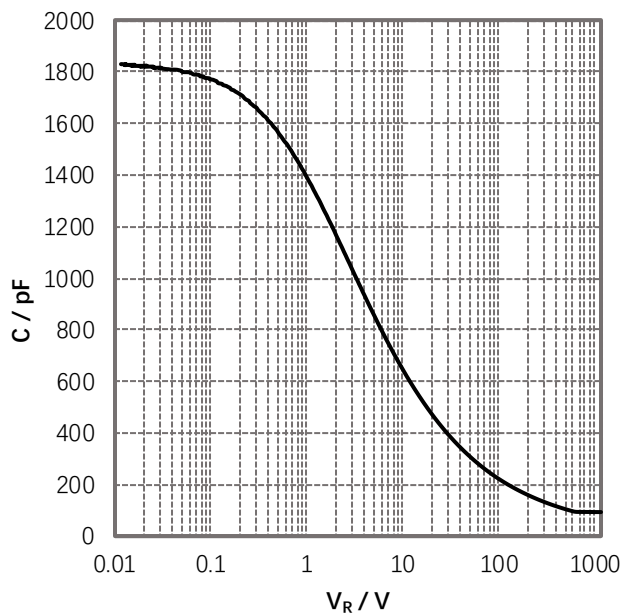


Figure 5. Capacitance vs. Reverse Voltage

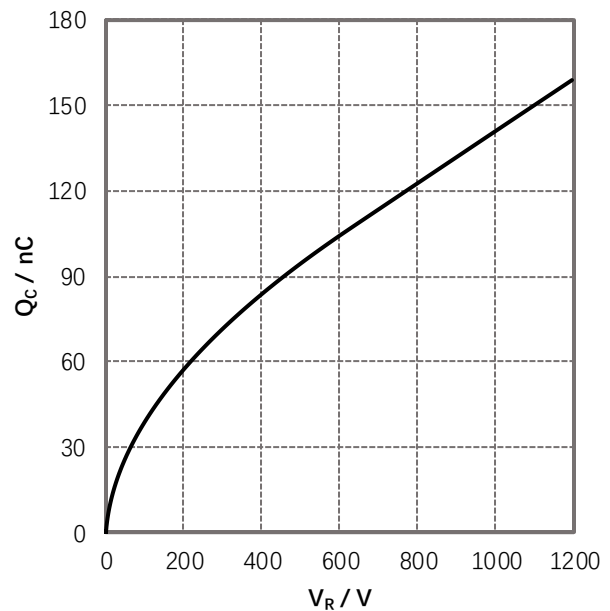


Figure 6. Total Capacitance Charge vs. Reverse Voltage

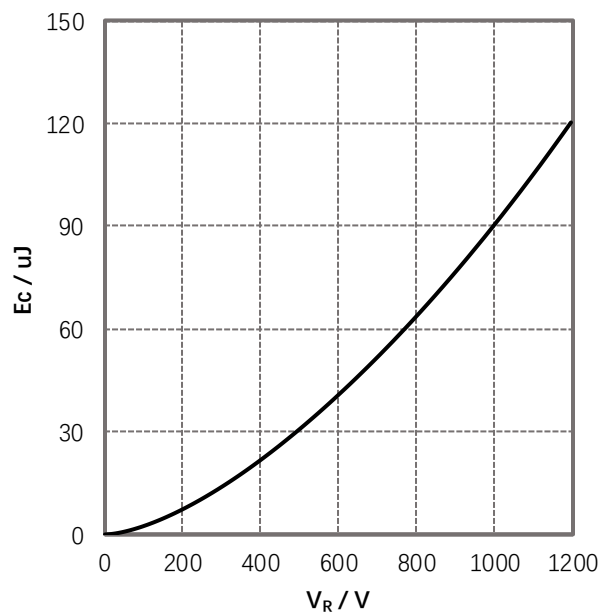


Figure 7. Capacitance Stored Energy

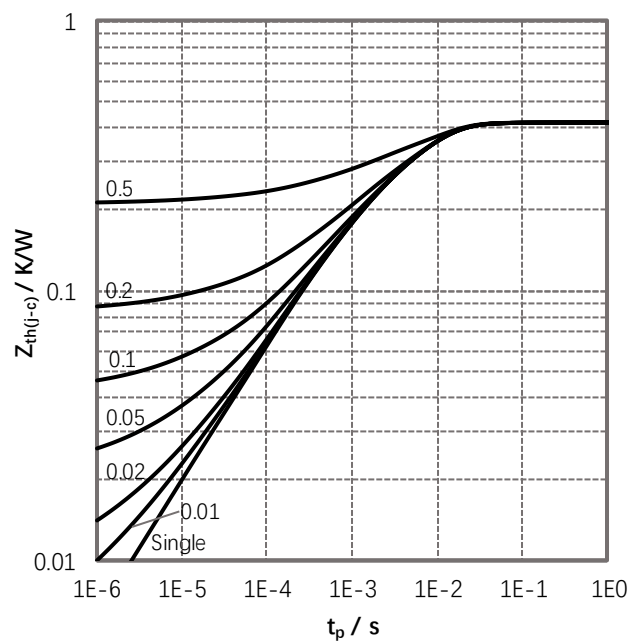
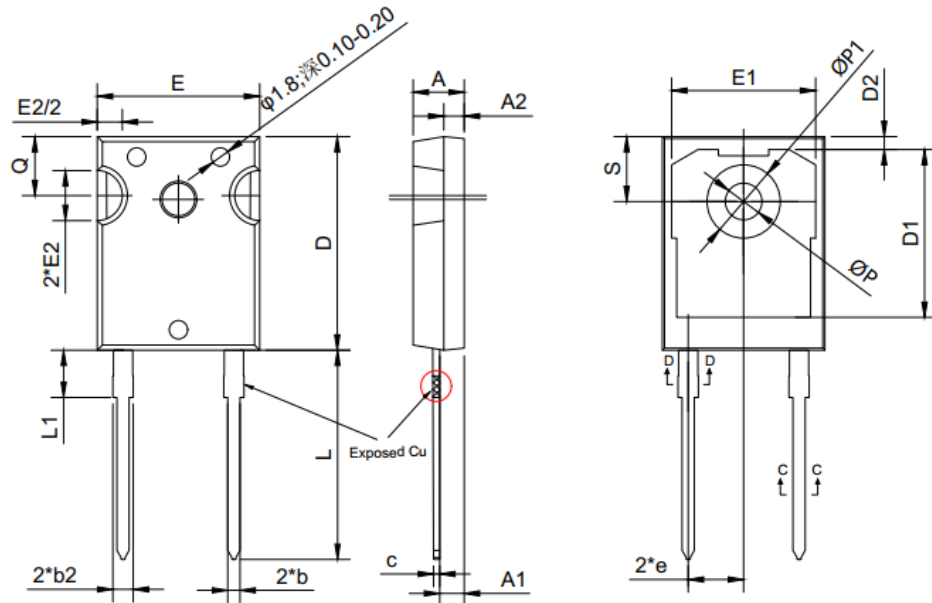


Figure 8. Transient Thermal Impedance

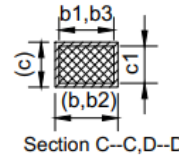


Package Information  
TO-247-2L



SYMBOL	DIMENSIONS		NOTES
	MIN	MAX	
A	4.83	5.21	
A1	2.29	2.55	
A2	1.50	2.49	
b	1.07	1.33	
b1	1.07	1.28	
b2	1.91	2.41	6
b3	1.91	2.34	
c	0.55	0.69	6
c1	0.55	0.65	
D	20.80	21.10	4
D1	16.25	17.65	5
D2	0.51	1.35	
E	15.75	16.13	4
E1	13.10	14.16	5
E2	3.68	5.49	3
e	5.44BSC		
L	19.81	20.32	6
L1	3.90	4.40	7
phi P	3.51	3.65	
phi P1	7.19REF		
Q	5.39	6.20	
S	6.04	6.30	

- Note:
1. Package Reference: JEDEC TO-247, Variation AD.
  2. All Dimensions Are In mm.
  3. Solder Required, Notch May Be Rounded.
  4. Dimension D & E Do Not Include Mold Flash. Mold Flash Shall Not Exceed 0.127mm Per Side. These Dimensions Are Measured At The Outermost Extreme Of The Plastic Body.
  5. Thermal Pad Contour Optional Within Dimension D1 & E1.
  6. Lead Finish Uncontrolled In L1.
  7. phi P To Have A Maximum Draft Angle Of 1.5° To The Top Of The Part With A Maximum Hole Diameter Of 3.91mm.
  8. Dimension "b2" And "b4" Does Not Include Dambar Protrusion. Allowable Dambar Protrusion Shall Be 0.10mm Total In Excess Of "b2" And "b4" Dimension At Maximum Material Condition.



Section C-C, D-D



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