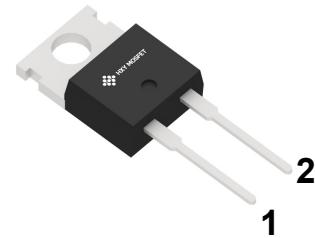




## Features

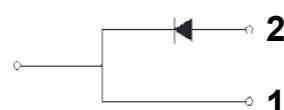
- 1200-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on  $V_F$



TO-220C-2L

## 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)
S4D20120A	TO-220C-2L	50

## 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	53 25.4 20	A	$T_c=25^\circ\text{C}$ $T_c=135^\circ\text{C}$ $T_c=148.5^\circ\text{C}$
$I_{FRM}$	Repetitive Peak Forward Surge Current	90	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$I_{FSM}$	Non-Repetitive Peak Forward Surge Current	180	A	$T_c=25^\circ\text{C}$ , $t_p = 10$ ms, Half Sine Wave
$P_{tot}$	Power Dissipation	250 108	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	°C	
M	TO-220 Mounting Torque	1	Nm	M3 Screw
$\int i^2 dt$	$i^2 dt$ value	162	A <sup>2</sup> 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		1.47 2.2	1.7 2.5	V	$I_F = 20 \text{ A}$ $T_J = 25^\circ\text{C}$ $I_F = 20 \text{ A}$ $T_J = 175^\circ\text{C}$
$I_R$	Reverse Current		5.5 32	50 100	$\mu\text{A}$	$V_R = 1200 \text{ V}$ $T_J = 25^\circ\text{C}$ $V_R = 1200 \text{ V}$ $T_J = 175^\circ\text{C}$
$Q_c$	Total Capacitive Charge		80		nC	$V_R = 800 \text{ V}$ $T_J = 25^\circ\text{C}$
C	Total Capacitance		1235 75 62		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		41		$\mu\text{J}$	$V_R = 800 \text{ V}$

## Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.6	$^\circ\text{C/W}$

## Typical Performance

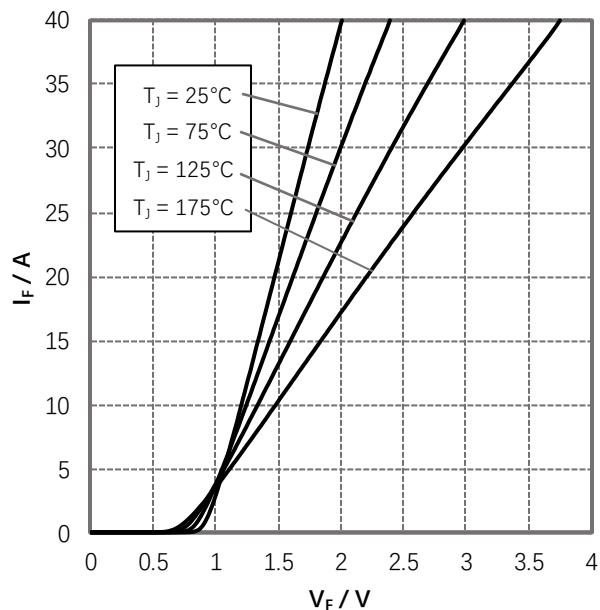


Figure 1. Forward Characteristics

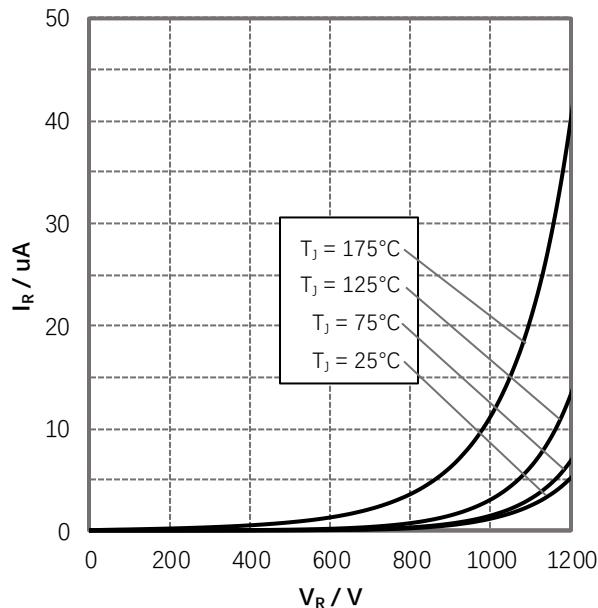


Figure 2. Reverse Characteristics

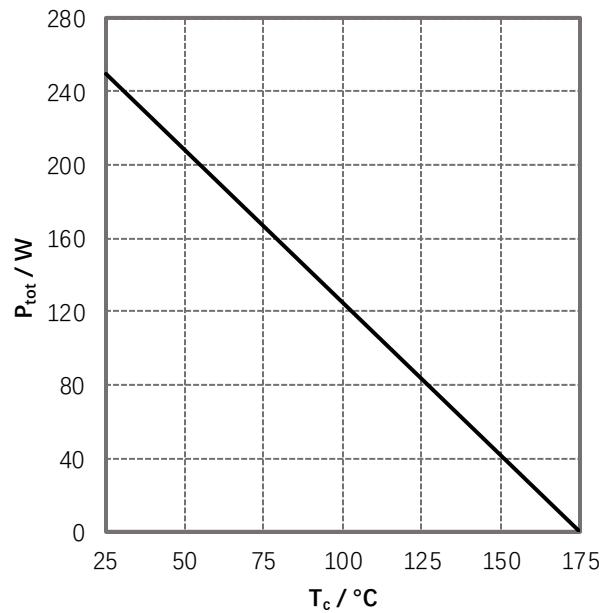


Figure 3. Power Derating

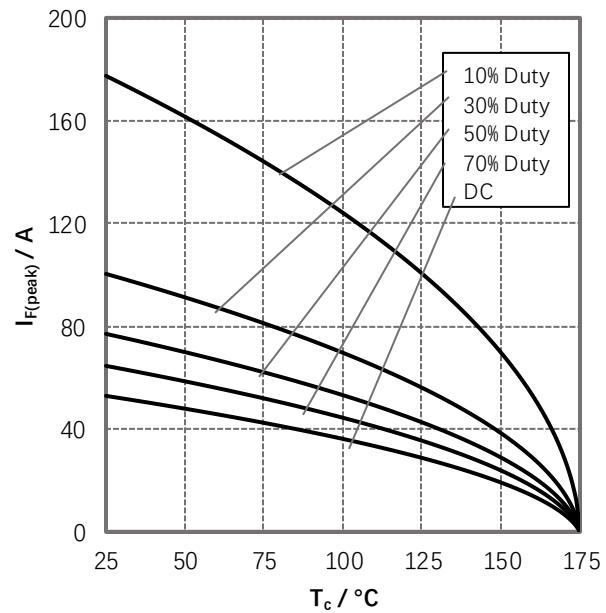


Figure 4. Current Derating

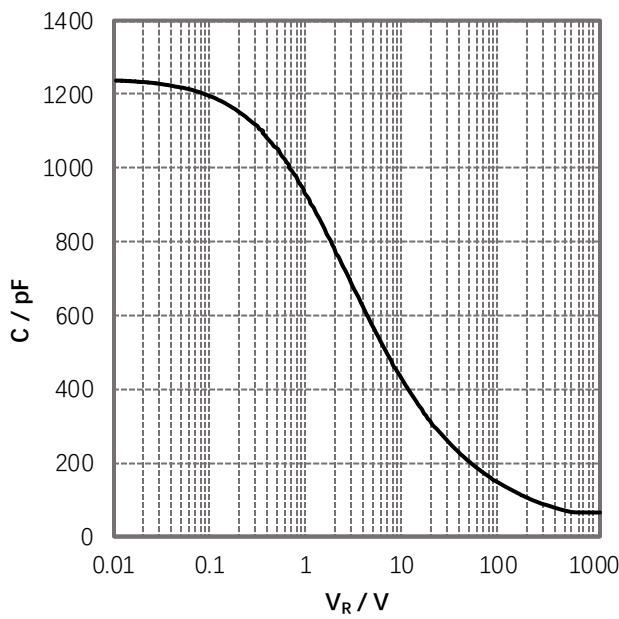


Figure 5. Capacitance vs. Reverse Voltage

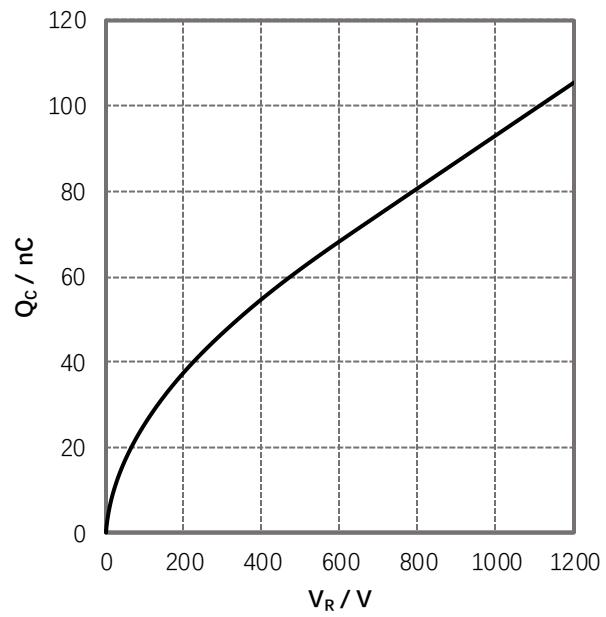


Figure 6. Total Capacitance Charge vs. Reverse Voltage

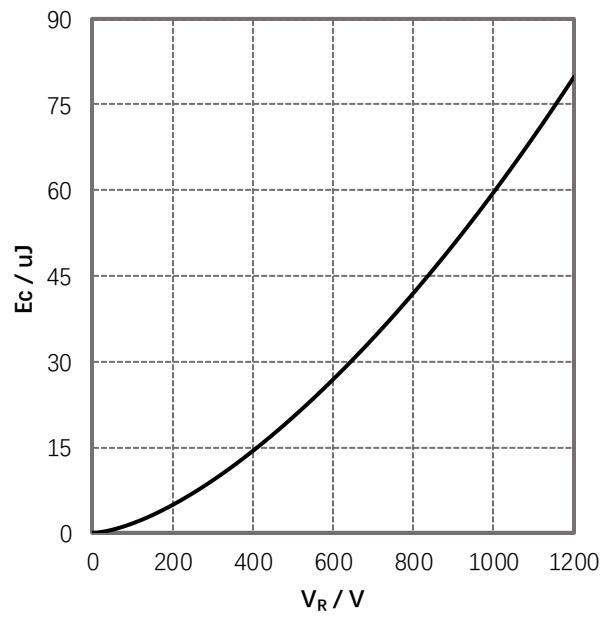


Figure 7. Capacitance Stored Energy

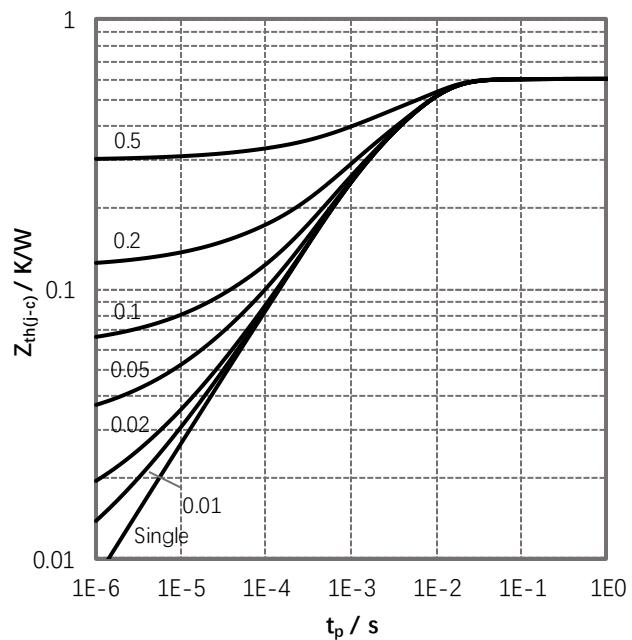
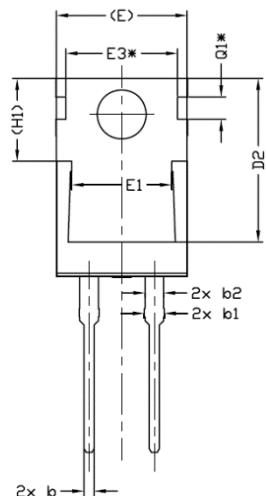
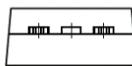
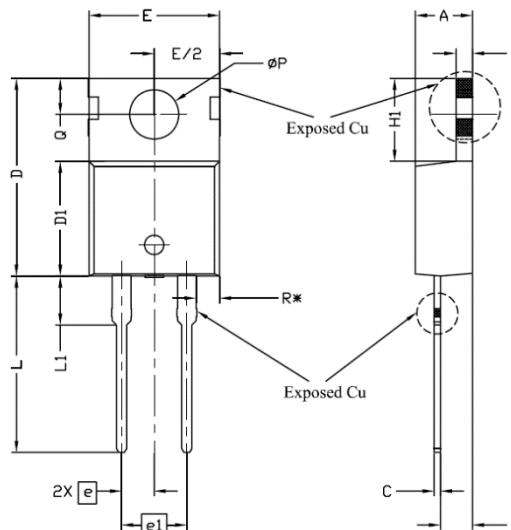


Figure 8. Transient Thermal Impedance

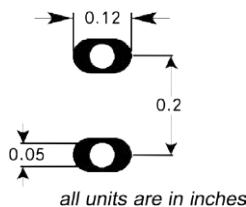


## Package Information TO-220C-2L



SYMBOL	DIMENSIONS			NOTES
	MIN.	NOM.	MAX.	
A	4,24	4,44	4,64	
A1	1,15	1,27	1,40	
A2	2,30	2,48	2,70	
b	0,70	0,80	0,90	
b1	1,20	1,55	1,75	
b2	1,20	1,45	1,70	
c	0,40	0,50	0,60	
D	14,70	15,37	16,00	4
D1	8,82	8,92	9,02	
D2	12,43	12,73	12,83	5
E	9,96	10,16	10,36	4,5
E1	6,86	7,77	8,89	5
E3*	8,70REF.			
e	2,54BSC			
e1	5,08BSC			
H1	6,30	6,45	6,60	5,6
L	13,47	13,72	13,97	
L1	3,60	3,80	4,00	
ØP	3,75	3,84	3,93	
Q	2,60	2,80	3,00	
Q1*	1,73REF.			
R*	1,82REF.			

## Recommended Solder Pad Layout



TO-220C-2L



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