

## Features

- Zero Forward/Reverse Recovery Current
- High Blocking Voltage
- High Frequency Operation
- Positive Temperature Coefficient on  $V_F$
- Temperature Independent Switching Behavior
- High surge current capability
- 100% avalanche tested

## Benefits

- Higher System Efficiency
- Parallel Device Convenience without thermal runaway
- High Temperature Application
- No Switching loss
- Hard Switching & Higher Reliability
- Environmental Protection

## Applications

- Servo Drives
- Solar / Wind Inverters
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies



TO-247-2



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

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		1200	V
Continuous Forward Current	$I_F$	$T_C=25^\circ\text{C}$	50	A
		$T_C=135^\circ\text{C}$	21	
		$T_C=150^\circ\text{C}$	15	
Non repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	130	A
		$T_C = 110^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse	120	
Repetitive peak Forward Surge Current	$I_{FRM}$	$T_C = 25^\circ\text{C}$ , $t_p=10$ ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	100	A
		$T_C = 110^\circ\text{C}$ , $t_p=10$ ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	90	
Total power dissipation	$P_D$	$T_C=25^\circ\text{C}$	240	W
		$T_C=110^\circ\text{C}$	98	
Single Pulse Avalanche Energy	$E_{AS}$	$L=2\text{mH}$ , $I_{AS}=10\text{A}$	100	mJ
Diode $dv/dt$ ruggedness	$dv/dt$	$V_R = 0-1200\text{V}$	80	V/ns
Operating Junction Temperature	$T_J$		-55 to 175	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-55 to 175	$^\circ\text{C}$

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

### Electrical Characteristics

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
DC Blocking Voltage	$V_{DC}$	$T_J = 25^{\circ}C$	1200			V
Forward Voltage	$V_F$	$I_F = 20A, T_J = 25^{\circ}C$		1.45	1.8	V
		$I_F = 20A, T_J = 125^{\circ}C$		1.8		V
		$I_F = 20A, T_J = 175^{\circ}C$		2.0		V
Reverse Current	$I_R$	$V_R = 1200V, T_J = 25^{\circ}C$		10	200	$\mu A$
		$V_R = 1200V, T_J = 125^{\circ}C$		20	250	$\mu A$
		$V_R = 1200V, T_J = 175^{\circ}C$		50	300	$\mu A$
Total Capacitive Charge	$Q_C$	$V_R = 800V, T_J = 25^{\circ}C$		93		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^{\circ}C,$ Freq = 1MHz		1120		pF
		$V_R = 400V, T_J = 25^{\circ}C,$ Freq = 1MHz		92		
		$V_R = 800V, T_J = 25^{\circ}C,$ Freq = 1MHz		62		

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

### Thermal Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Thermal Resistance	$R_{th(j-c)}$	junction-case		0.6	0.75	$^{\circ}C/W$

### Ordering Information

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
SC4D15120H	TO-247-2	SC4D15120H	-55 to 175 $^{\circ}C$	1	TUBE,450	Rohs

**Typical Electrical Curves**

Figure 1. Forward Characteristics

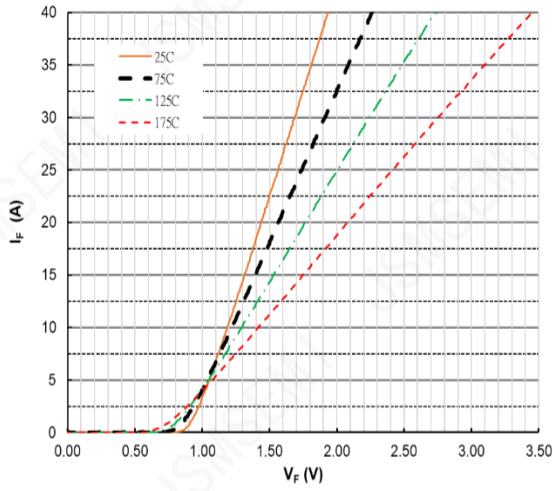


Figure 2. Forward Characteristics

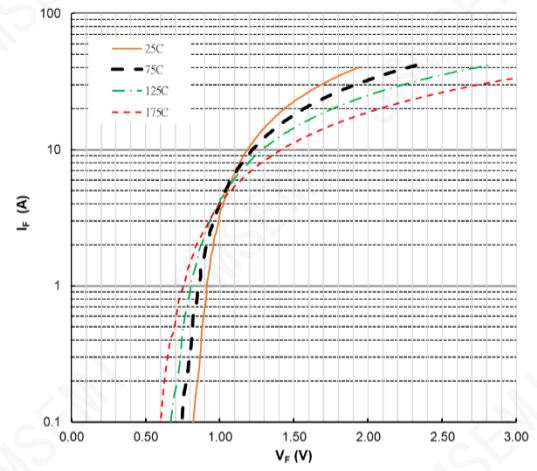


Figure 3. Reverse Characteristics

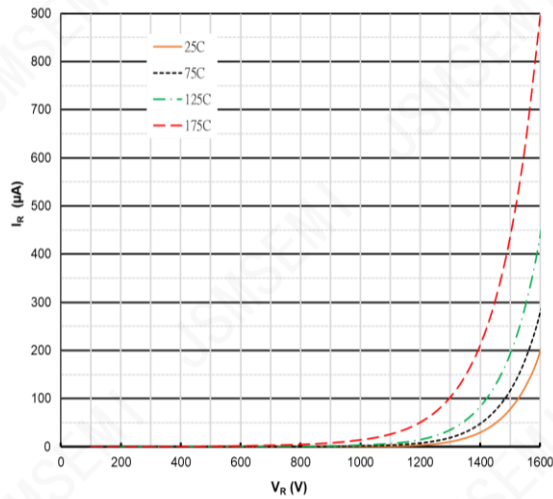


Figure 4. Power Derating

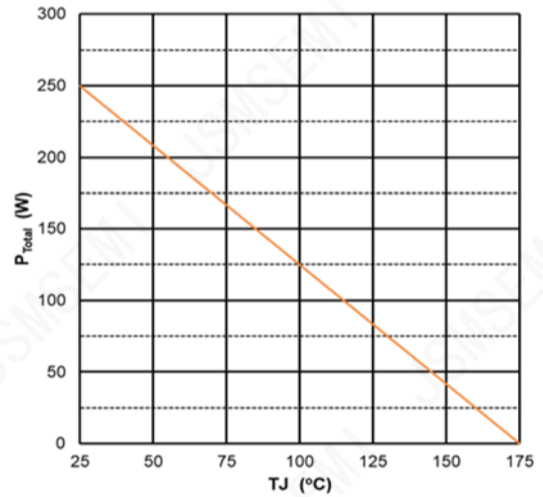


Figure 5. Reverse charge vs. Reverse Voltage

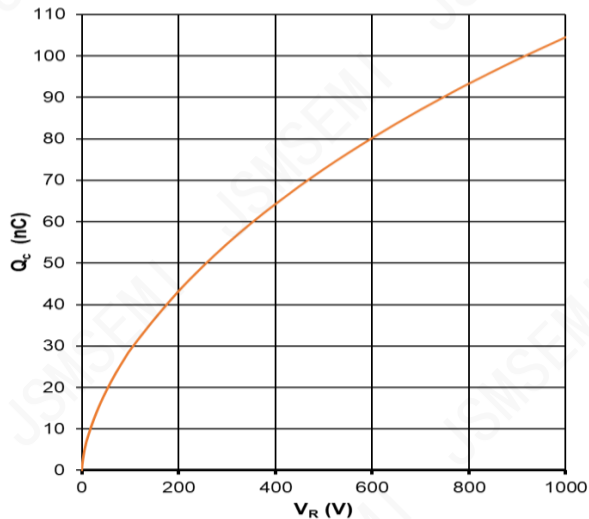
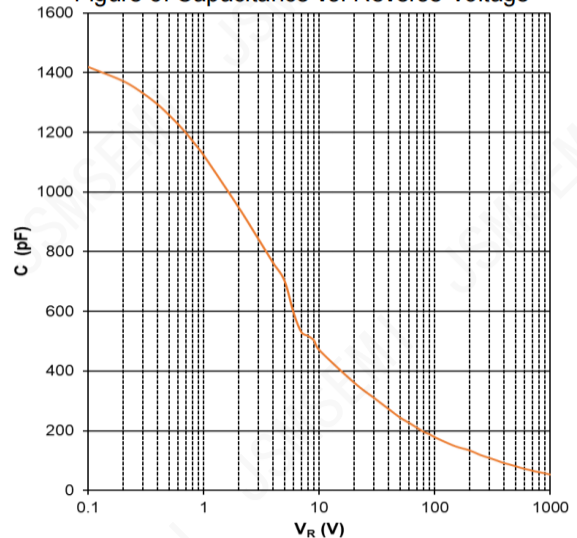
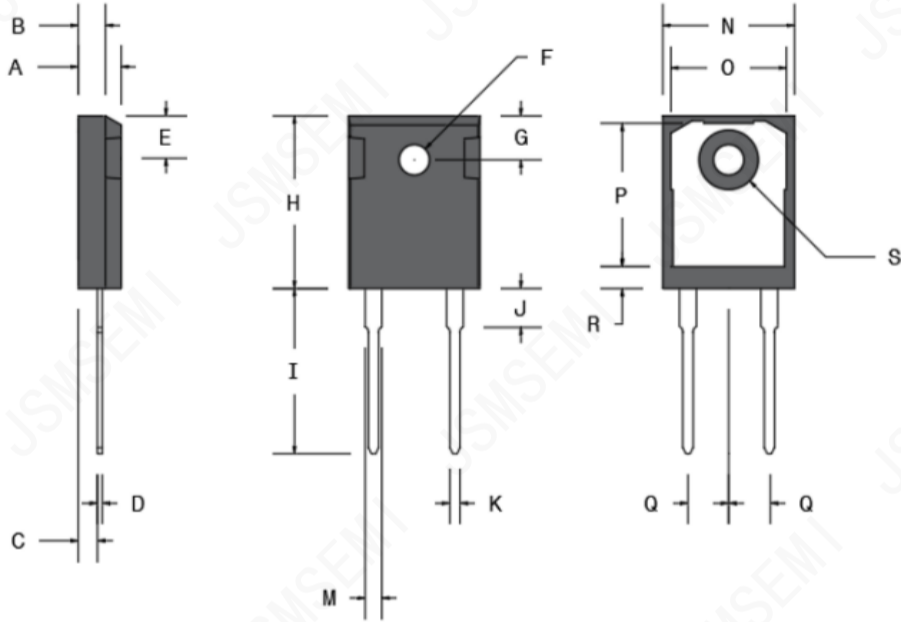


Figure 6. Capacitance vs. Reverse Voltage



## Package Dimensions

(TO-247-2 Package)



SYMBOL	MIN	MAX	MIN	MAX
	[mm]	[mm]	[INCH]	[INCH]
A	4.69	5.31	0.185	0.209
B	1.49	2.49	0.059	0.098
C	2.21	2.59	0.087	0.102
D	0.40	0.79	0.016	0.031
E	5.38	6.20	0.212	0.244
F	3.50	3.81	0.138	0.150
G	6.15BSC		0.242BSC	
H	20.80	21.46	0.819	0.845
I	19.81	20.32	0.780	0.800
J	4.00	4.50	0.157	0.177
K	1.01	1.40	0.040	0.055
L	2.87	3.12	0.113	0.123
M	1.65	2.13	0.065	0.084
N	15.49	16.26	0.610	0.640
O	13.50	14.50	0.531	0.571
P	16.50	17.50	0.650	0.689
Q	5.45BSC		0.215BSC	
R	2.00	2.75	0.079	0.108
S	7.10	7.50	0.280	0.295

## Revision History

Rev.	Change	Date
V1.0	Initial version	2/23/2022

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