

## 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

## Benefits

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

## Applications

- PC Power
- Server Power Supply
- AC/DC converters
- DC/DC converters
- Uninterruptable power supplies



TO-220-2



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

Parameter	Symbol	Test conditions	Value	Unit
Peak Repetitive Reverse Voltage	$V_{RRM}$		650	V
Peak Reverse Surge Voltage	$V_{RSM}$		650	V
DC Blocking Voltage	$V_R$		650	V
Continuous Forward Current	$I_F$	$T_C=25^\circ\text{C}$ $T_C=135^\circ\text{C}$ $T_C=150^\circ\text{C}$	32 14 10	A
Non repetitive Forward Surge Current	$I_{FSM}$	$T_C = 25^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse $T_C = 150^\circ\text{C}$ , $t_p=10$ ms, Half Sine Pulse $T_C = 25^\circ\text{C}$ , $t_p=10$ $\mu\text{s}$ , Square	65 55 520	A
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 $T_C = 150^\circ\text{C}$ , $t_p=10$ ms, Freq = 0.1Hz, 100 cycles, Half Sine Pulse	55 45	A
Total power dissipation	$P_D$	$T_C=25^\circ\text{C}$	94	W
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	$V_{DC}$	$I_R = 250\mu A, T_J = 25^\circ C$	650			V
Forward Voltage	$V_F$	$I_F = 10A, T_J = 25^\circ C$		1.45	1.8	V
		$I_F = 10A, T_J = 125^\circ C$		1.6		
		$I_F = 10A, T_J = 175^\circ C$		1.7		V
Reverse Current	$I_R$	$V_R = 650V, T_J = 25^\circ C$		12	80	$\mu A$
		$V_R = 650V, T_J = 125^\circ C$		68		$\mu A$
		$V_R = 650V, T_J = 175^\circ C$		190		$\mu A$
Total Capacitive Charge	$Q_C$	$V_R = 400V$ $T_J = 25^\circ C$		23		nC
Total Capacitance	C	$V_R = 1V, T_J = 25^\circ C,$ Freq = 1MHz		380		pF
		$V_R = 200V, T_J = 25^\circ C,$ Freq = 1MHz		48		
		$V_R = 400V, T_J = 25^\circ C,$ Freq = 1MHz		31		

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		1.6		$^\circ C/W$

**Ordering Information**

Order number	Package	Marking	Operation Temperature Range	MSL Grade	Ship,Quantity	Green
SFFSP1065B-F085	TO-220-2	SC6D10065A	-55 to 175 $^\circ C$	1	TUBE,1000	RoHS

**Typical Electrical Curves**

Figure 1. Forward Characteristics

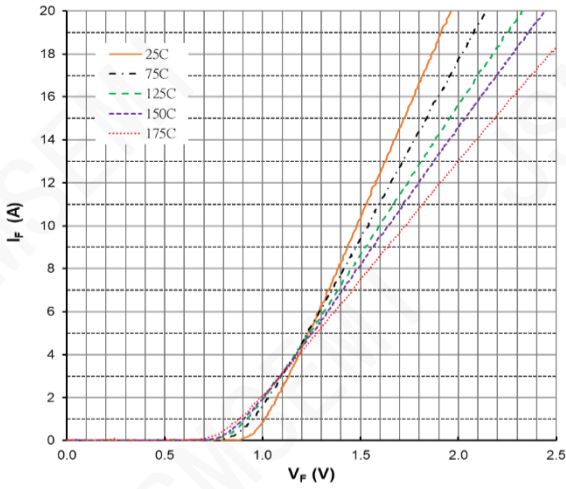


Figure 2. Forward Characteristics

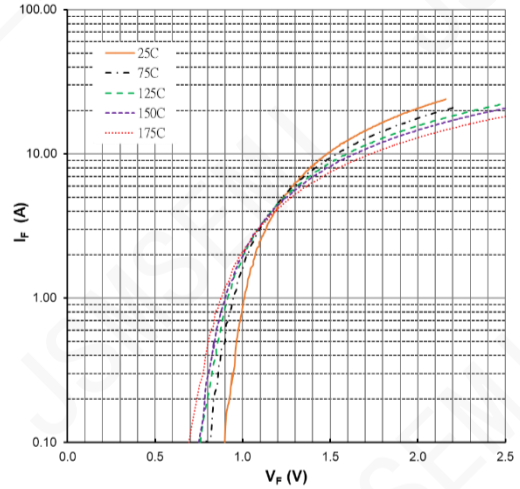


Figure 3. Reverse Characteristics

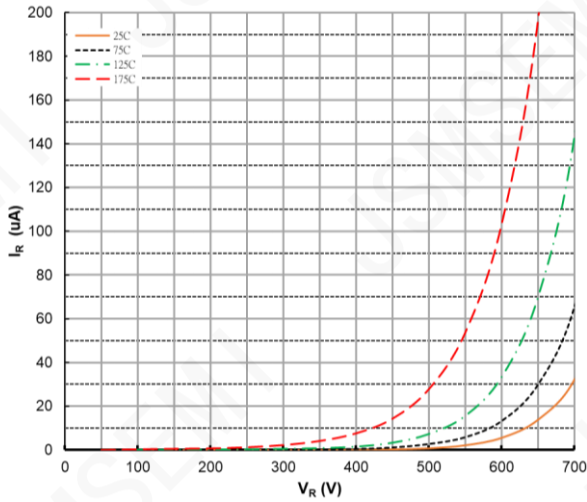


Figure 4. Power Derating

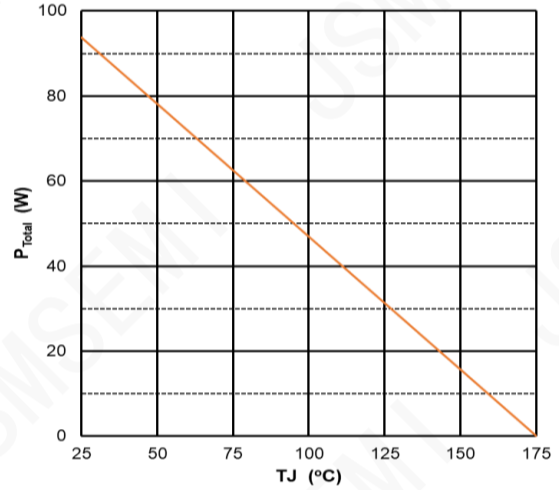


Figure 5. Capacitance vs Reverse Voltage

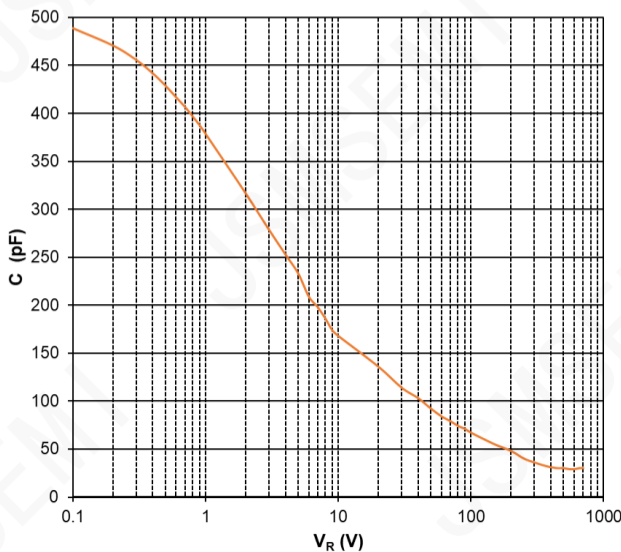
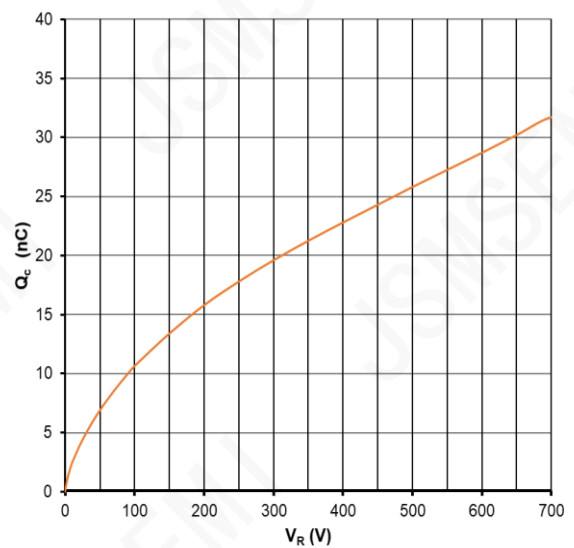
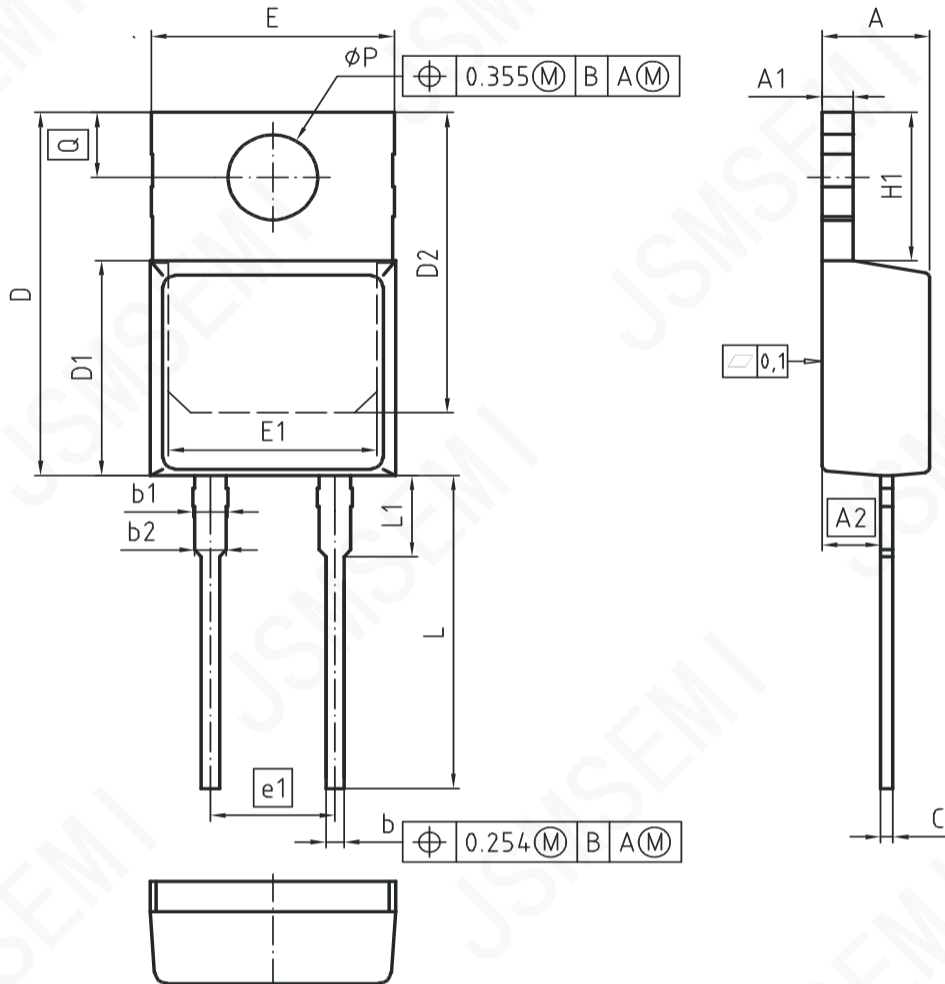


Figure 6. Recovery Charge vs Reverse Voltage



### Package Dimensions

(TO-220-2 Package)



DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	4.30	4.50	0.169	0.177
A1	1.17	1.37	0.046	0.054
A2	2.30	2.50	0.091	0.098
b	0.65	0.85	0.026	0.033
b1	1.19	1.69	0.047	0.066
b2	1.19	1.39	0.047	0.055
c	0.40	0.60	0.016	0.024
D	15.35	15.95	0.604	0.628
D1	9.05	9.45	0.356	0.372
D2	12.30	13.05	0.484	0.514
E	9.80	10.20	0.386	0.402
E1	7.25	8.60	0.285	0.339
e1	5.08		0.200	
N	2		2	
H1	5.90	6.90	0.232	0.272
L	13.00	14.00	0.512	0.551
L1	3.30	3.70	0.130	0.146
$\phi P$	3.55	3.90	0.140	0.146
Q	2.60	3.00	0.102	0.118

## Revision History

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

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