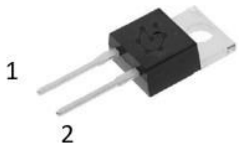
SiC SBD P4D06010I2

650V SiC Schottky Diode

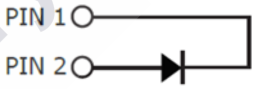


Features

- Qualified to AEC-Q101
- Ultra-Fast Switching
- Zero Reverse Recovery Current
- High-Frequency Operation
- Low V_F SBD series
- Positive Temperature Coefficient on V_F
- Full Isolated Package for Direct Heat Sinking
- High Surge Current
- 100% UIS tested

TO-220I-2

Cathode	1
Anode	2



Standards Benefits

- Improve System Efficiency
- Reduction of Heat Sink Requirement
- Essentially No Switching Losses
- Parallel Devices Without Thermal Runaway

Application

- Consumer SMPS
- Boost Diodes in PFC or DC/DC Stages
- AC/DC Converters

Order Information

Part Number	Package	Marking
P4D06010I2	TO-220I-2	P4D06010I2

Contents

1. Maximum Ratings

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Value	Unit	Test condition
Repetitive Peak Reverse Voltage	V_{RRM}	650	V	T_C= 25℃
Surge Peak Reverse Voltage	V_{RSM}	650	V	T_C= 25℃
DC Blocking Voltage	V_R	650	V	T_C= 25℃
Forward Current	I_F	31 13 10	A	T_C= 25℃ T_C= 125℃ T_C= 140℃
Non-Repetitive Forward Surge Current	I_{FSM}	80 67	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Repetitive Peak Forward Surge Current	I_{FRM}	57 25	A	T_C= 25℃, t_p= 10ms T_C= 125℃, t_p= 10ms
Power Dissipation	P_{tot}	59	W	T_C= 25℃
Operating Junction and Storage Temperature	T_J, T_{STG}	-55 to +175	℃	
TO-220 Mounting Torque M3 Screw	T_{orq}	1 8.8	N*m Ibf-in	

2. Electrical Characteristics

At T_J= 25℃, unless specified otherwise

Parameter	Symbol	Values			Unit	Test condition
		Min.	Typ.	Max.		
Forward Voltage	V_F	/	1.29	1.5	V	I_F= 10A, T_J= 25℃
			1.45	/		I_F= 10A, T_J= 175℃
Reverse Current	I_R	/	12	41	μA	V_R= 650V, T_J= 25℃
			200	/		V_R= 650V, T_J= 175℃
Total Capacitance	C	/	555	/	pF	V_R= 0V, T_J= 25℃ f= 1MHz
			59			V_R= 200V, T_J= 25℃ f= 1MHz
			44			V_R= 400V, T_J= 25℃ f= 1MHz
Total Capacitive Charge	Q_C	/	26	/	nC	V_R= 400V, I_F= 10A di/dt= 500A/μs T_J= 25℃

3. Thermal Characteristics

Parameter	Symbol	Values	Unit
Thermal Resistance from Junction to Case	$R_{\theta JC}$	2.53	℃/W

4. Typical Performance

At T_J= 25℃, unless specified otherwise

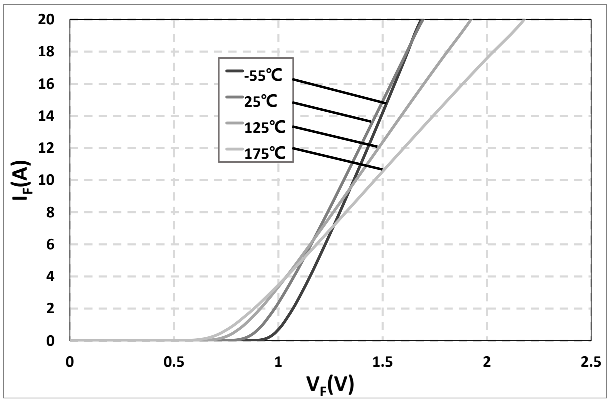


Fig. 1 Typical Forward Characteristics
I_F = f(V_F); T_J = -55℃, 25℃, 125℃, 175℃

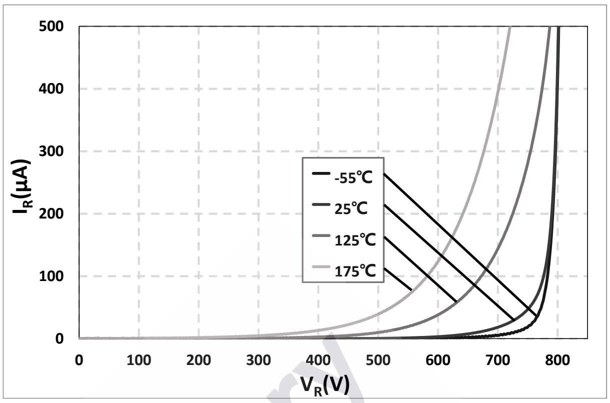


Fig. 2 Reverse Characteristics
I_R=f(V_R); T_J = -55℃, 25℃, 125℃, 175℃

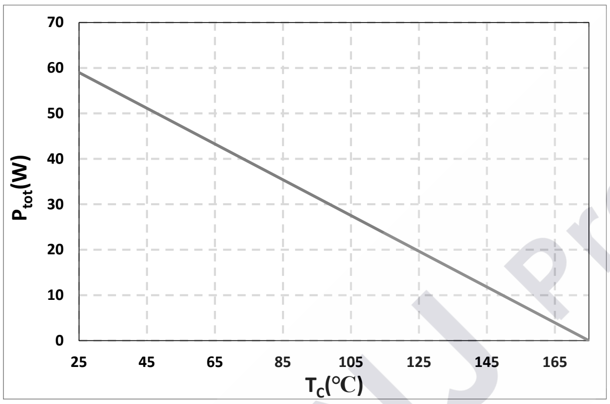


Fig. 3 Typical Power Derating
P_{tot} = f(T_C)

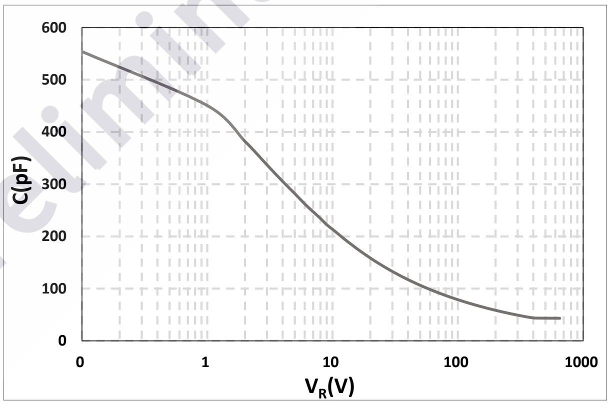


Fig. 4 Typical Total Capacitance
C=f(V_R)

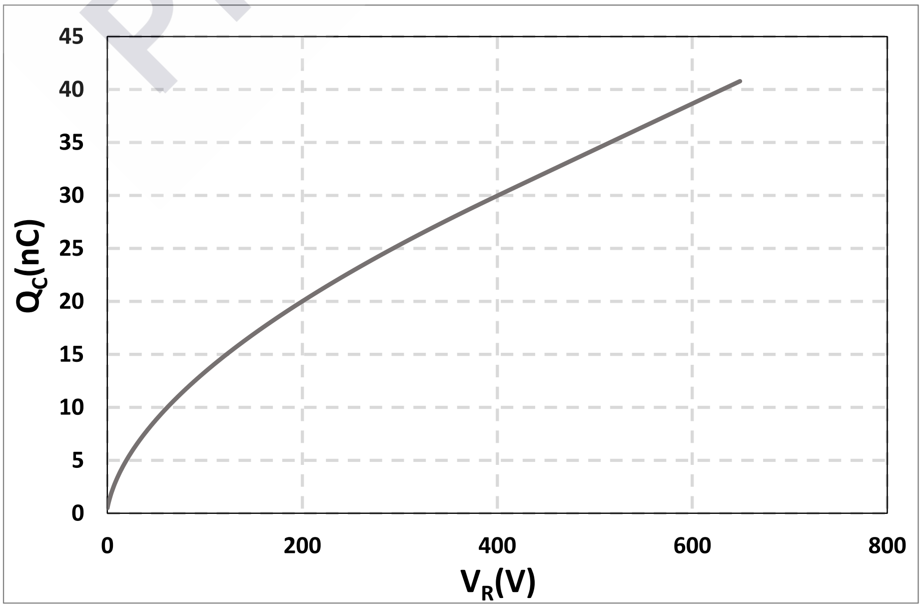
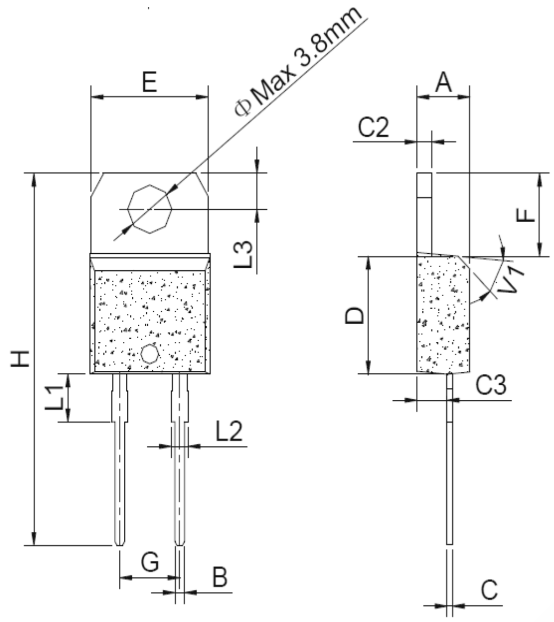


Fig. 5 Typical Total Capacitive Charge
Q_C = f(V_R)

5. Package Outlines



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	4.40		4.60	0.173		0.181
B	0.61		0.88	0.024		0.035
C	0.46		0.70	0.018		0.028
C2	1.21		1.32	0.048		0.052
C3	2.40		2.72	0.094		0.107
D	8.60		9.70	0.339		0.382
E	9.80		10.4	0.386		0.409
F	6.55		6.95	0.258		0.274
G		5.08			0.1	
H	28.0		29.8	1.102		1.173
L1		3.75			0.148	
L2	1.14		1.70	0.045		0.067
L3	2.65		2.95	0.104		0.116
V1		45°			45°	

Drawing and dimensions