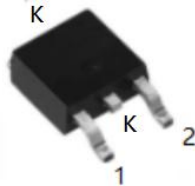


S6D06065E

6A 650V SIC POWER SCHOTTKY RECTIFIERS



DPAK(TO-252-2)

Description

This 650V 6A diode is a high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S6D06065E is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram



Features

- 175°C TJ operation
- Ultra-low switching loss
- Switching speeds independent of operating temperature
- Low total conduction losses
- High forward surge current capability
- High package isolation voltage
- Terminals finish: 100% Pure Tin
- “-A” is an AEC-Q101 qualified device
- Pb - Free Device
- All SMC parts are traceable to the wafer lot
- Additional electrical and life testing can be performed upon request

Applications

- Alternative energy inverters
- Power Factor Correction (PFC)
- Free-Wheeling diodes
- Switching supply output rectification
- Reverse polarity protection

Technical Data
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Maximum Ratings:

Characteristics	Symbol	Condition	Max.	Units
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_{DC}	-	650	V
Average Rectified Forward Current	$I_{F(AV)1}$	$T_C=25^{\circ}\text{C}$	27	A
	$I_{F(AV)2}$	$T_C=136^{\circ}\text{C}$	10	A
	$I_{F(AV)3}$	$T_C=160^{\circ}\text{C}$	6	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, $T_C=25^{\circ}\text{C}$	31	A
	I_{FRM2}	10ms, Half Sine pulse, $T_C=110^{\circ}\text{C}$	19	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, $T_C=25^{\circ}\text{C}$	52	A
	I_{FSM2}	10ms, Half Sine pulse, $T_C=110^{\circ}\text{C}$	32	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10 μ s. Pulse, $T_C=25^{\circ}\text{C}$	520	A
	$I_{F,Max2}$	10 μ s. Pulse, $T_C=110^{\circ}\text{C}$	470	A
Power Dissipation	P_{tot1}	$T_C=25^{\circ}\text{C}$	102	W
	P_{tot2}	$T_C=110^{\circ}\text{C}$	44	W

Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 6A, Pulse, $T_J = 25^{\circ}\text{C}$	1.27	1.5	V
	V_{F2}	@ 6A, Pulse, $T_J = 175^{\circ}\text{C}$	1.4	1.6	V
Reverse Current*	I_{R1}	@ $V_R = \text{rated } V_R$ $T_J = 25^{\circ}\text{C}$	0.3	3	μA
	I_{R2}	@ $V_R = \text{rated } V_R$ $T_J = 175^{\circ}\text{C}$	6	25	μA
Junction Capacitance	C_T	$V_R=0\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$	559	-	pF
Reverse Recovery Charge	Q_c	$I_F = 6\text{A}$, $di/dt = 200\text{A}/\mu\text{s}$ $V_R = 400\text{V}$, $T_J=25^{\circ}\text{C}$	34.87	-	nC
Capacitance Stored Energy	EC	$V_R = 400\text{V}$, $T_J=25^{\circ}\text{C}$	8.54	-	μJ

* Pulse width < 300 μs , duty cycle < 2%

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T_J	-	-55 to +175	$^{\circ}\text{C}$
Storage Temperature	T_{stg}	-	-55 to +175	$^{\circ}\text{C}$
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	1.45	$^{\circ}\text{C}/\text{W}$

Ratings and Characteristics Curves

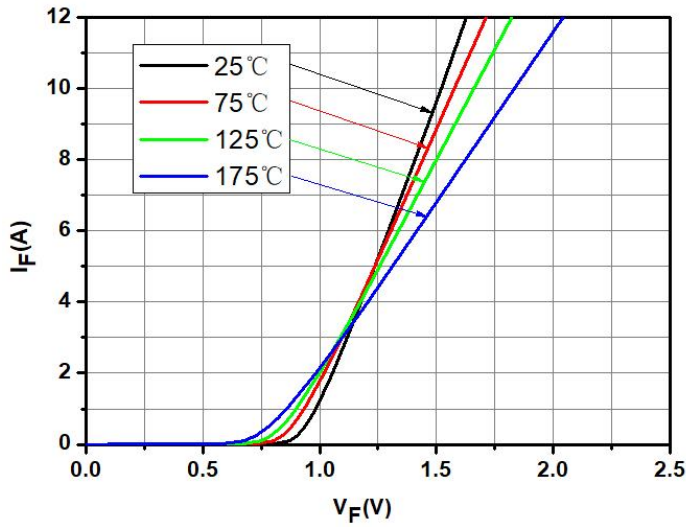


Fig.1-Typical Forward Voltage

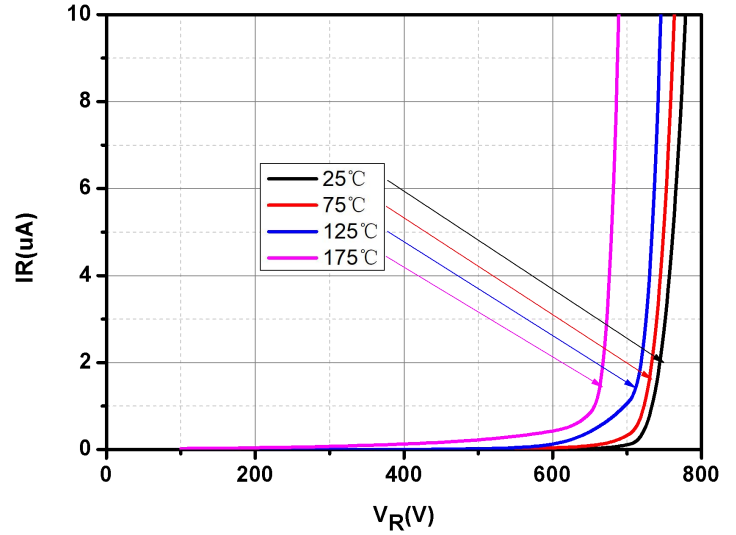


Fig.2-Typical Reverse Characteristics

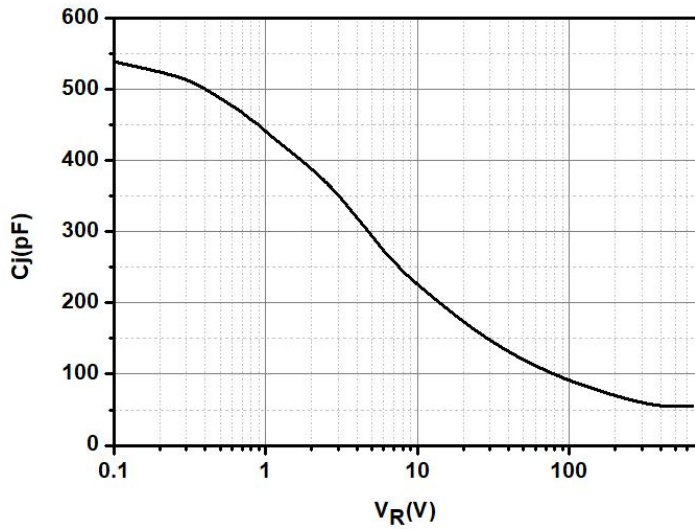


Fig.3-Capacitance vs. Reverse Voltage

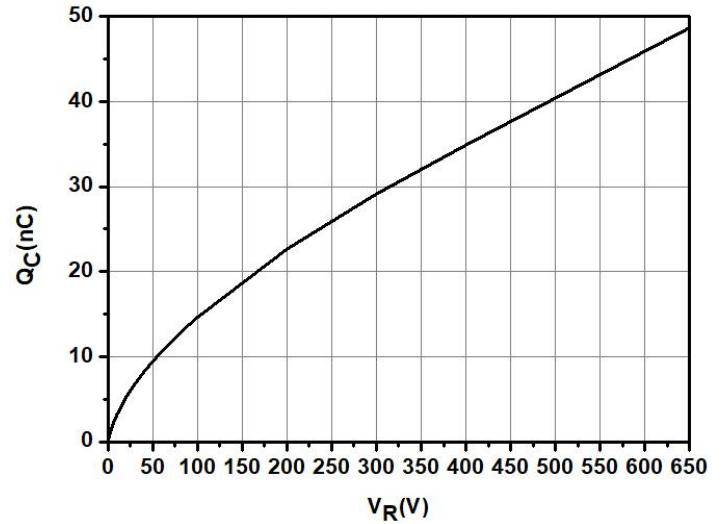


Fig.4-Total Capacitance Charge vs. Reverse Voltage

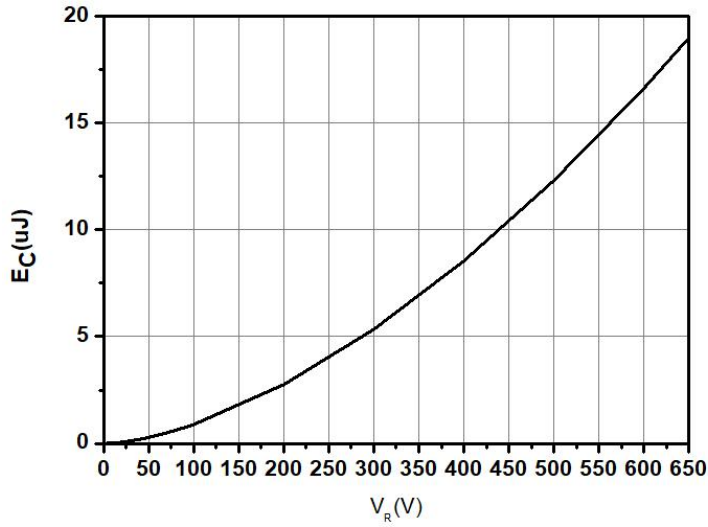


Fig.5-Capacitance Stored Energy

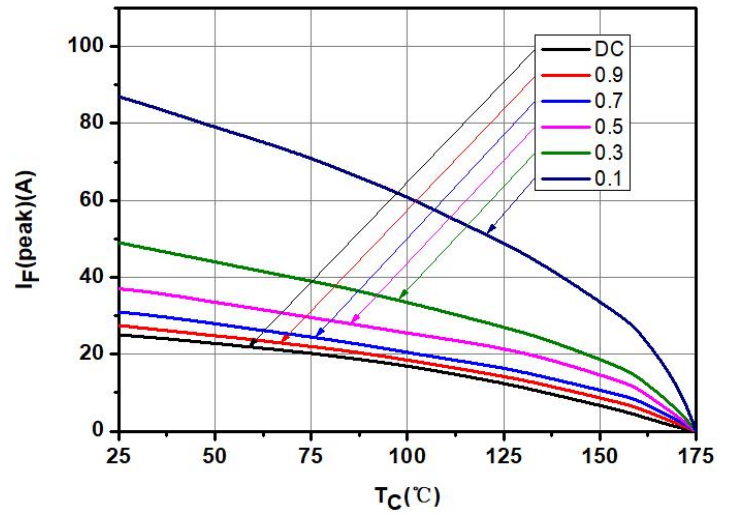


Fig.6-Current Derating

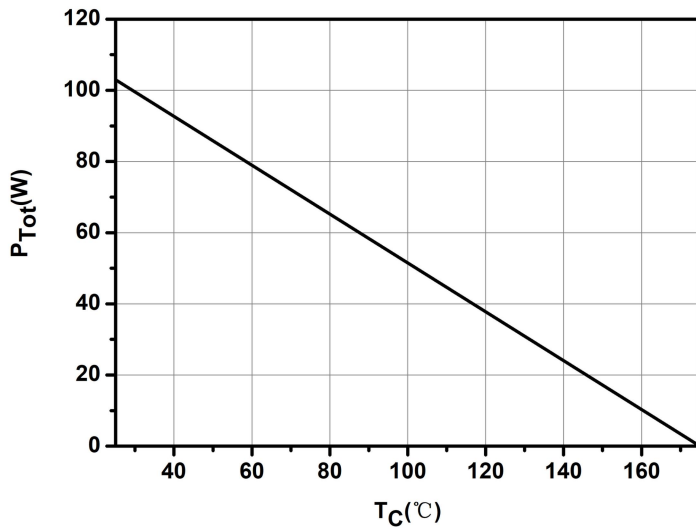


Fig.7-Power Derating

Technical Data
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Tube Specification

Device	Package	Shipping
S6D06065E	DPAK(TO-252-2)	2500pcs / reel
S6D06065ETR	DPAK(TO-252-2)	2500pcs / reel

For information on tape and reel specifications, including part orientation and tape sizes, please refer to our tape and reel packaging specification.

Marking Diagram

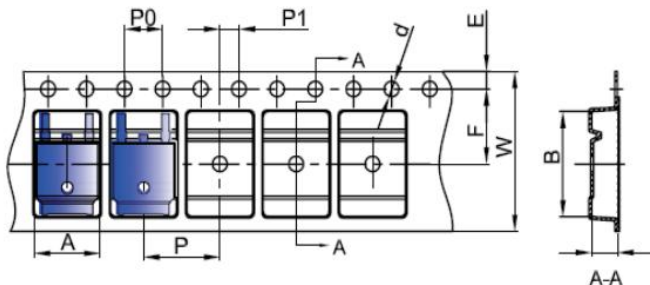


Where XXXXX is YYWWL

S6D = Device Type
E = Package type
06 = Forward Current (6A)
065 = Reverse Voltage (650V)
SSG = SSG
YY = Year
WW = Week
L = Lot Number

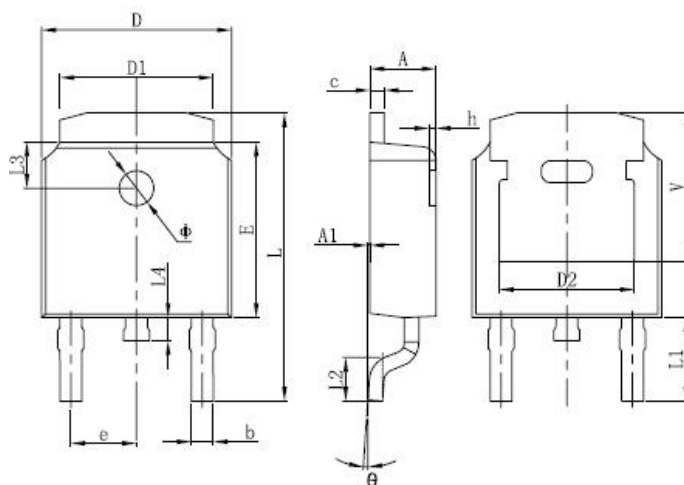
Cautions: Molding resin
Epoxy resin UL94V-0

Carrier Tape & Reel Specification



SYMBOL	Millimeters	
	Min.	Max.
A	6.80	7.00
B	10.40	10.60
C	2.60	2.80
d	Φ1.45	Φ1.65
E	1.65	1.85
F	7.40	7.60
P0	3.90	4.10
P	7.90	8.10
P1	1.90	2.10
W	15.90	16.30

Mechanical Dimensions



SYMBOL	Dimensions in millimeters		
	Min.	Typ.	Max.
A	2.18	-	2.39
A1	-	-	0.13
b	0.64	-	0.89
c	0.46	-	0.89
D	6.35	-	6.73
D1	4.95	-	5.46
D2	4.32	-	-
E	5.95	6.1	6.22
e	2.29BSC		
L	9.4	-	10.41
L1	2.90 REF.		
L2	1.4	1.52	1.78
L3	1.60 REF.		
L4	-	-	1.02
Φ	1.1	-	1.3
θ	0°	-	10°
V	5.21	-	-

Technical Data
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