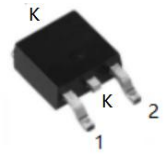
Technical Data
Data Sheet N2445, REV.-

S2D04065E
4A 650V SIC POWER SCHOTTKY RECTIFIER



DPAK(TO-252-2)

Description

S2D04065E are all single SiC Schottky rectifiers packaged in DPAK(TO-252-2). The device is high voltage Schottky rectifier that has very low total conduction losses and very stable switching characteristics over temperature extremes. The S2D04065E is ideal for energy sensitive, high frequency applications in challenging environments.

Circuit Diagram

Features

- **175°C T_J 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
Data Sheet N2445, REV.-

RoHS

Maximum Ratings@T_A=25°C unless otherwise specified

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	$I_{F\ (AV)1}$	Tc=25°C	17	A
	$I_{F\ (AV)2}$	Tc=135°C	8	A
	$I_{F\ (AV)3}$	Tc=160°C	4	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, T_J =25°C	23	A
	I_{FRM2}	10ms, Half Sine pulse, T_J =110°C	15	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, T_J =25°C	46	A
	I_{FSM2}	10ms, Half Sine pulse, T_J =110°C	32	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max}$	10μs. Pulse, T_J =25℃	390	A
	$I_{F,Max}$	10μs. Pulse, T_J =110℃	265	A
Power Dissipation	P_{tot1}	T_J =25℃	89	W
	P_{tot1}	T_J =110℃	39	W

Electrical Characteristics@T_A=25°C unless otherwise specified

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 4A, Pulse, T_J = 25 °C	1.5	1.7	V
	V_{F2}	@ 4A, Pulse, T_J = 175 °C	1.85	2.0	V
Reverse Current*	I_{R1}	@V_R = rated V_R T_J = 25 °C	0.03	2	uA
	I_{R2}	@V_R = rated V_R T_J = 175 °C	0.3	20	uA
Junction Capacitance	C_T	V_R=0V, T_J=25℃, f=1MHz	230	-	pF
Reverse Recovery Charge	Q_c	I_F = 4A, di/dt = 200A/μs VR = 400 V, T_J =25°C	14.35	-	nC
Capacitance Stored Energy	E_C	V_R = 400 V	3.51	-	μJ

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

Technical Data
Data Sheet N2445, REV.-

Thermal-Mechanical Specifications@T_A=25°C unless otherwise specified

Characteristics	Symbol	S2D04065E	Units
Junction Temperature	T_J	-55 to +175	°C
Storage Temperature	T_{stg}	-55 to +175	°C
Typical Thermal Resistance Junction to Case	R_{qJC}	1.45	°C/W

Ordering Information

Device	Package	Shipping
S2D04065E	DPAK(TO-252-2)	2500pcs / reel
S2D04065ETR	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.

Ratings and Characteristics Curves

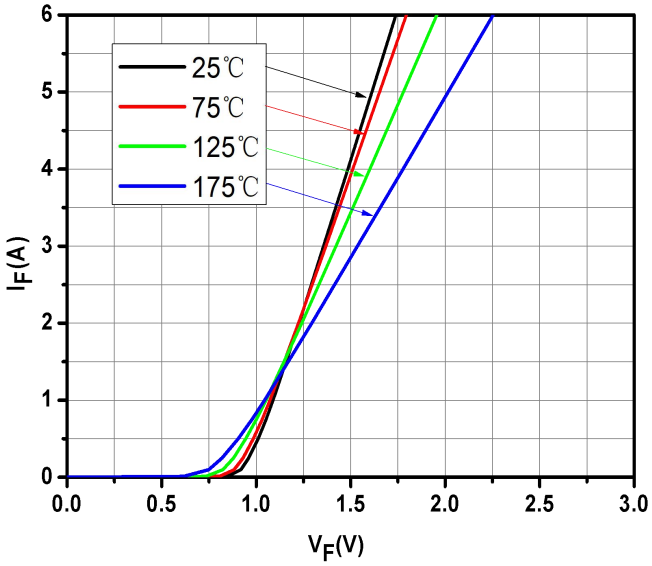


Fig.1-Typical Forward Voltage Characteristics

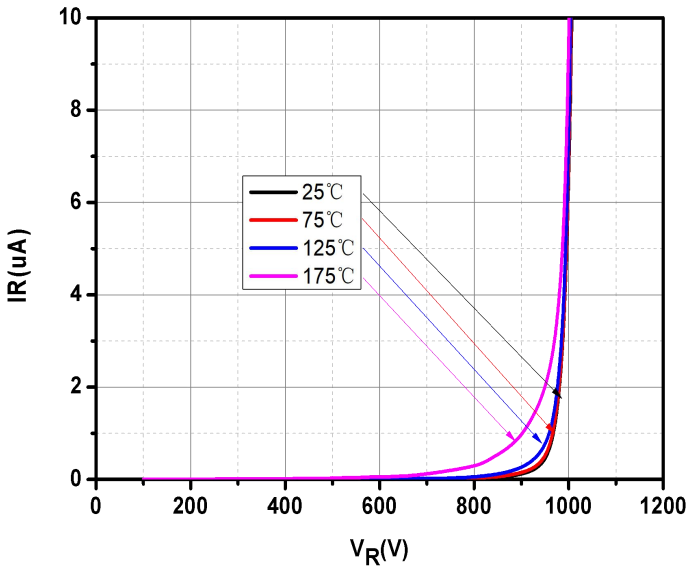


Fig.2-Typical Reverse Characteristics

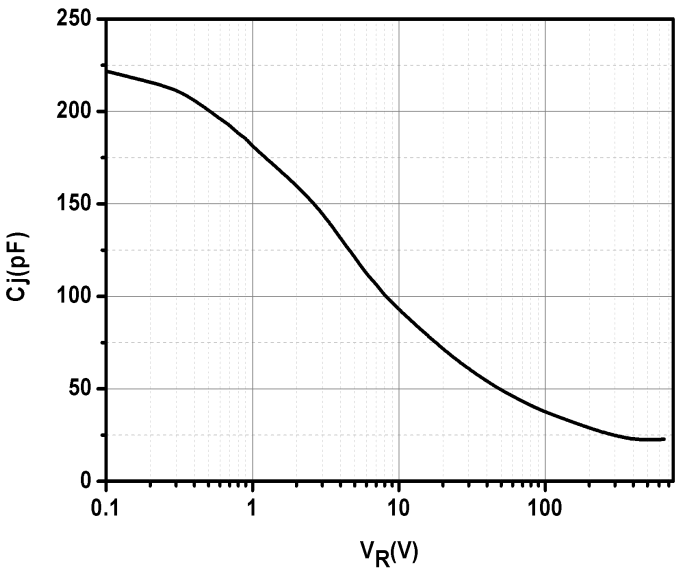


Fig.3-Capacitance vs. Reverse Voltage

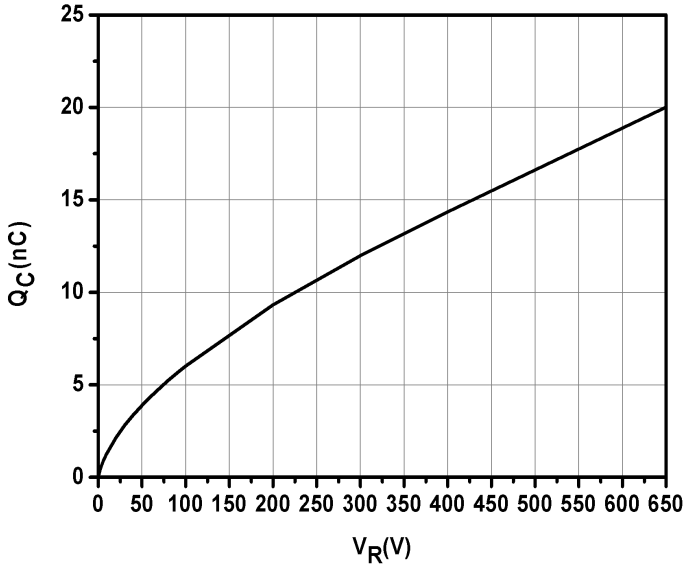


Fig.4-Total Capacitance Charge vs. Reverse Voltage

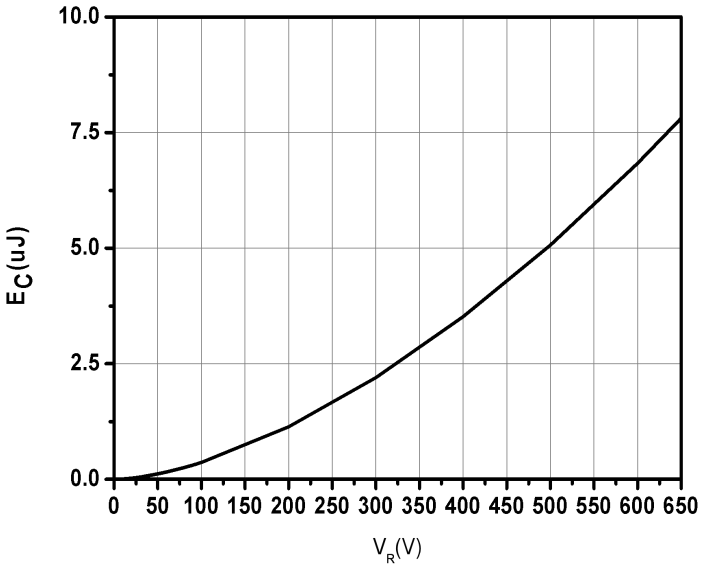


Fig.5-Capacitance Stored Energy

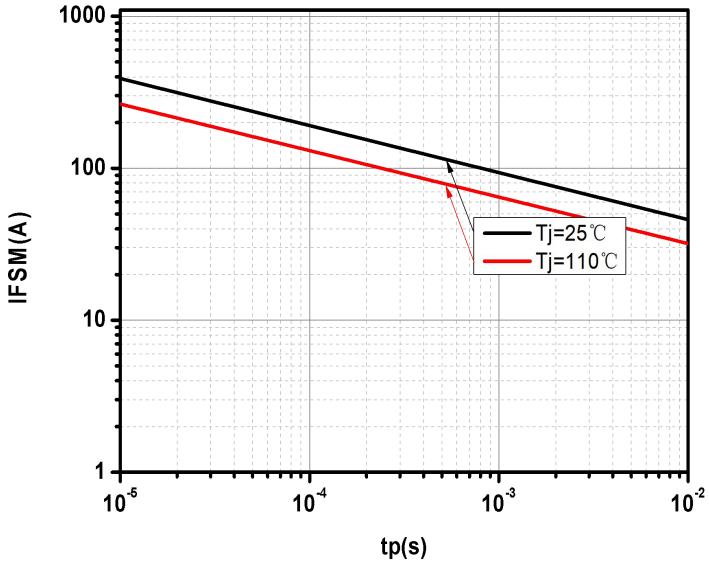


Fig.6-Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

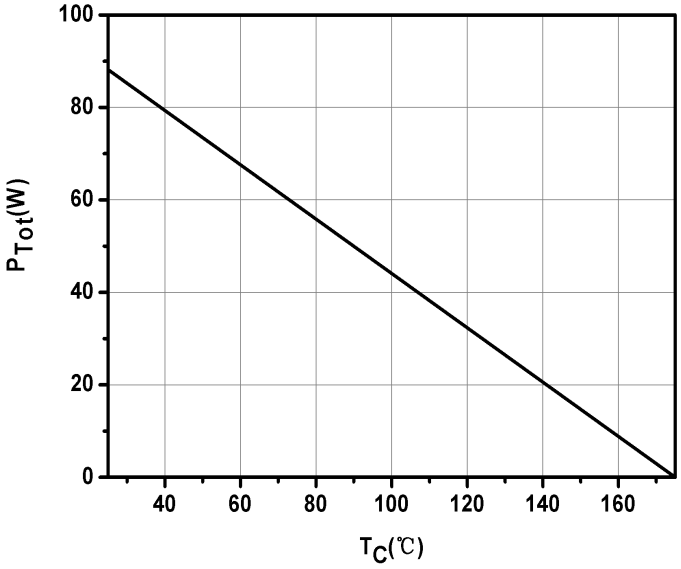


Fig.7-Power Derating

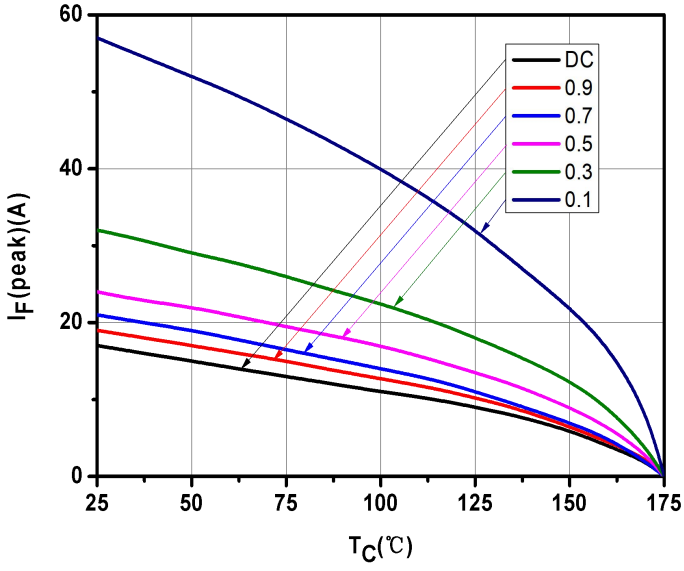


Fig.8-Current Derating

Technical Data
Data Sheet N2445, REV.-

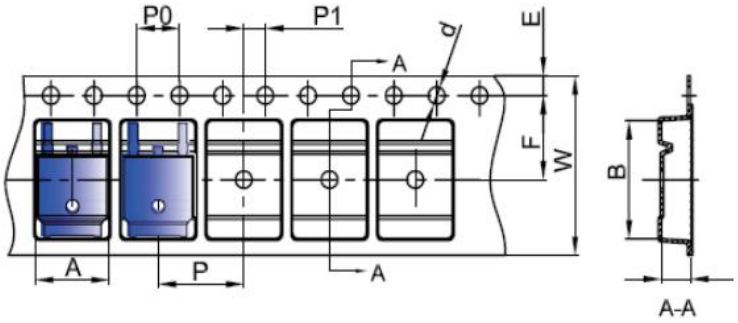
Marking Diagram

Where XXXXX is YYWWL

S2D	= Device Type
E	= Package type
04	= Forward Current (4A)
065	= Reverse Voltage (650V)
SSG	= SSG
YY	= Year
WW	= Week
L	= Lot Number

Cautions: Molding resin
Epoxy resin UL:94V-0

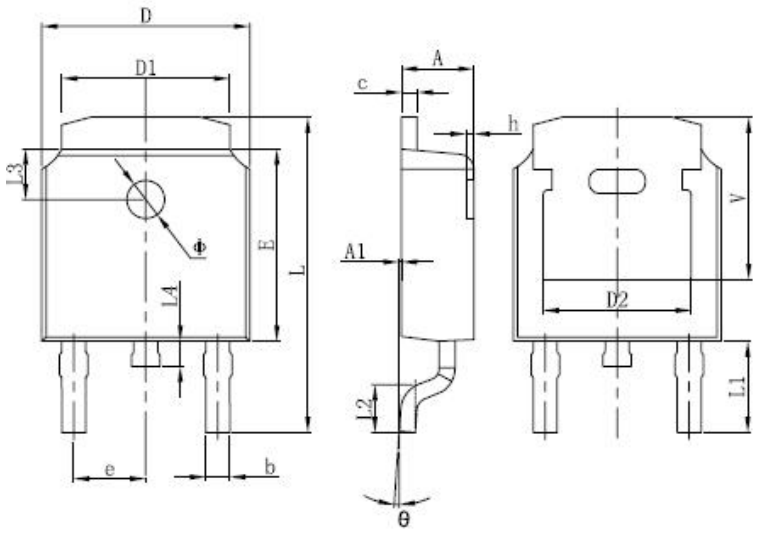
Carrier Tape & Reel Specification DPAK(TO-252-2)



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

Technical Data
Data Sheet N2445, REV.-

Mechanical Dimensions DPAK(TO-252-2)



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
D2	4.32	-	-
E	5.97	6.10	6.22
e		2.29BSC	
L	9.40	-	10.41
L2	1.40	1.52	1.78
L4	-	-	1.02
Θ	0°	-	10°
V	5.21	-	-

Technical Data
Data Sheet N2445, REV.-

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