Technical Data
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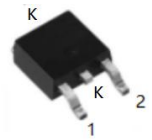
S4D05120E
1200V SIC POWER SCHOTTKY RECTIFIERS



DPAK(TO-252-2)

Description

The 1200V 5A diodes are high voltage Schottky rectifiers that have very low total conduction losses and very stable switching characteristics over temperature extremes. The S4D05120E 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

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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}	-	1200	V
Average Rectified Forward Current	$I_{F\ (AV)1}$	Tc=25˚C	17	A
	$I_{F\ (AV)2}$	Tc=151˚C	5	A
Repetitive Peak Forward Surge Current	I_{FRM1}	10ms, Half Sine pulse, T_C=25˚C	30	A
	I_{FRM2}	10ms, Half Sine pulse, T_C=110˚C	20	A
Peak One Cycle Non-Repetitive Surge Current	I_{FSM1}	10ms, Half Sine pulse, T_C=25˚C	70	A
	I_{FSM2}	10ms, Half Sine pulse, T_C=110˚C	48	A
Non-Repetitive Peak Forward Surge Current	$I_{F,Max1}$	10μs. Pulse, T_C=25˚C	600	A
	$I_{F,Max2}$	10μs. Pulse, T_C=110˚C	500	A
Power Dissipation	P_{tot1}	T_C=25˚C	100	W
	P_{tot2}	T_C=110˚C	43	W

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Electrical Characteristics:

Characteristics	Symbol	Condition	Typ.	Max.	Units
Forward Voltage Drop*	V_{F1}	@ 5A, Pulse, T_J = 25°C	1.65	1.8	V
	V_{F2}	@ 5A, Pulse, T_J = 175°C	2.2	3.0	V
Reverse Current*	I_{R1}	@V_R = rated V_R T_J = 25°C	4	50	uA
	I_{R2}	@V_R = rated V_R T_J = 175°C	10	100	uA
Junction Capacitance	C_T	V_R=0V, T_J=25°C, f=1MHz	296	-	pF
Reverse Recovery Charge	Q_c	I_F = 5A, di/dt = 200A/μs VR = 800 V, T_J =25°C	22.80	-	nC
Capacitance Stored Energy	EC	VR = 800 V, T_J =25°C	11.71	-	μJ

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

Thermal-Mechanical Specifications:

Characteristics	Symbol	Condition	Specification	Units
Junction Temperature	T_J	-	-55 to +175	°C
Storage Temperature	T_{stg}	-	-55 to +175	°C
Typical Thermal Resistance Junction to Case	$R_{\theta JC}$	DC operation	1.5	°C/W

Ratings and Characteristics Curves

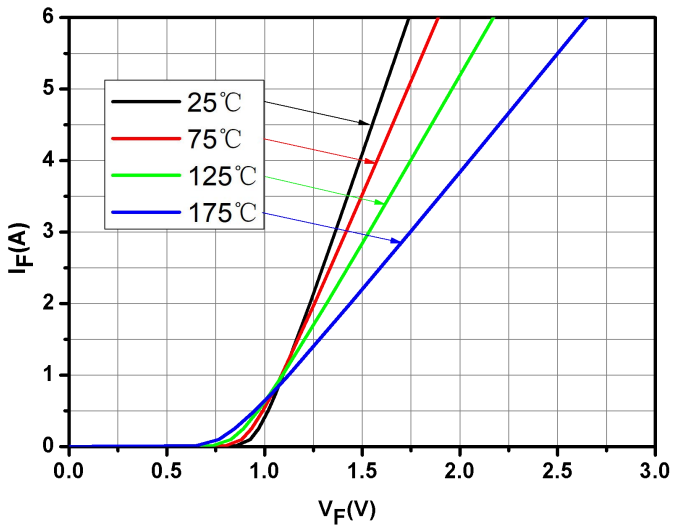

Fig.1-Typical Forward Voltage Characteristics

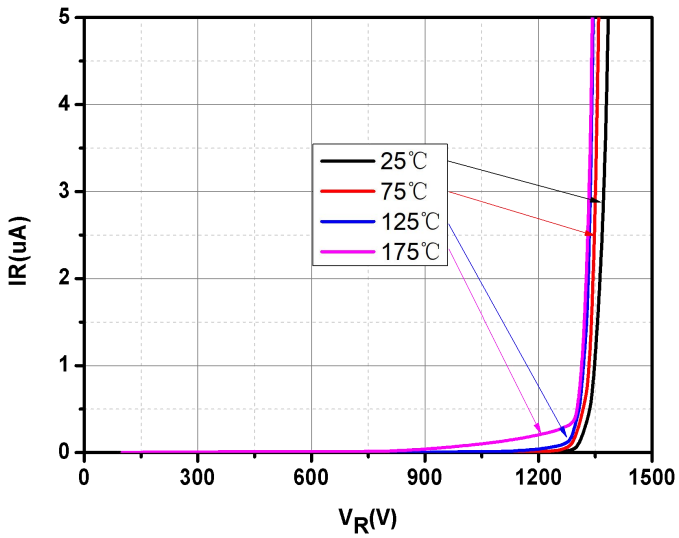

Fig.2-Typical Reverse Characteristics

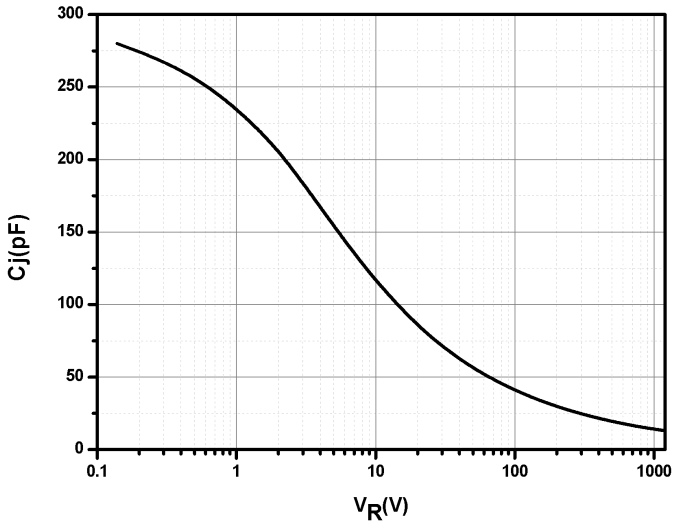

Fig.3-Capacitance vs. Reverse Voltage

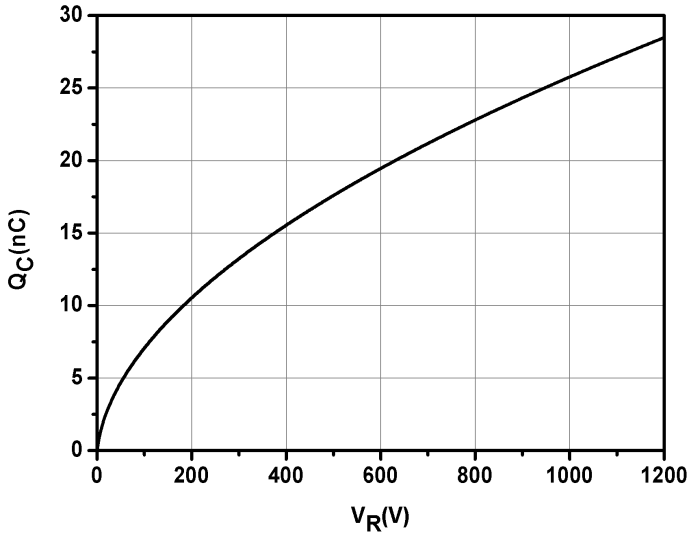

Fig.4-Total Capacitance Charge vs. Reverse Voltage

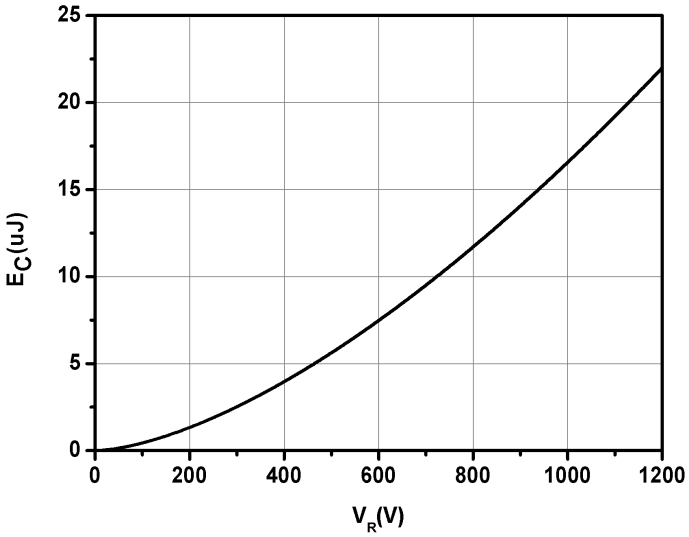

Fig.5-Capacitance Stored Energy

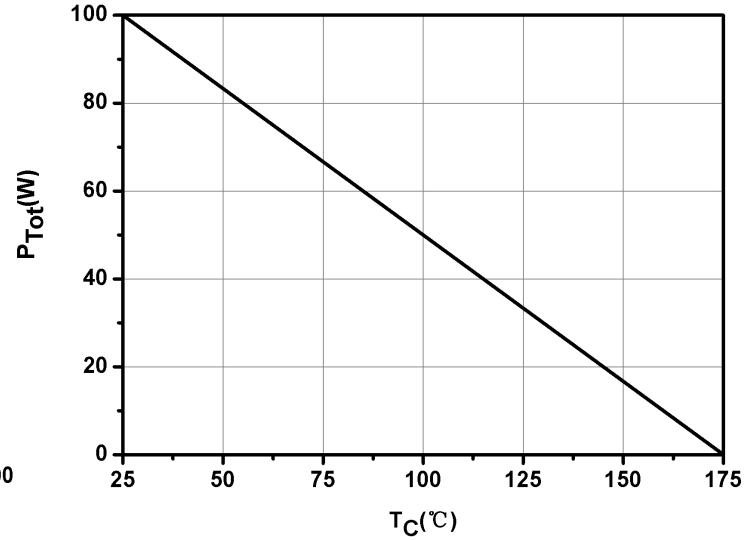

Fig.6-Power Derating

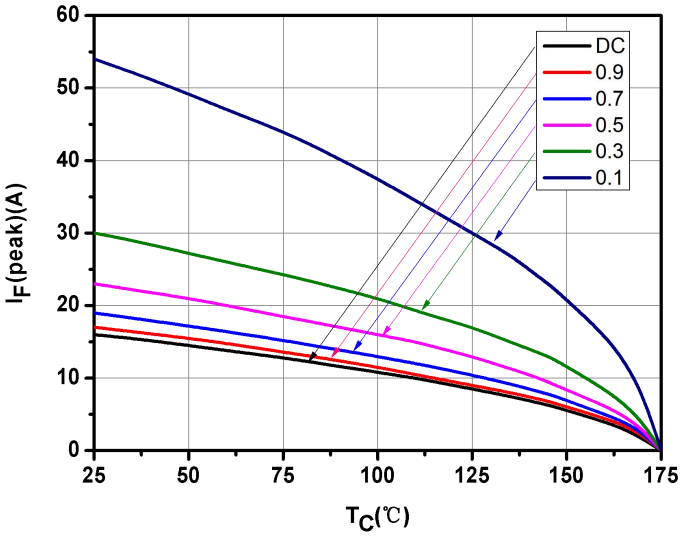

Fig.7-Current Derating

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Ordering Information

Device	Package	Shipping
S4D05120E	DPAK(TO-252-2)	2500pcs / reel
S4D05120ETR	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.

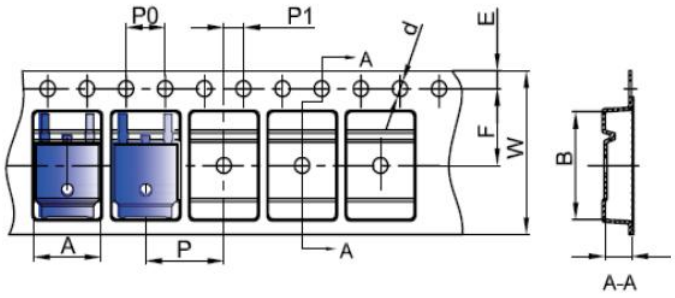
Marking Diagram

Where XXXXX is YYWWL

S4D	= Device Type
E	= Package type
05	= Forward Current (5A)
120	= Reverse Voltage (1200V)
SSG	= SSG
YY	= Year
WW	= Week
L	= Lot Number

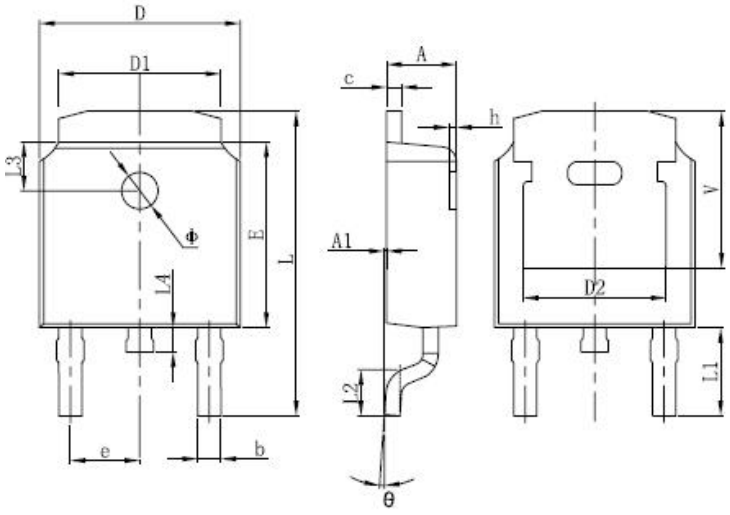
Cautions : Molding resin
Epoxy resin UL : 94V-0

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	5.97	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	-	-

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