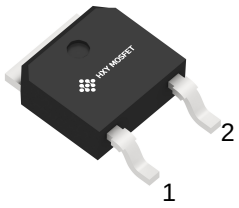
S4D08120E

Silicon Carbide Schottky Diode

Features

- 1200-Volt Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- High-Frequency Operation
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Positive Temperature Coefficient on V_F



TO-252N-2L

Benefits

- Replace Bipolar with Unipolar Rectifiers
- Essentially No Switching Losses
- Higher Efficiency
- Reduction of Heat Sink Requirements
- Parallel Devices Without Thermal Runaway



Applications

- Switch Mode Power Supplies
- Power Factor Correction
- Motor Drives

Part Number	Package	Qty(PCS)
S4D08120E	TO-252N-2L	2500

Maximum Ratings (T_C = 25 ˚C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	
I_F	Continuous Forward Current	25.4 12.1 8	A	T_C=25˚C T_C=135˚C T_C=155 ˚C
I_{FRM}	Repetitive Peak Forward Surge Current	40	A	T_C=25˚C, t_P = 10 ms, Half Sine Wave
I_{FSM}	Non-Repetitive Peak Forward Surge Current	96	A	T_C=25˚C, t_p = 10 ms, Half Sine Wave
P_{tot}	Power Dissipation	119 52	W	T_C=25˚C T_C=110˚C
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	˚C	
$\int i^2dt$	i²dt value	46.08	A^2s	T_C=25˚C, t_p = 10 ms, Half Sine Wave

Electrical Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	1200			V	
V_F	Forward Voltage		1.45 1.99	1.7 2.5	V	I_F = 8 A T_J=25°C I_F = 8 A T_J=175°C
I_R	Reverse Current		3.5 17	50 100	μA	V_R = 1200 V T_J=25°C V_R = 1200 V T_J=175°C
Q_C	Total Capacitive Charge		38		nC	V_R = 800 V T_J = 25°C
C	Total Capacitance		595 38 30		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25°C, f = 1 MHz V_R = 800 V, T_J = 25°C, f = 1 MHz
E_C	Capacitance Stored Energy		20		μJ	V_R = 800 V

Thermal Characteristics

Symbol	Parameter	Typ.	Unit
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.26	°C/W

Typical Performance

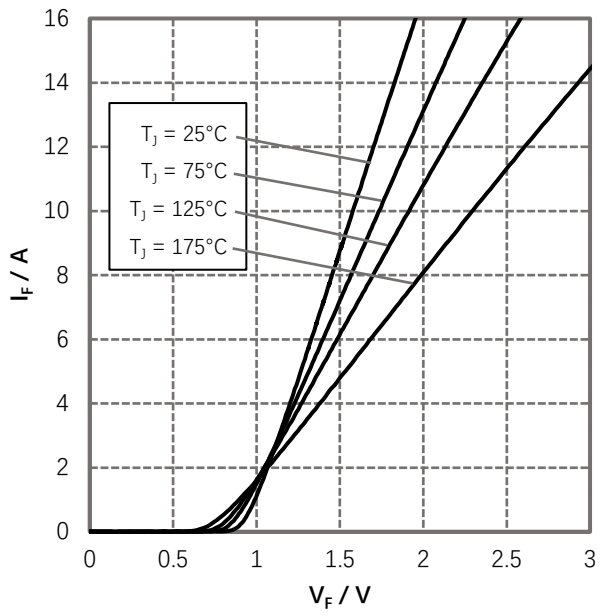


Figure 1. Forward Characteristics

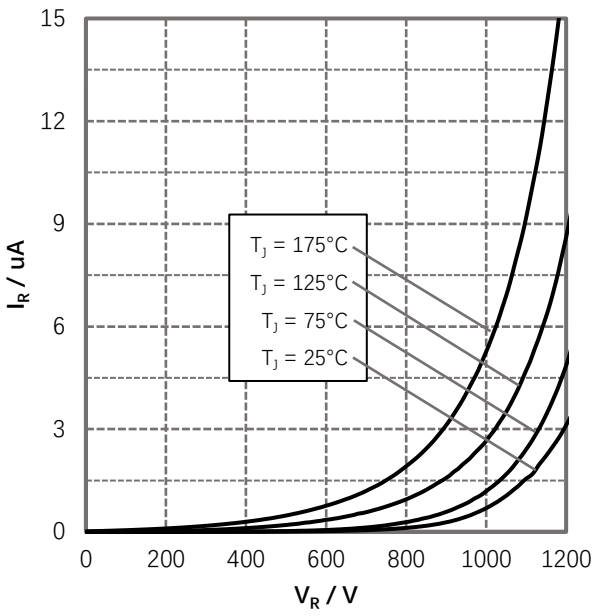


Figure 2. Reverse Characteristics

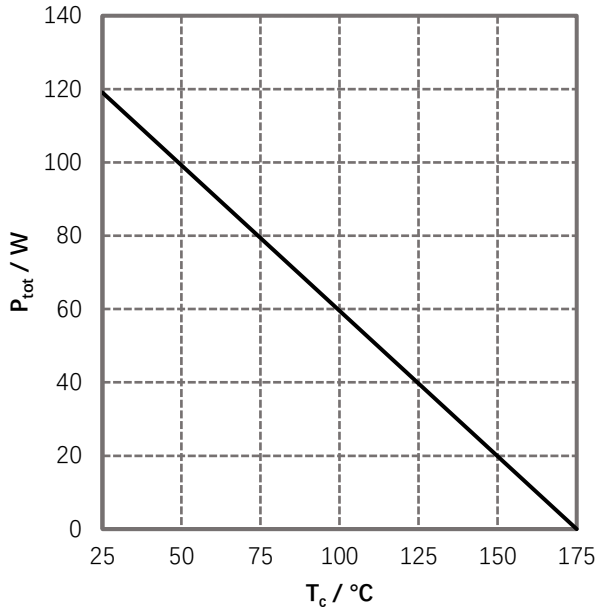


Figure 3. Power Derating

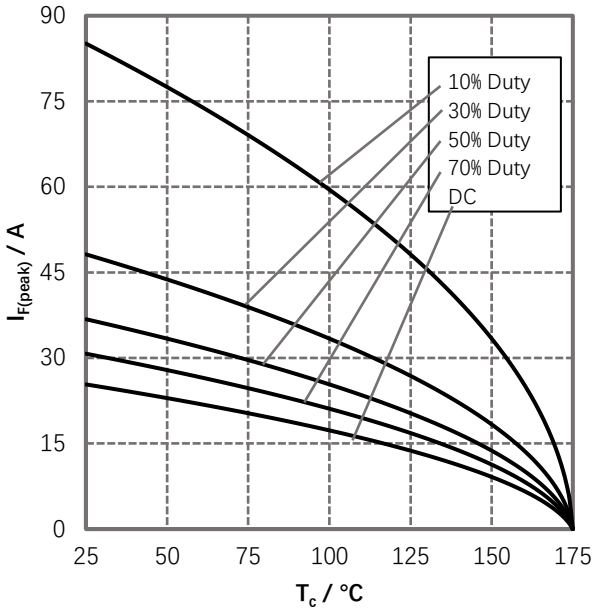


Figure 4. Current Derating

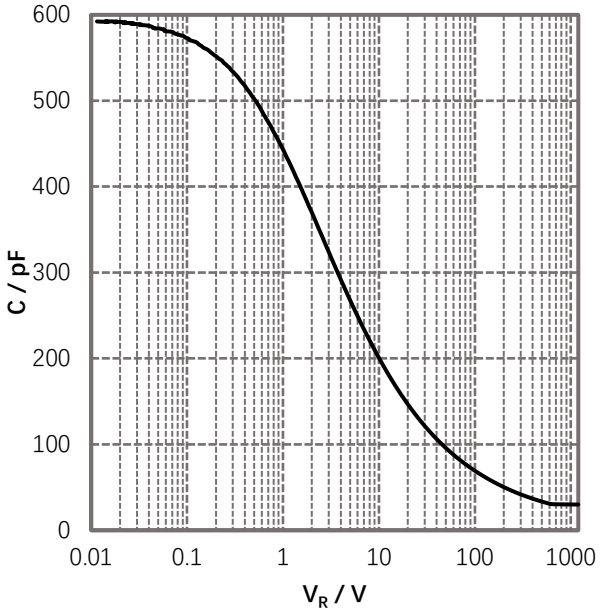


Figure 5. Capacitance vs. Reverse Voltage

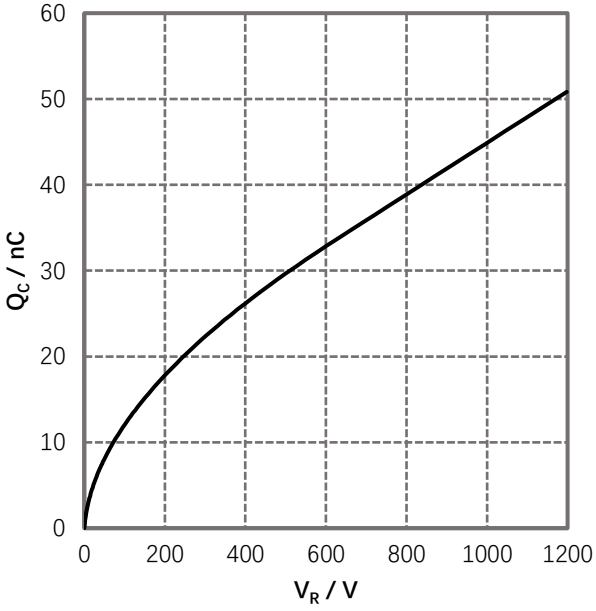


Figure 6. Total Capacitance Charge vs. Reverse Voltage

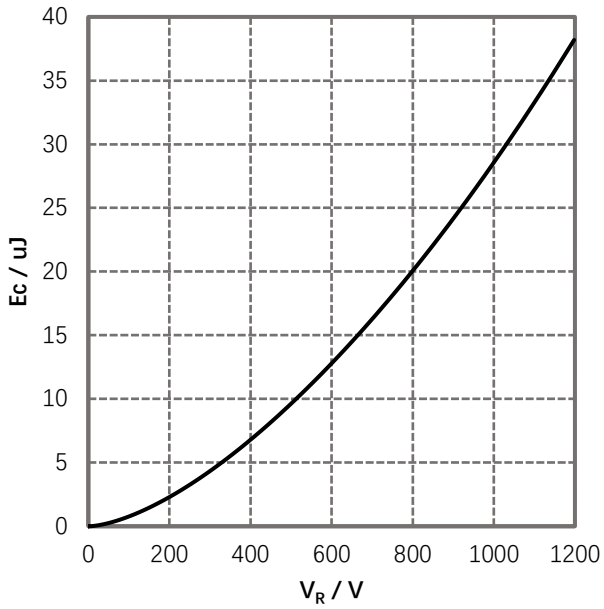


Figure 7. Capacitance Stored Energy

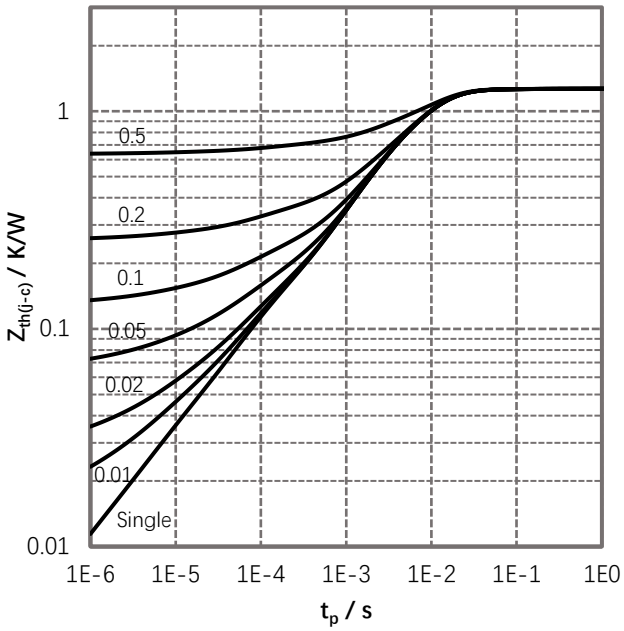
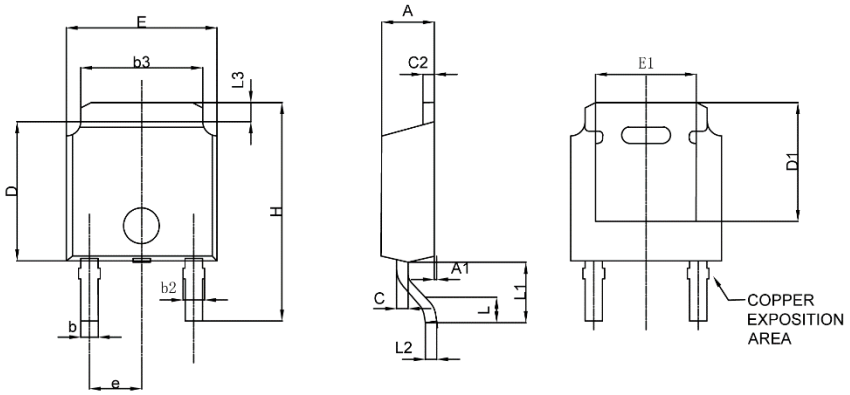


Figure 8. Transient Thermal Impedance

Package Information
TO-252N-2L



Symbol	DIMENSIONAL REQMTS		
	Min	Nom	Max
E	6.35	6.60	6.73
L	1.40	1.52	1.78
L1	2.743REF		
L2	0.508BSC		
L3	0.89	——	1.27
D	5.97	6.10	6.22
H	9.40	10.00	10.40
b	0.64	0.76	0.89
b2	0.76	0.84	1.14
b3	4.95	5.34	5.46
e	2.286BSC		
A	2.18	2.30	2.39
A1	0.00	——	0.13
c	0.46	0.50	0.61
c2	0.46	0.50	0.60
D1	5.21	——	——
E1	4.32	——	——

Note:
1.All Dimension Are In mm
2.Package Body Sizes Exclude Mold Flash,Protrusion Or Gate Burrs.
Mold Flash,Protrusion Or Gate Burrs Shall Not Exceed 0.10mm Per Side.
3.Package Body Sizes Determined At The Outermost Extremes
Of The Plastic Body Exclusive Of Mold Flash,
Gate Burrs And Interlead Flash,
But Including Any Mismatch Between
The Top And Bottom Of The Plastic Body.
4.The Package Top May Be Smaller Than The Package Bottom.
5.Dimension "b" Does Not Include Dambar Protrusion.
Allowable Dambar Protrusion Shall Be 0.10mm
Total In Excess Of "b" Dimension At Maximun Material Condition.
The Dambar Cannot Be Located On The Lower Radius Of The Foot.

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AZ4836-01L ESD5L5.0C-HXY HSEN3611D3 PESDLC2FD3V3BH PESDNC2XD5VBF ESD5LM5.0C-HXY HRCLAMP3371ZCTFT HSEN2411D3 RLSD32A121V TPSMB28A-VR HESDSLC3V3D3B HSG3D15B3.3MA HSTS521050B331 PESDNC2XD5VBL PESDSC2FD5VU 60N06 HACPDQC5V0-HF PJEC5V0M1FN2 HLY323BC1524L HPTVSUC3D5VB AZ4007-01H HSD15C.TCT LM393DR-HXY PJSD24CW_R1 TPSMB100CA-VR HAZ4007-01H HCEZ36V,L3F AQ15C-01FTG BV05C-H HESD36VD3B