Silicon Carbide Schottky Diode Chip

V_{RRM}	=	1200	V
$I_{F(AVG)}$	=	40	A
Q_C	=	250	nC

Features

- 1200-Volt Schottky Rectifier
- Zero Reverse Recovery
- Zero Forward Recovery
- Positive Temperature Coefficient on V_F
- Temperature-Independent Switching Behavior

Chip Outline

Part Number	Die Size	Anode	Cathode
H3D40120L	4.2×5.3 mm^2	Al	Ni/Ag

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{DC}	DC Blocking Voltage	1200	V		
$I_{F(AVG)}$	Average Forward Current	40	A	$T_C \leq 135^{\circ}C$	1
I_{FSM}	Non-Repetitive Forward Surge Current	250	A	$T_C = 25^{\circ}C$, $t_p = 8.3ms$, Half Sine Wave	1
T_J	Operating Junction Temperature	-55 to 175	$^{\circ}C$		

1. Assumes Thermal Resistance of 0.6°C/W or less

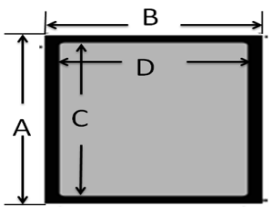
Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.55 2.3	1.8 3	V	I_F = 40A, T_J = 25°C I_F = 40A, T_J = 175°C	Fig.1
I_R	Reverse Current	3 20	100 200	μA	V_R = 1200V, T_J = 25°C V_R = 1200V, T_J = 175°C	Fig.2
C	Total Capacitance	2660 255 190	/	pF	V_R = 0V, T_J = 25°C, f = 1MHz V_R = 400V, T_J = 25°C, f = 1MHz V_R = 800V, T_J = 25°C, f = 1MHz	Fig.3
Q_C	Total Capacitive Charge	250	/	nC	V_R = 1200V, I_F = 40A di/dt = 200A/μs, T_J = 25°C	Fig.4

Mechanical Parameters

Parameter	Typ.	Unit
Die Size	4.2×5.3	mm^2
Anode Pad Opening	3.4×4.5	mm^2
Thickness	350±50	μm
Wafer Size	100	mm
Anode Metallization (Al)	4	μm
Cathode Metallization (Ni/Ag)	1.6	μm
Frontside Passivation	Polyimide	

Chip Dimensions



Symbol	Dimension
A	4.2mm
B	5.3mm
C	3.4mm
D	4.5mm

Typical Performance

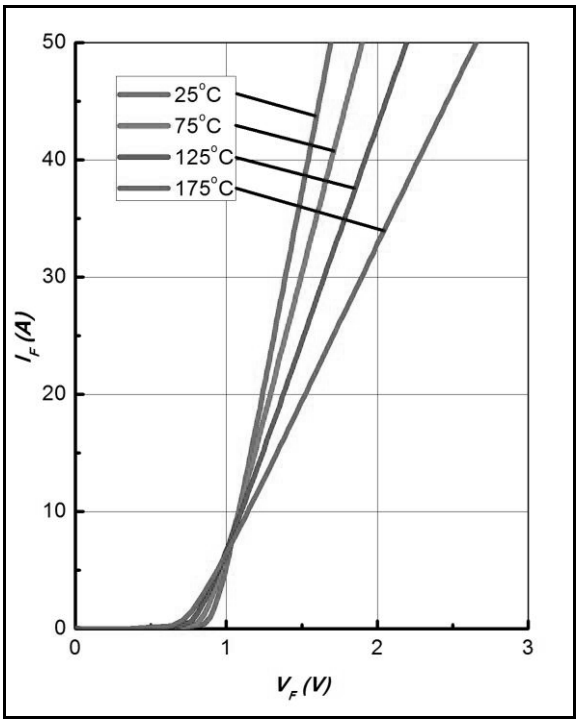


Figure 1. Forward Characteristics

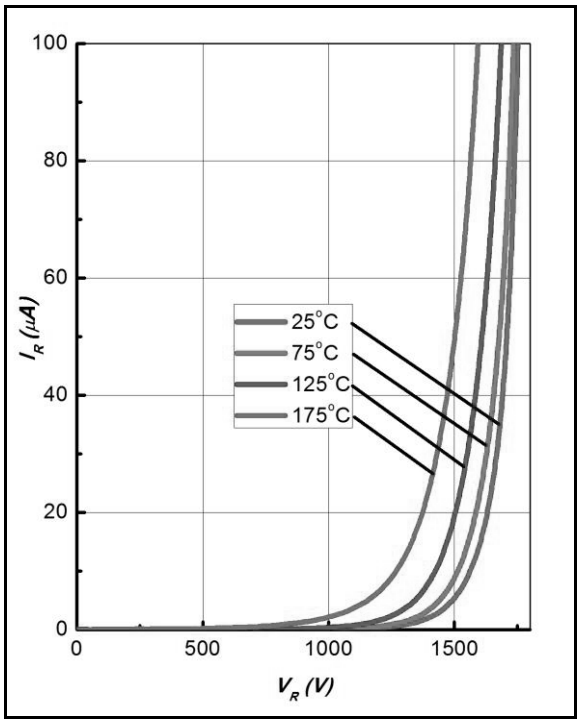


Figure 2. Reverse Characteristics

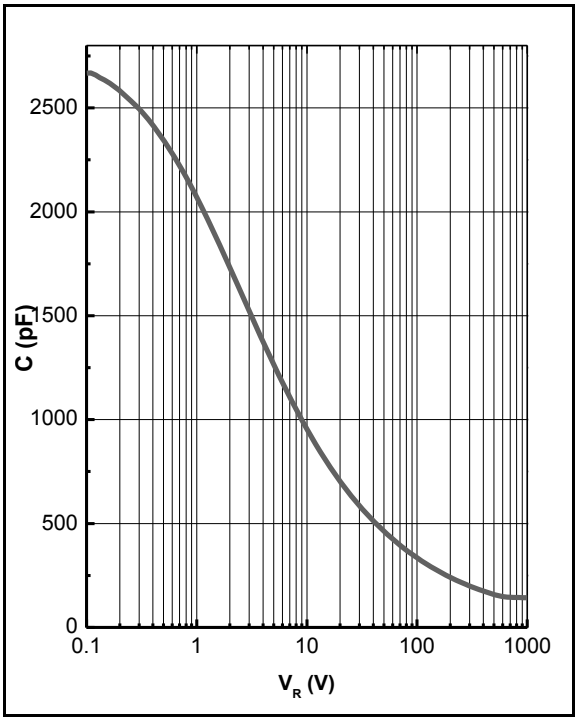


Figure 3. Total Capacitance vs. Reverse Voltage

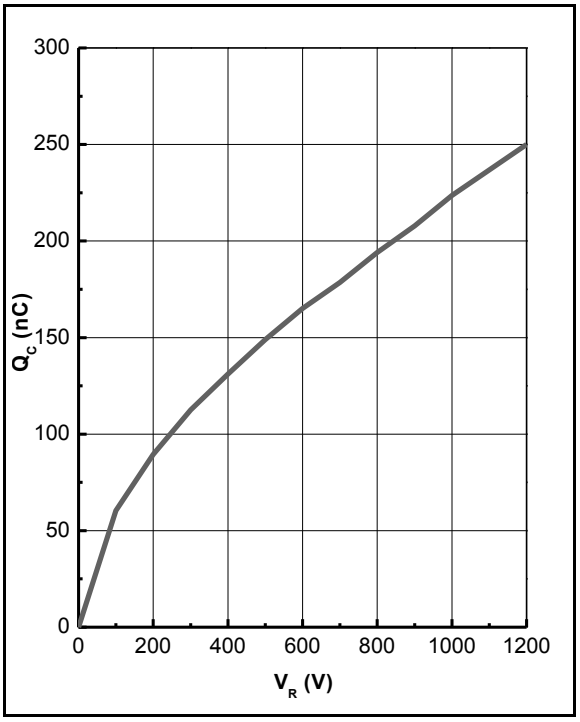


Figure 4. Total Capacitance Charge vs. Reverse Voltage