

G3S06510A

Silicon Carbide Schottky Diode

Features

- Zero reverse recovery current
- Zero forward recovery voltage
- Temperature independent switching behavior
- High temperature operation
- High frequency operation

V_{RRM}	650V
$I_F (T_c = 153.5^\circ\text{C})$	10A
Q_c	32nC

Benefits

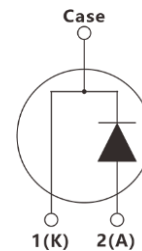
- Unipolar rectifier
- Substantially reduced switching losses
- No thermal run-away with parallel devices
- Reduced heat sink requirements

Applications

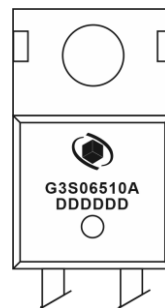
- SMPS, PFC
- Solar application, UPS, EV/HEV
- Motor drives, Wind turbine, Rail traction



TO-220AC



Inner Circuit



G = GPT
3 = Gen3
S = SiC Schottky Diode
065 = Voltage Rating 650V
10 = Current Rating 10A
A = TO-220AC
DDDDDD = Traceable Code



Maximum Ratings (at $T_j = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Value	Unit
Repetitive Peak Reverse Voltage	V_{RRM}	650	V
Surge Peak Reverse Voltage	V_{RSM}	650	V
Continuous Forward Current $T_c = 25^\circ\text{C}$ $T_c = 135^\circ\text{C}$ $T_c = 153.5^\circ\text{C}$	I_F	32.1 14.8 10	A
Repetitive Peak Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FRM}	50	A
Non-Repetitive Forward Surge Current $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	I_{FSM}	100	A
i^2t Value $T_c = 25^\circ\text{C}$, $t_p = 10\text{ms}$, Half Sine Pulse	$\int i^2 dt$	50	A^2s
Power Dissipation $T_c = 25^\circ\text{C}$ $T_c = 110^\circ\text{C}$	P_{tot}	115 50	W
Operating Junction Range	T_j	-55 to +175	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55 to +175	$^\circ\text{C}$
Mounting Torque, M3 Screw	M	1	Nm

Electrical Characteristics (at $T_J = 25^\circ\text{C}$, unless otherwise specified)

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
DC Blocking Voltage	V_{DC}		650	-	-	V
Forward Voltage	V_F	$I_F = 10\text{A}$	-	1.39	1.7	V
		$T_J = 25^\circ\text{C}$	-	1.66	2	
Reverse Current	I_R	$V_R = 650\text{V}$	-	0.35	50	μA
		$T_J = 175^\circ\text{C}$	-	2.4	100	
Total Capacitance	C	$f = 1\text{MHz}$	-	617	-	pF
		$V_R = 0\text{V}$	-	62	-	
		$V_R = 400\text{V}$	-	61	-	
Total Capacitive Charge	Q_C	$V_R = 400\text{V}$ $T_J = 25^\circ\text{C}$	-	32	-	nC
Capacitance Stored Energy	E_C	$V_R = 400\text{V}$	-	8	-	μJ

Thermal Characteristics

Parameter	Symbol	Test Condition	Value			Unit
			min.	typ.	max.	
Thermal Resistance, junction-case	$R_{th(j-c)}$		-	1.3	-	$^\circ\text{C}/\text{W}$

Typical Characteristics Curves

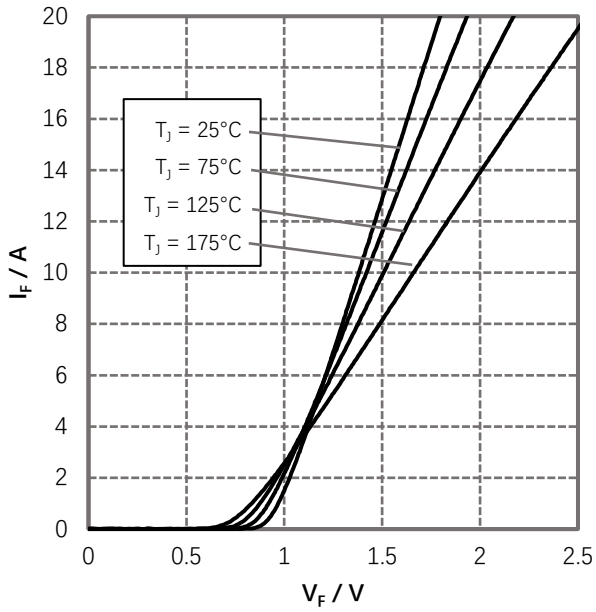


Figure 1. Forward Characteristics

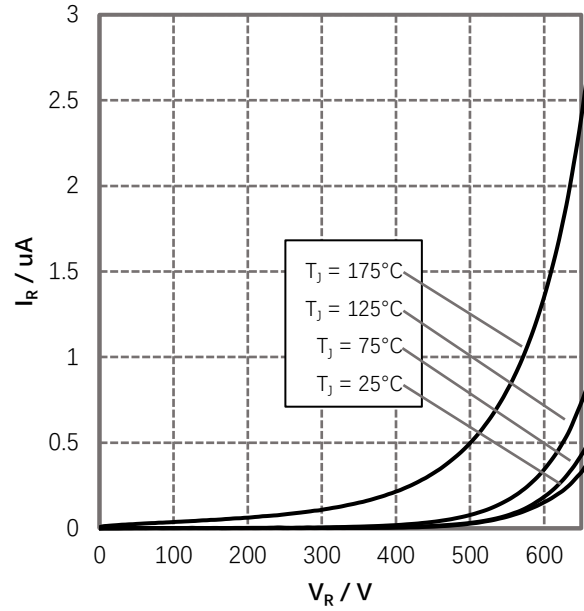


Figure 2. Reverse Characteristics

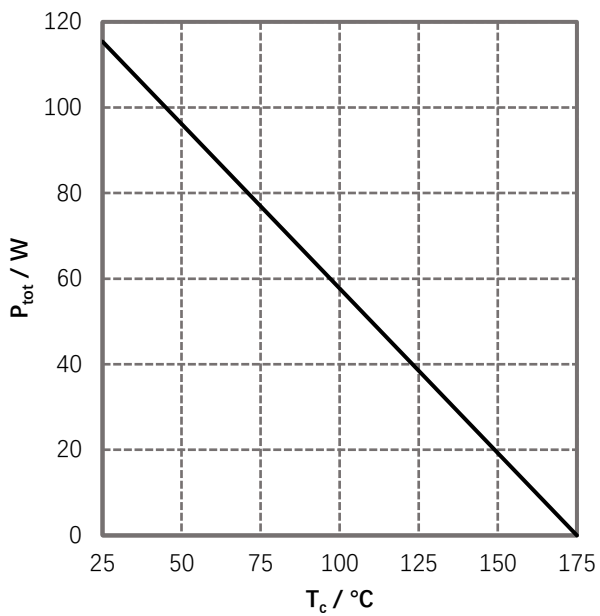


Figure 3. Power Derating

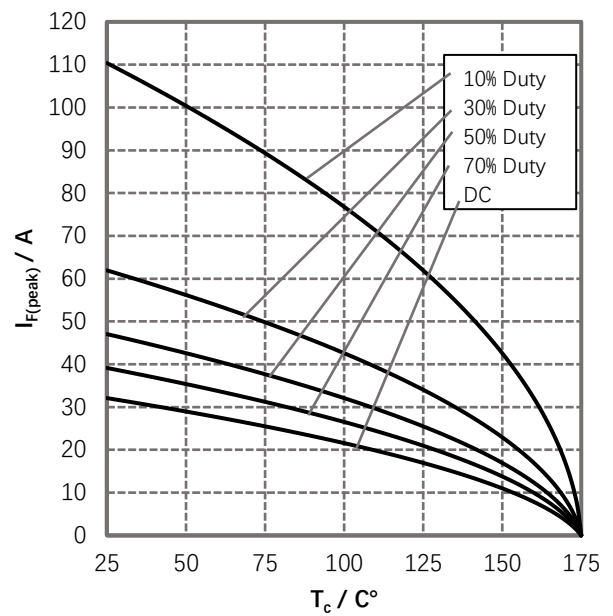


Figure 4. Current Derating

Typical Characteristics Curves

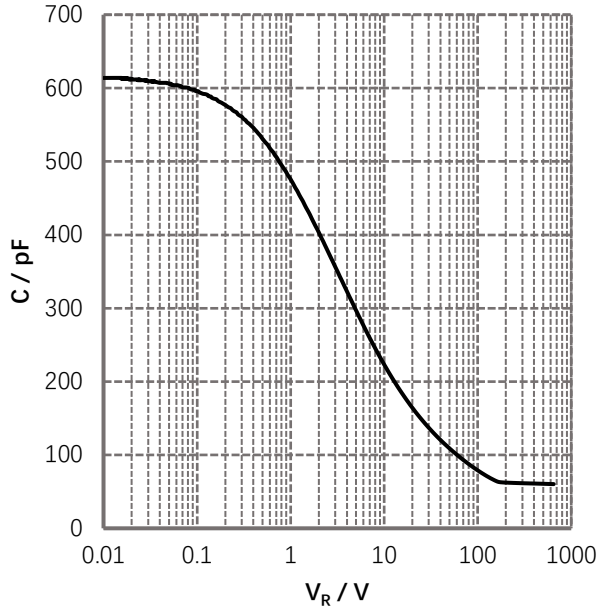


Figure 5. Capacitance vs. Reverse Voltage

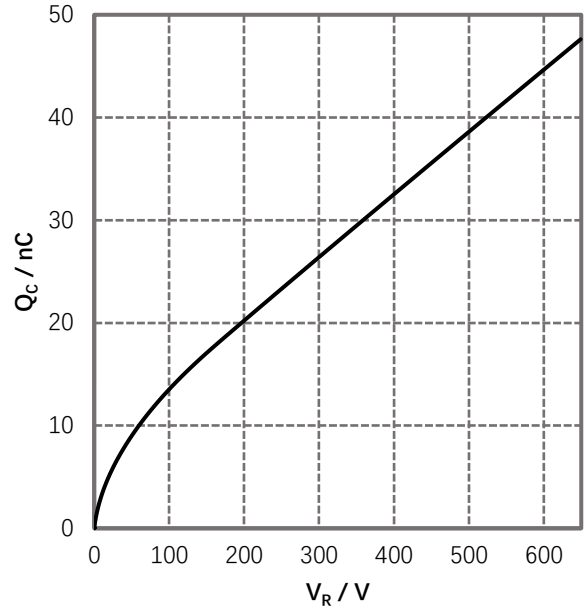


Figure 6. Reverse Charge vs. Reverse Voltage

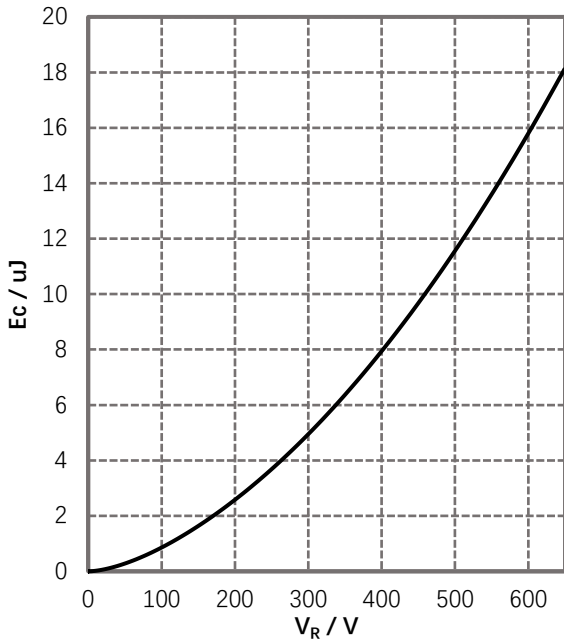


Figure 7. Capacitance Stored Energy

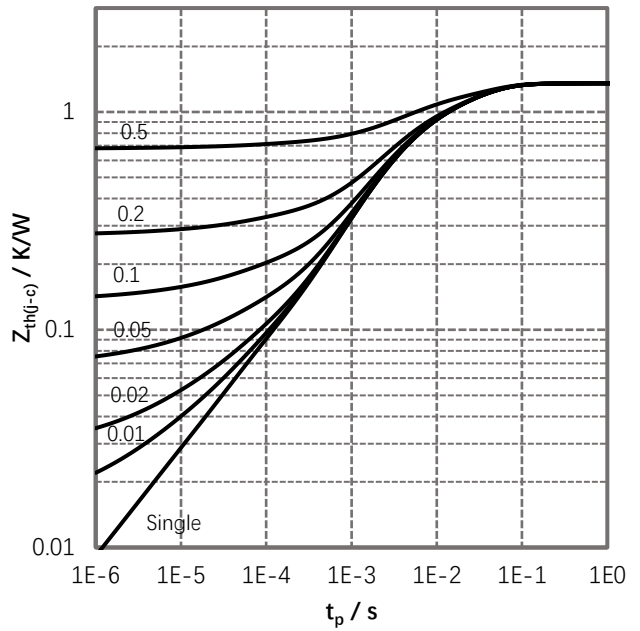
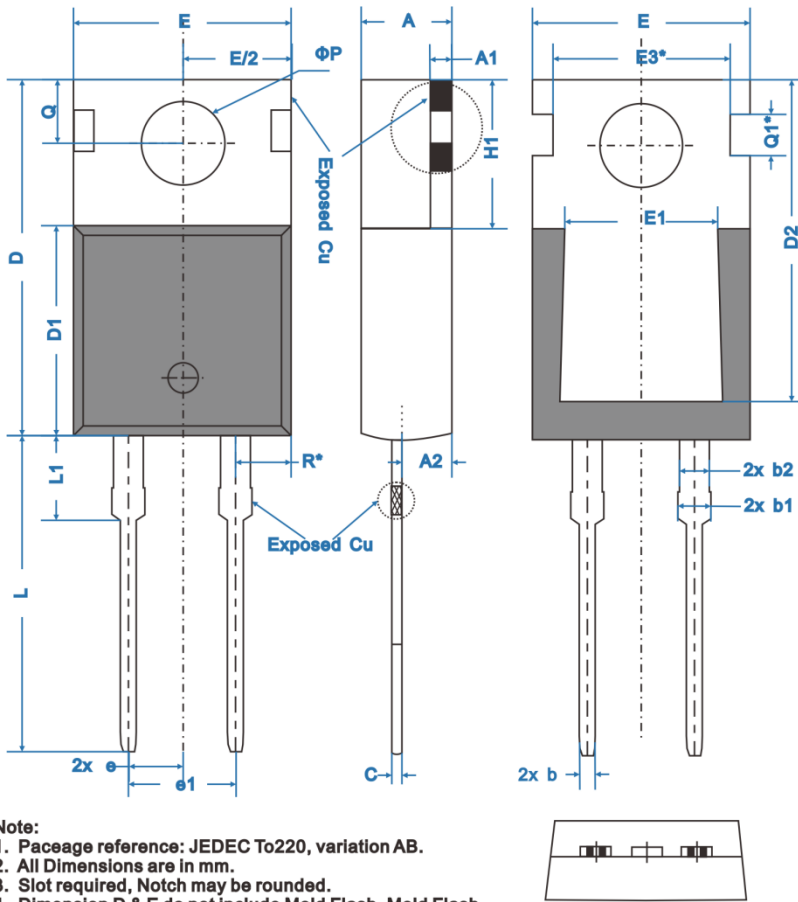


Figure 8. Transient Thermal Impedance

Package Dimensions



Unit: mm

Symbol	Dimensions			Notes
	Min.	NOM.	Max.	
A	4.24	4.44	4.64	
A1	1.15	1.27	1.40	
A2	2.30	2.48	2.70	
b	0.70	0.80	0.90	
b1	1.20	1.55	1.75	
b2	1.20	1.45	1.70	
c	0.40	0.50	0.60	
D	14.70	15.37	16.00	4
D1	8.82	8.92	9.02	
D2	12.63	12.73	12.83	5
E	9.96	10.16	10.36	4,5
E1	6.86	7.77	8.89	5
E3*	8.70 Ref.			
e	2.54 BSC			
e1	5.08 BSC			
H1	6.30	6.45	6.60	5,6
L	13.47	13.72	13.97	
L1	3.60	3.80	4.00	
ΦP	3.75	3.80	4.00	
Q	2.60	2.80	3.00	
Q1*	1.73 Ref.			
R*	1.82 Ref.			

Note:

1. Package reference: JEDEC To220, variation AB.
2. All Dimensions are in mm.
3. Slot required, Notch may be rounded.
4. Dimension D & E do not include Mold Flash. Mold Flash shall not exceed 0.127 per side. These dimension are measured at the outermost extreme of the Plastic Body.
5. Thermal Pad contour optional within dimension E, H1, D2 & E1.
6. Dimension E2 & H1 define A zone where Stamping and Singulation Irregularities are allowed.
7. "*" is reference.

Ordering Information

Part Number	Marking	Package	Packaging Mode
G3S06510A	G3S06510A	TO-220AC	50pcs/Tube