

A4G40D1200NT3C

1200V Silicon Carbide Schottky Diode



Features

- New Thin Wafer Technology
- Low Forward Voltage Drop (VF)
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on VF
- Temperature-independent Switching

Benefits

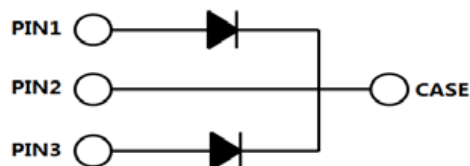
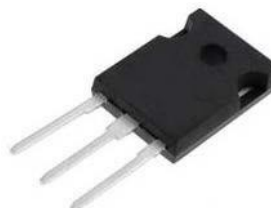
- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Applications

- Switch Mode Power Supplies
- Uninterruptible Power Supplies
- Server/Telecom Power Supplies
- Industrial Power Supplies

Product Summary

V_{DS}	1200V
$I_D (T_C \leq 145^\circ\text{C})$	20A (Per Leg)



Ordering Information

Part Number	Marking	Package	Packaging
A4G40D1200NT3C	A4G40D1200NT3C	TO-247-3	Tube

Absolute Maximum Ratings

Symbol	Parameter	Value	Unit
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V
V_{RSM}	Surge Peak Reverse Voltage	1200	
V_R	DC Blocking Voltage	1200	
I_F	Forward Current (Per leg/Device)	40/80 ($T_C \leq 25^\circ\text{C}$)	A
		24/48 ($T_C \leq 135^\circ\text{C}$)	
		20/40 ($T_C \leq 145^\circ\text{C}$)	
I_{FSM}	Non-Repetitive Forward Surge Current	180 (Per leg)	A
P_{tot}	Power Dissipation (Per leg/Device)	214/428 ($T_C = 25^\circ\text{C}$)	W
T_J, T_{stg}	Operating Junction and Storage Temperature	-55 to +175	$^\circ\text{C}$

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

Typical Performance-Static

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V_F	Forward Voltage	$I_F = 20\text{A}, T_J = 25^\circ\text{C}$		1.45	1.8	V
		$I_F = 20\text{A}, T_J = 175^\circ\text{C}$		2.0		V
I_R	Reverse Current	$V_R = 1200\text{V}, T_J = 25^\circ\text{C}$		10	100	μA
		$V_R = 1200\text{V}, T_J = 175^\circ\text{C}$		50	500	μA

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C	Total Capacitance	$V_R = 0.1V, T_J = 25^{\circ}C, f = 1MHz$	1220	pF
		$V_R = 400V, T_J = 25^{\circ}C, f = 1MHz$	87	pF
		$V_R = 800V, T_J = 25^{\circ}C, f = 1MHz$	64	pF
Qc	Total Capacitive Charge	$V_R = 800V, I_F = 20A$ $di/dt = 200A/\mu s, T_J = 25^{\circ}C$	50	nC

Thermal Characteristics

Symbol	Parameter	Value	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case (Per leg/Device)	0,7/0.35	$^{\circ}C/W$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	80	$^{\circ}C/W$
T_{sold}	Soldering Temperature	260	$^{\circ}C$

Typical Performance

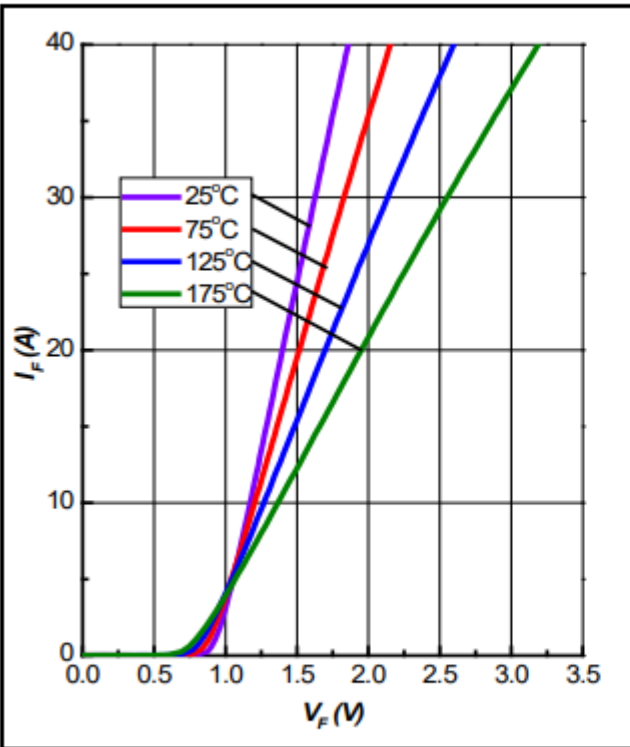


Figure 1. Forward Characteristics

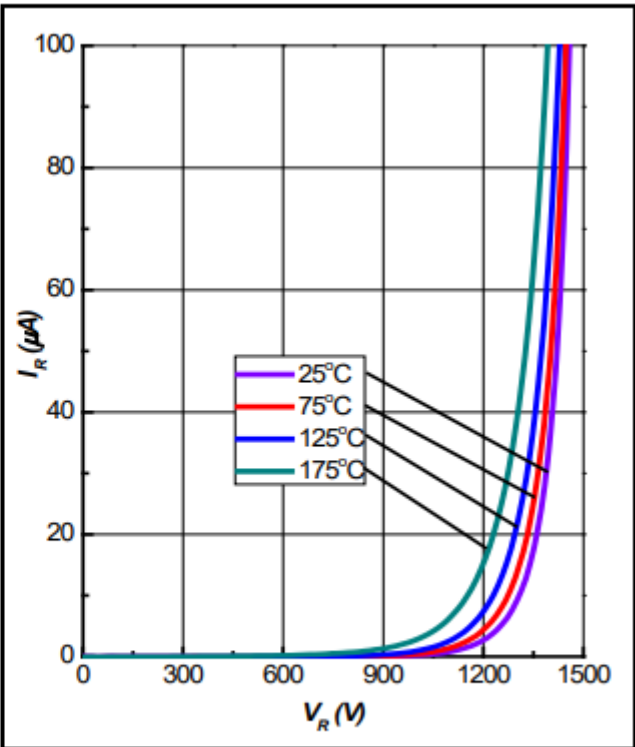


Figure 2. Reverse Characteristics

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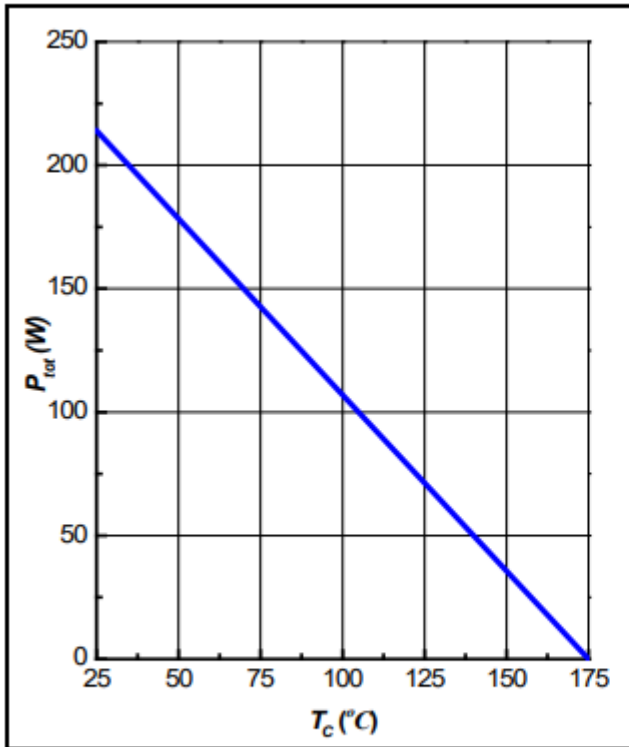


Figure 3. Power Derating

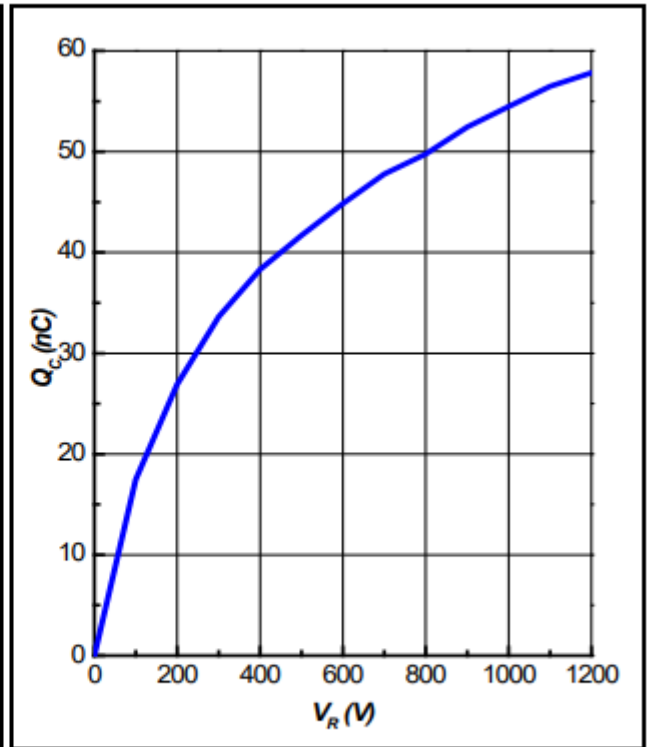


Figure 4. Total Capacitive Charge vs. Reverse Voltage

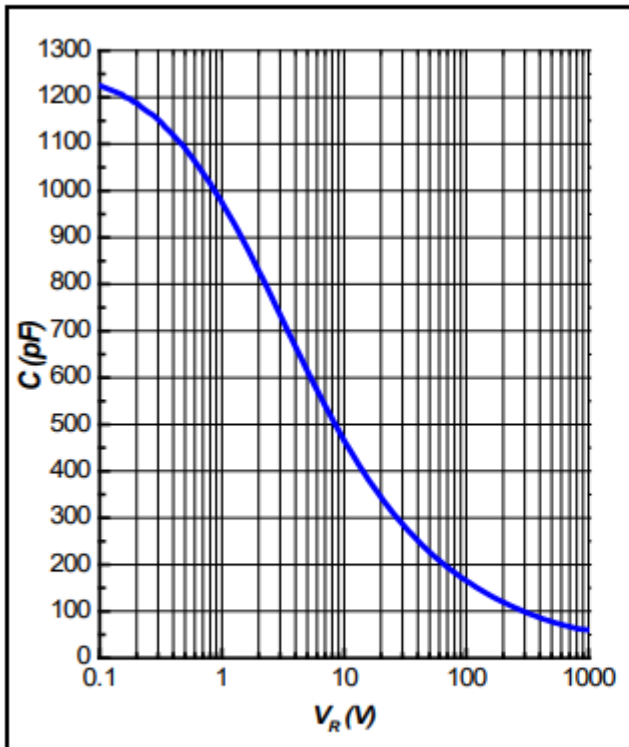


Figure 5. Total Capacitance vs. Reverse Voltage

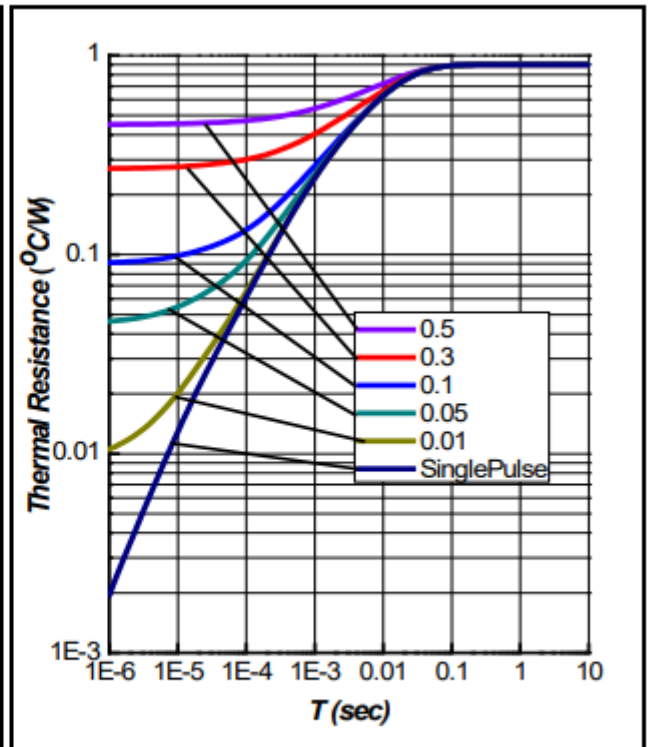
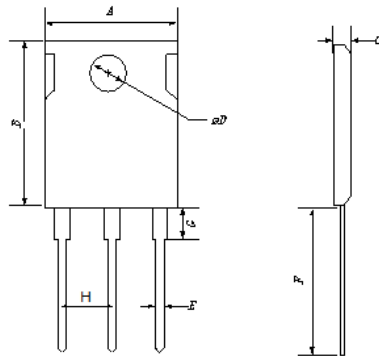


Figure 6. Transient Thermal Impedance

Package Drawing

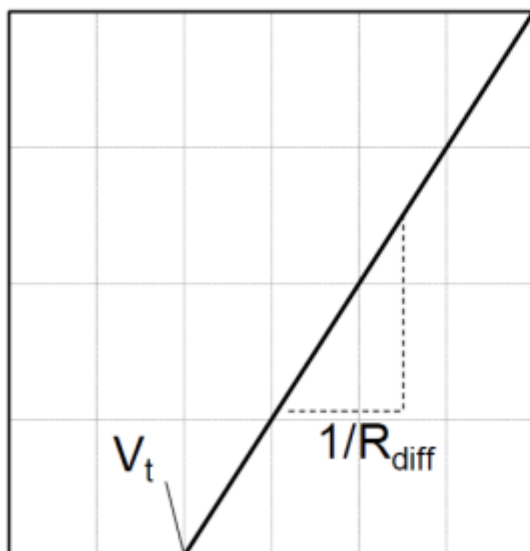
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Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	14.18	15.75	17.33
B	18.45	20.5	22.55
C	4.50	5.00	5.50
D	3.15	3.50	3.85
E	1.08	1.20	1.32
F	18.27	20.32	22.33
G	4.21	4.68	5.15
H	4.91	5.46	6.01

Simplified Diode Model

Equivalent IV Curve for Model



Mathematical Equation

$$V_F = V_t + I_F \times R_{diff}$$

$$V_t = -0.0014 \times T_j + 0.98 \text{ [V]}$$

$$R_{diff} = 8 \times 10^{-7} \times T_j^2 + 9.5 \times 10^{-5} \times T_j + 0.02 \text{ [\Omega]}$$

Note:

T_j = Diode Junction Temperature In Degrees Celsius,
valid from 25°C to 175°C

I_F = Forward Current

Less than 40A

Revision version	Description	Date
1	Initial	08.2025