AS4D010120D

1200V,10A Silicon Carbide Schottky Diode

Features

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

V_{RRM}	=	1200	V
I_F (T_C≤135℃)	=	13	A
Q_C	=	25	nC

Benefits

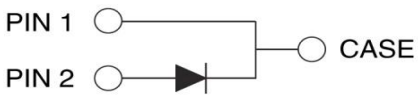
- Replace Bipolar with Unipolar Device
- Reduction of Heat Sink Size
- Parallel Devices Without Thermal Runaway
- Essentially No Switching Losses

Package

TO-252-2

Applications

- Switch Mode Power Supplies
- Uninterruptible Power Supplies
- Motor drive, PV Inverter, Wind Power Station



Part Number	Package	Marking
AS4D010120D	TO-252-2	AS4D010120D

AS4D010120D

1200V,10A Silicon Carbide Schottky Diode

Maximum Ratings

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	T_C = 25℃	
V_{RSM}	Surge Peak Reverse Voltage	1200	V	T_C = 25℃	
V_R	DC Blocking Voltage	1200	V	T_C = 25℃	
I_F	Forward Current	25 13 10	A	T_C ≤ 25℃ T_C ≤ 135℃ T_C ≤ 148℃	
I_{FSM}	Non-Repetitive Forward Surge Current	90	A	T_C = 25℃, t_p = 8.3ms, Half Sine Wave	
P_{tot}	Power Dissipation	125	W	T_C = 25℃	Fig.3
T_J, T_{STG}	Operating Junction and Storage Temperature	-55 to 175	℃		

Electrical Characteristics

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.45 2.0	1.8 /	V	I_F = 10A, T_J = 25℃ I_F = 10A, T_J = 175℃	Fig.1
I_R	Reverse Current	6 30	100 500	μA	V_R = 1200V, T_J = 25℃ V_R = 1200V, T_J = 175℃	Fig.2
C	Total Capacitance	600 45 34	/	pF	V_R = 0.1V, T_J = 25℃, f = 1MHz V_R = 400V, T_J = 25℃, f = 1MHz V_R = 800V, T_J = 25℃, f = 1MHz	Fig.5
Q_C	Total Capacitive Charge	25	/	nC	V_R = 800V, I_F = 10A di/dt = 200A/μs, T_J = 25℃	Fig.4

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	1.2	℃/W	Fig.6
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	80	℃/W	
T_{sold}	Soldering Temperature	260	℃	

Typical Performance

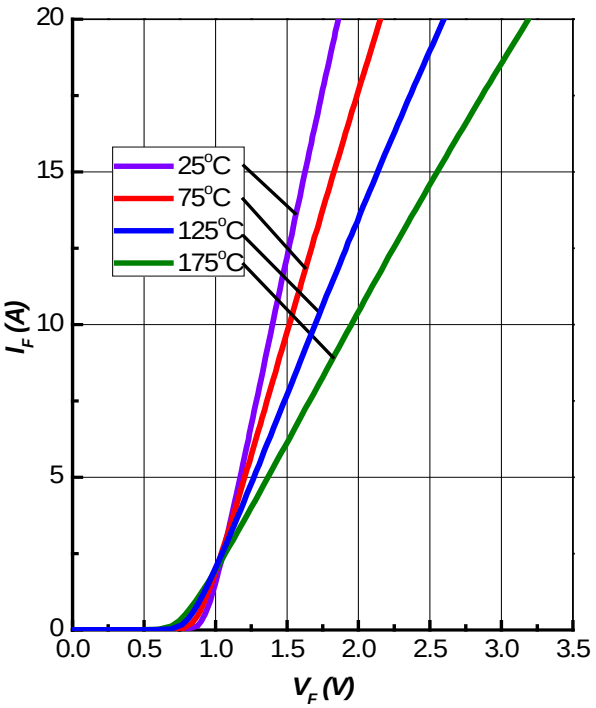


Figure 1. Forward Characteristics

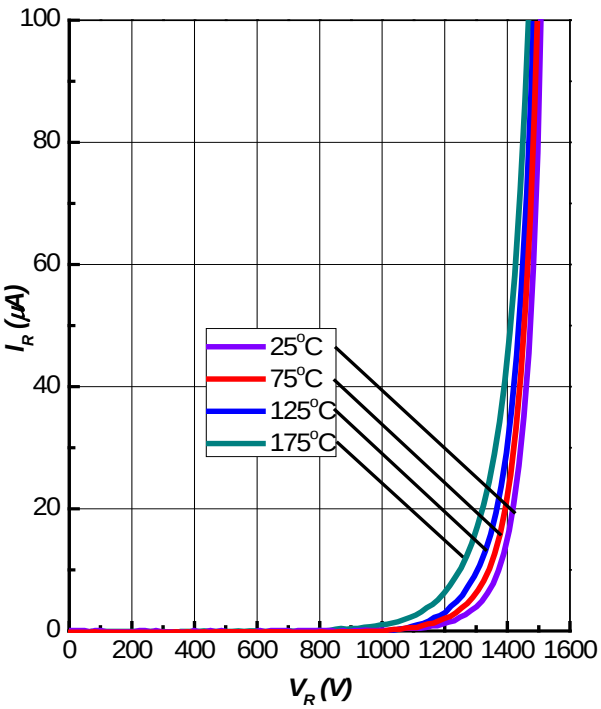


Figure 2. Reverse Characteristics

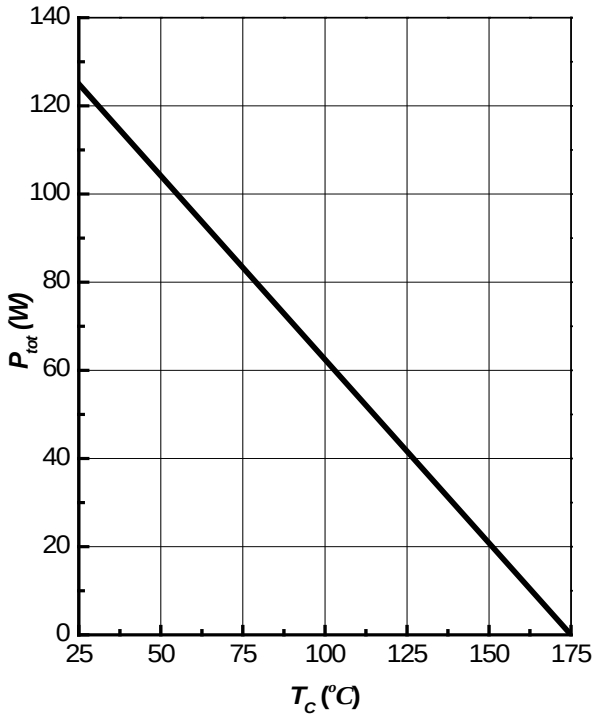


Figure 3. Power Derating

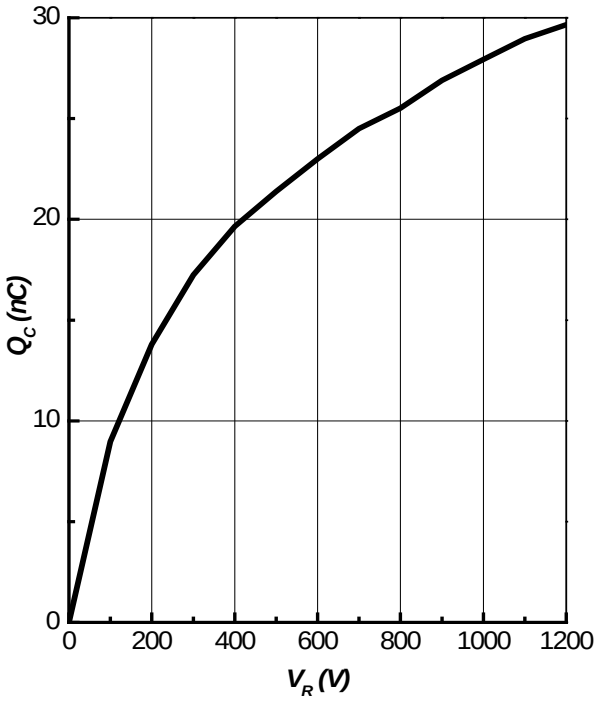


Figure 4. Total Capacitive Charge vs. Reverse Voltage

Typical Performance

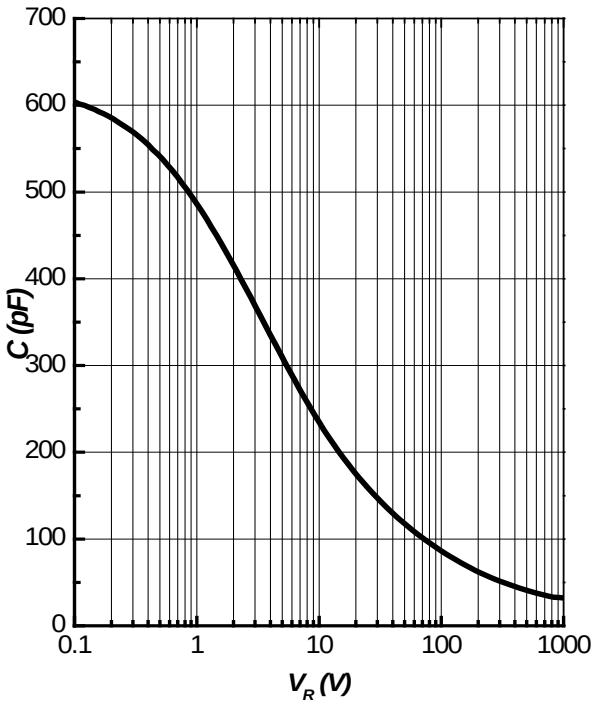


Figure 5. Total Capacitance vs. Reverse Voltage

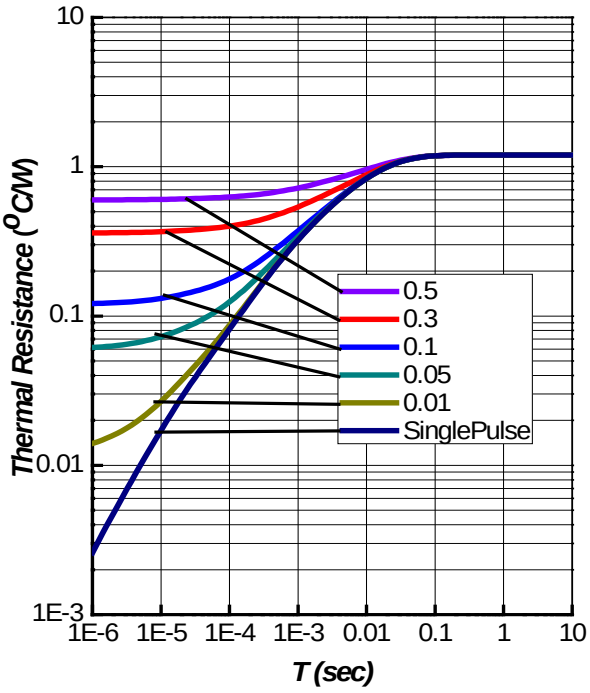
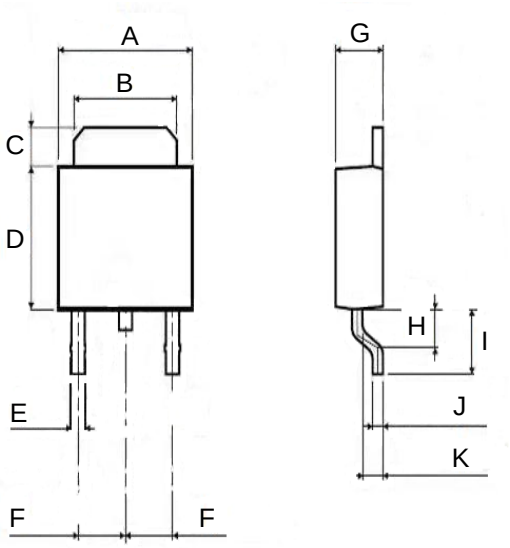


Figure 6. Transient Thermal Impedance

Package Dimensions

Package TO-252-2



Symbol	Min. (mm)	Typ. (mm)	Max. (mm)
A	6.30	6.50	6.70
B	5.20	5.30	5.40
C	1.15	1.25	1.35
D	5.70	5.90	6.10
E	0.65	0.7	0.75
F	2.10	2.30	2.50
G	2.20	2.30	2.40
H	1.45	1.50	1.55
I	2.90	3.00	3.10
J	0.45	0.5	0.55
K	0.90	1.00	1.10