

ASC100D1200DT2R

1200V, 100A, 555nC, Silicon Carbide Schottky Diode

Product Data Sheet

ASTC-3T04-121A A/0



爱仕特半导体
AST Semiconductor

General Description

The AST-DT2 series SiC Diode in a TO-247-2L package delivers ultra-low conduction loss and rugged reliability for high-frequency switched-mode power supplies, with safe paralleling capability and automotive-grade compliance.



Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Max Junction Temperature 175°C
- 100% Avalanche (UIL) Tested
- Temperature Independent Switching Characteristics
- High-Speed Switching



Applications

- Motor Drives
- Photovoltaic
- Uninterruptible Power Supply (UPS)
- Switched-Mode Power Supplies (SMPS)
- Power Factor Correction (PFC)
- Wind Power
- Locomotive Traction

Ordering Informations

Order Number	ASC100D1200DT2R
Marking	ASC100D1200DT2
Package Type	TO-247-2L
Packing Method	Tube

Key Parameters

Symbol	Parameter	Values			Unit	Test Conditions
Absolute maximum rating						
V _{RRM}	Repetitive Peak Reverse Voltage	1200			V	T _C =25°C
I _F	Continuous Forward Current	100			A	T _C =130°C
T _{VJ} ; T _{STG}	Operating Junction and Storage Temperature	-55 to 175			°C	
Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Static characteristics						
V _F	Forward Voltage	-	1.55	1.80	V	I _F =100A; T _{VJ} =25°C
		-	2.00	2.45		I _F =100A; T _{VJ} =175°C
Dynamic characteristics						
Q _C	Total Capacitive Charge	-	555	-	nC	V _R =800V; T _{VJ} =25°C

Absolute Maximum Ratings (at $T_{VJ}=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Values	Unit	Test Conditions
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V	$T_C=25^{\circ}\text{C}$
I_F	Continuous Forward Current	270	A	$T_C=25^{\circ}\text{C}$
		100		$T_C=130^{\circ}\text{C}$
I_{FRM}	Repetitive Forward Surge Current, Sine Half-Wave	542	A	$T_C=25^{\circ}\text{C}; t_p=10\text{ms}$
		460		$T_C=110^{\circ}\text{C}; t_p=10\text{ms}$
I_{FSM}	Non-Repetitive Forward Surge Current (Half Sine Pulse)	615	A	$T_C=25^{\circ}\text{C}; t_p=10\text{ms}$
		522		$T_C=110^{\circ}\text{C}; t_p=10\text{ms}$
P_{tot}	Power Dissipation for $R_{th(j-c,max)}$	1071	W	$T_C=25^{\circ}\text{C}$
$T_{VJ}; T_{STG}$	Operating Junction and Storage Temperature	-55 to 175	$^{\circ}\text{C}$	

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

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
V_{DC}	DC Blocking Voltage	1200	-	-	V	$I_R=100\mu\text{A}$
V_F	Forward Voltage	-	1.55	1.80	V	$I_F=100\text{A}; T_{VJ}=25^{\circ}\text{C}$
		-	2.00	2.45		$I_F=100\text{A}; T_{VJ}=175^{\circ}\text{C}$
I_R	Reverse Current	-	4	100	μA	$V_R=1200\text{V}; T_{VJ}=25^{\circ}\text{C}$
		-	98	580		$V_R=1200\text{V}; T_{VJ}=175^{\circ}\text{C}$
Q_C	Total Capacitive Charge	-	555	-	nC	$V_R=800\text{V}$
C	Total Capacitance	-	8500	-	pF	$V_R=0\text{V}; f=1\text{MHz}$
		-	450	-		$V_R=400\text{V}; f=1\text{MHz}$
		-	375	-		$V_R=800\text{V}; f=1\text{MHz}$
E_C	Capacitance Stored Energy	-	145	-	μJ	$V_R=800\text{V}$

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	-	0.140	-	$^{\circ}\text{C/W}$

Typical Performance

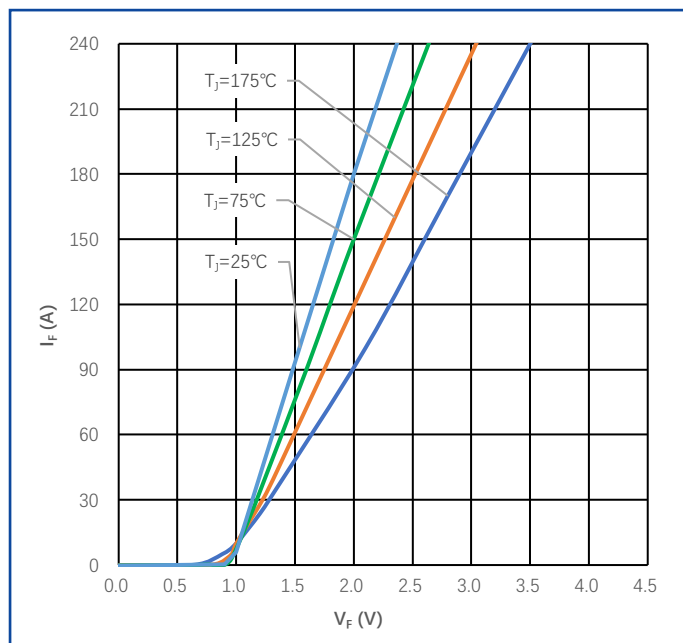


Figure 1

Forward Characteristics

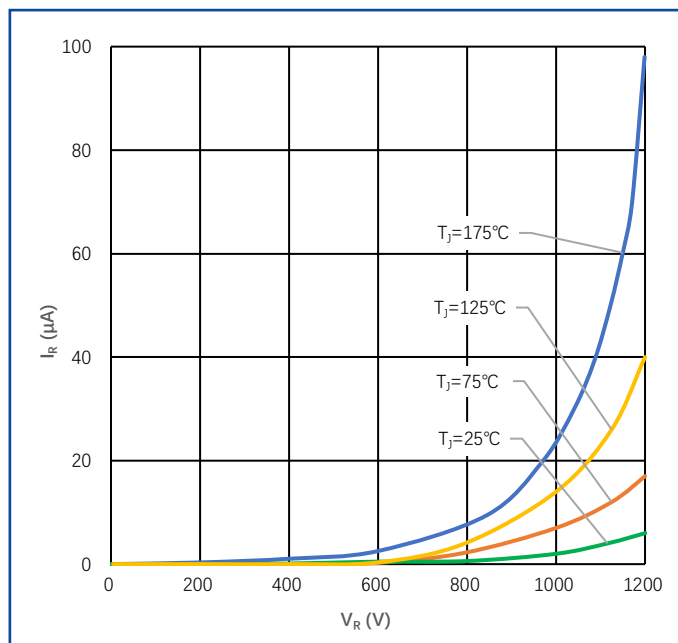


Figure 2

Reverse Characteristics

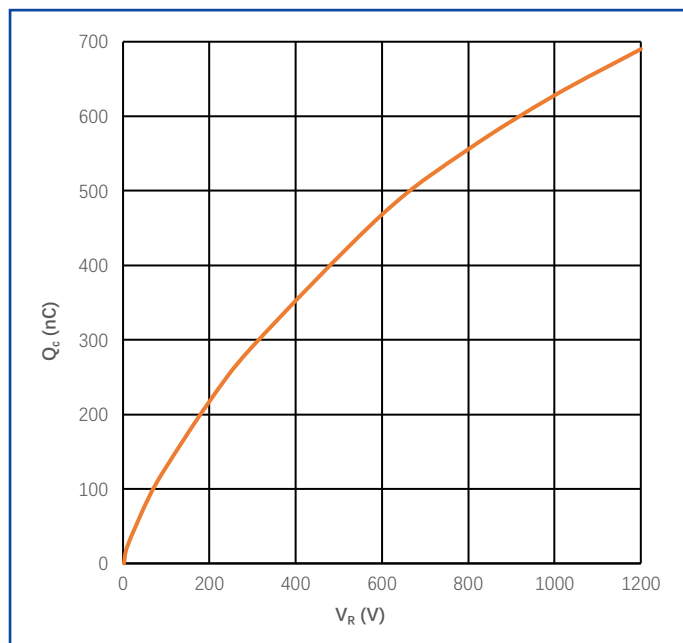


Figure 3

Reverse Charge vs. Reverse Voltage

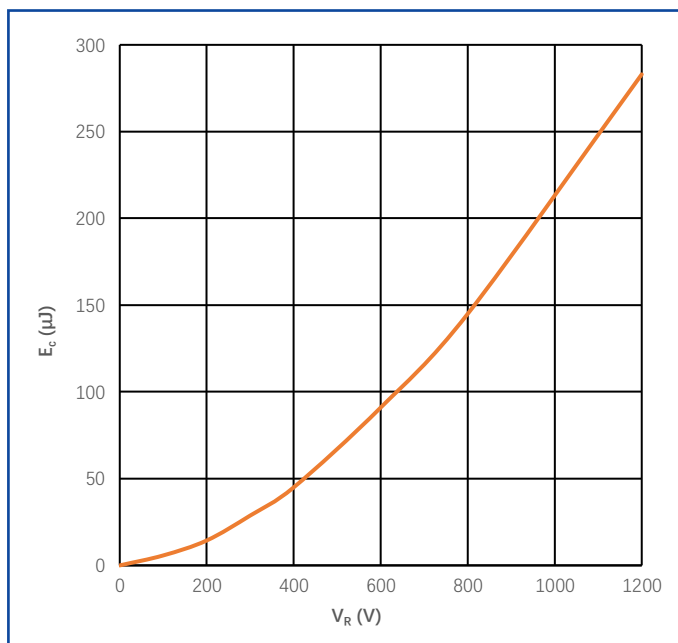


Figure 4

Capacitance Stored Energy

Typical Performance

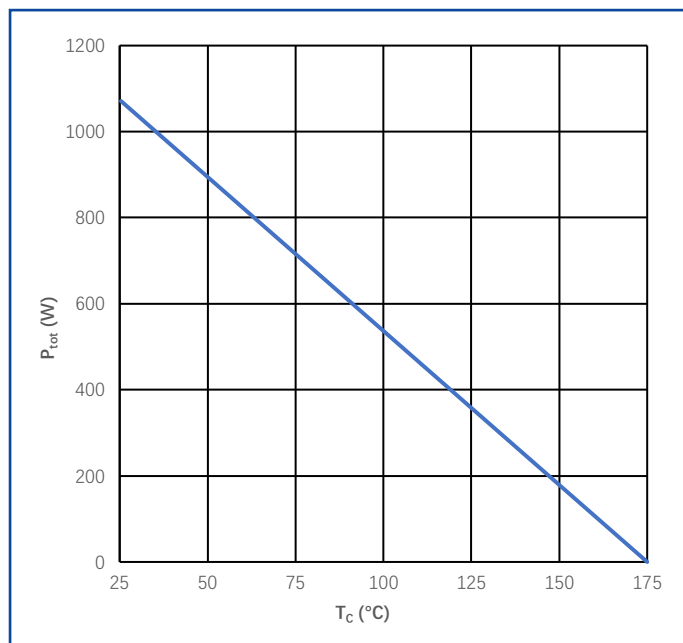


Figure 5
Power Derating

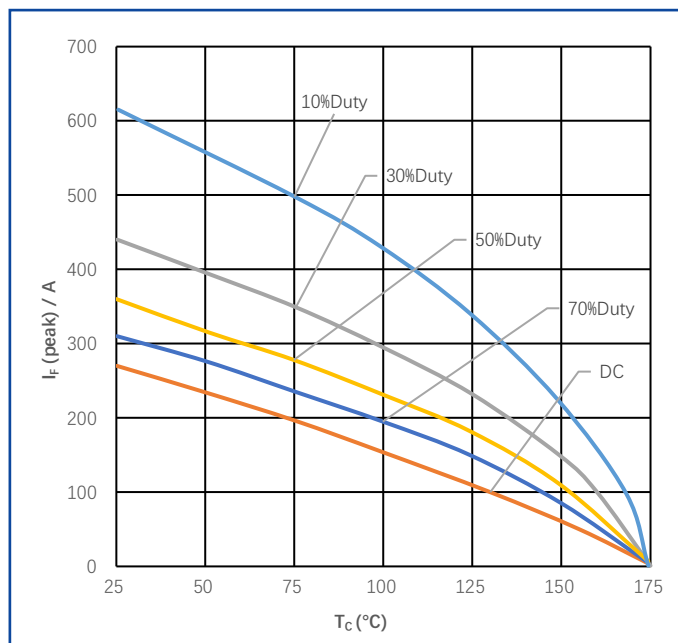


Figure 6
Current Derating

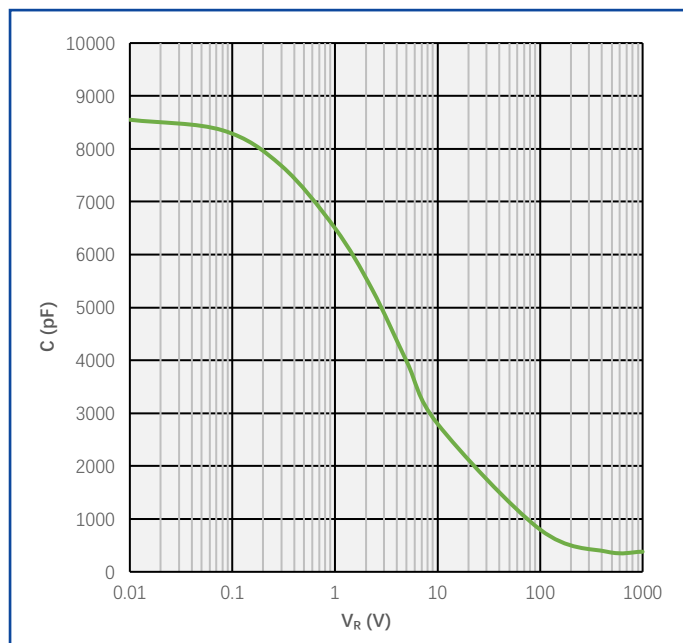


Figure 7
Capacitance vs. Reverse Voltage

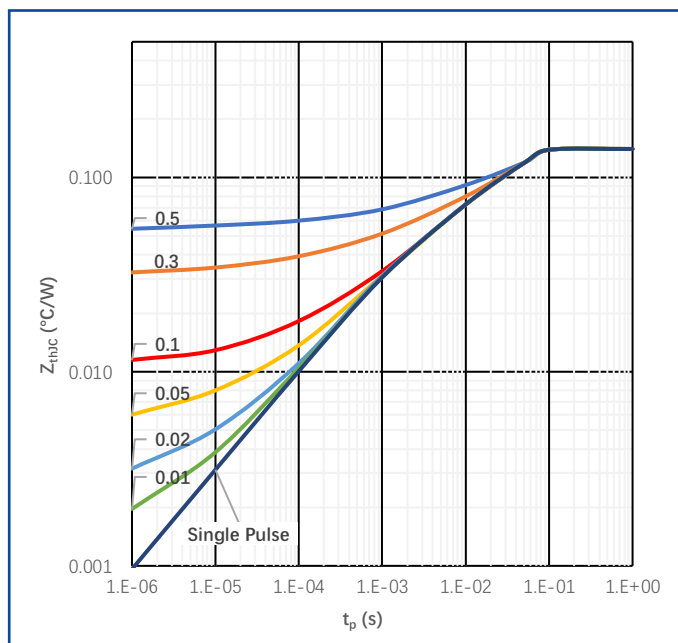
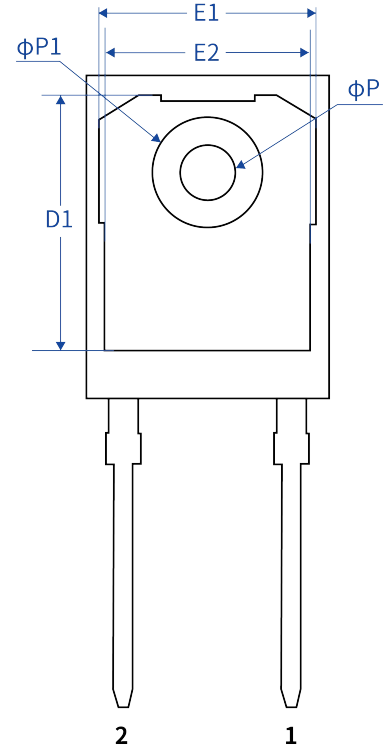
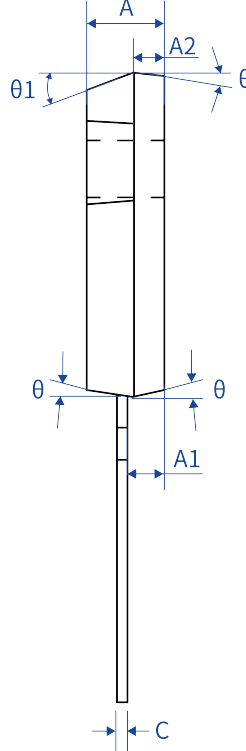
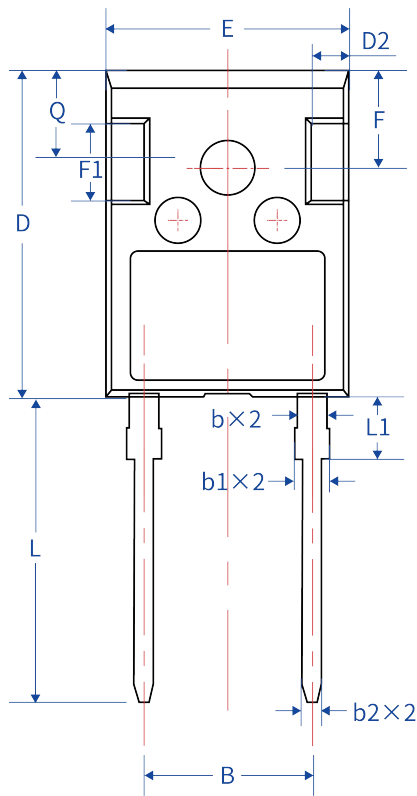


Figure 8
Transient Thermal Impedance

Package Dimensions (mm)

Package Type: TO-247-2L



Symbol	Millimeters			Symbol	Millimeters		
	Min.	Type.	Max.		Min.	Type.	Max.
A	4.85	5.00	5.15	E1	13.82	14.02	14.22
A1	2.26	2.41	2.56	E2	13.11	13.31	13.51
A2	1.90	2.00	2.10	F	6.00	6.15	6.30
B	10.78	10.88	10.98	F1	4.85	5.00	5.15
b	1.95	2.00	2.10	L	19.71	19.91	20.11
b1	2.00	2.10	2.20	L1	4.02	4.12	4.22
b2	1.15	1.20	1.30	φP	3.45	3.60	3.75
C	0.55	0.60	0.70	φP1	7.00	7.20	7.40
D	20.80	21.00	21.20	Q	5.65	5.80	5.95
D1	16.35	16.55	16.75	θ	7°		
D2	2.35	2.50	2.65	θ1	20°		
E	15.65	15.80	15.95				

Pin	Symbol	Description
1	K	cathode
2	A	anode
mb	mb	mounting base; connected to cathode

Note:

1. All metal surfaces are Sn plated (matte), except area of cut.
2. Burr or mold flash size (0.5 mm) is not included in the dimensions.

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