

ASC20D1200DT2

1200V, 20A, 104nC, Silicon Carbide Schottky Diode

Product Data Sheet

ASTC-3T01-37A-L A/0



爱仕特科技
AST TECHNOLOGY

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
- UPS
- Switched-Mode Power Supplies (SMPS)
- Power Factor Correction (PFC)
- Wind Power
- Locomotive Traction

Ordering Informations

Order Number / Marking	ASC20D1200DT2
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 for R _{th(j-c,max)}	20			A	T _C =150°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	-	1.45	1.7	V	I _F =20A; T _{VJ} =25°C
		-	1.98	2.50		I _F =20A; T _{VJ} =175°C
Dynamic characteristics						
Q _C	Total Capacitive Charge	-	104	-	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 for $R_{th(j-c,max)}$	60	A	$T_C=25^{\circ}\text{C}$
		20		$T_C=150^{\circ}\text{C}$
I_{FSM}	Non-Repetitive Forward Surge Current, Sine Half-Wave	220	A	$T_C=25^{\circ}\text{C}$; $t_p=10\text{ms}$
I_{FRM}	Repetitive Forward Surge Current, Sine Half-Wave	110	A	$T_C=25^{\circ}\text{C}$; $t_p=10\text{ms}$
P_{tot}	Power Dissipation for $R_{th(j-c,max)}$	234	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	-	1.45	1.7	V	$I_F=20\text{A}$; $T_{VJ}=25^{\circ}\text{C}$
		-	1.98	2.50		$I_F=20\text{A}$; $T_{VJ}=175^{\circ}\text{C}$
I_R	Reverse Current	-	8	50	μA	$V_R=1200\text{V}$; $T_{VJ}=25^{\circ}\text{C}$
		-	42	-		$V_R=1200\text{V}$; $T_{VJ}=175^{\circ}\text{C}$
Q_C	Total Capacitive Charge	-	104	-	nC	$V_R=800\text{V}$
C	Total Capacitance	-	1600	-	pF	$V_R=0\text{V}$; $f=1\text{MHz}$
		-	102	-		$V_R=400\text{V}$; $f=1\text{MHz}$
		-	82	-		$V_R=800\text{V}$; $f=1\text{MHz}$
E_C	Capacitance Stored Energy	-	52	-	μJ	$V_R=800\text{V}$

Thermal Characteristics

Symbol	Parameter	Min.	Typ.	Max.	Unit
$R_{\theta JC}$	Thermal Resistance, Junction to Case	-	0.64	-	$^{\circ}\text{C/W}$

Typical Performance

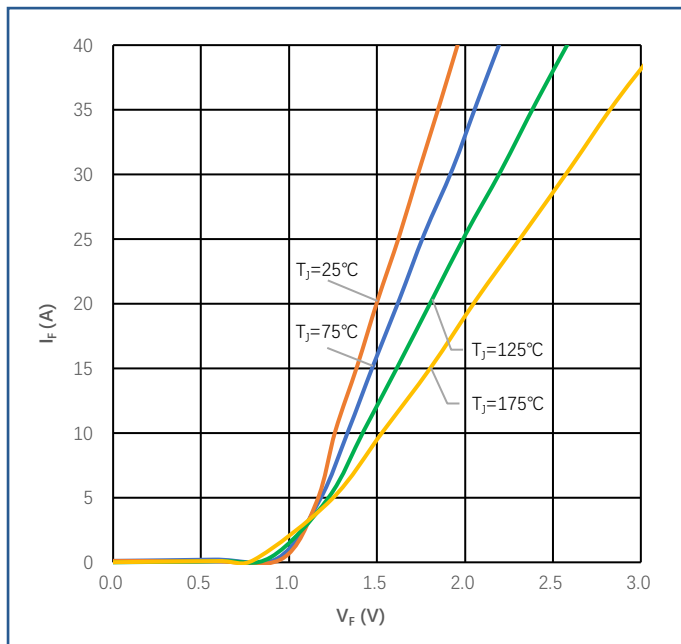


Figure 1

Forward Characteristics

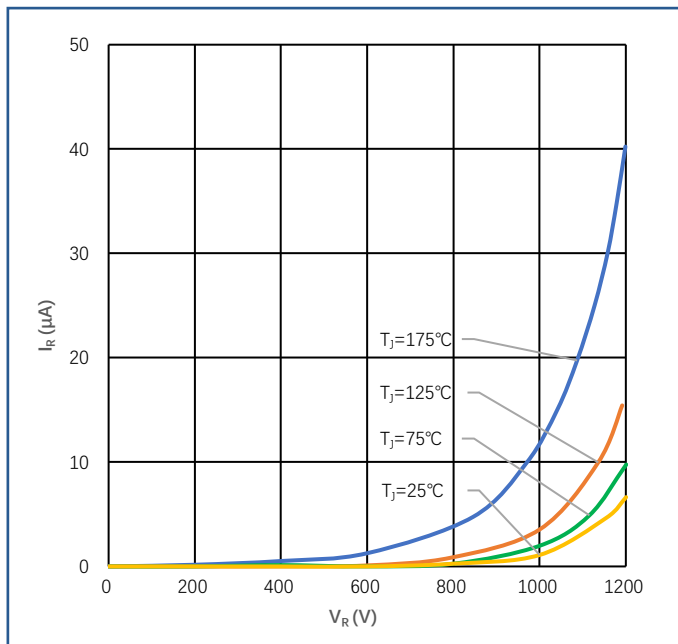


Figure 2

Reverse Characteristics

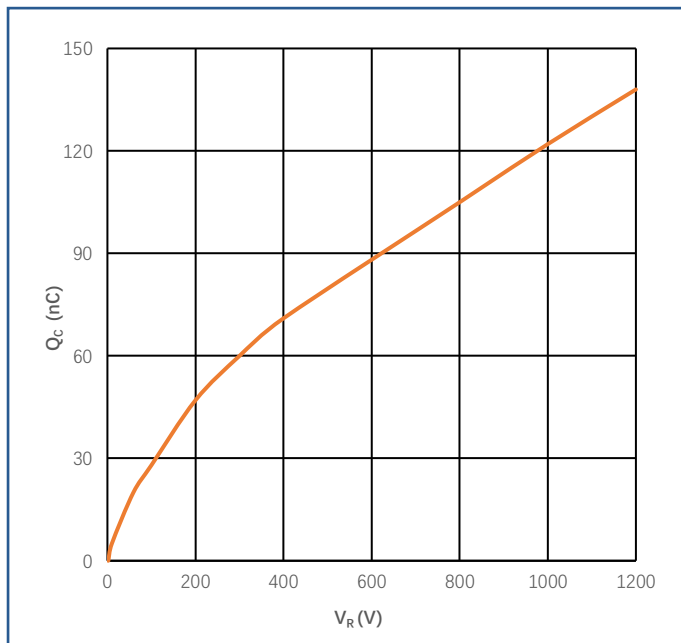


Figure 3

Reverse Charge vs. Reverse Voltage

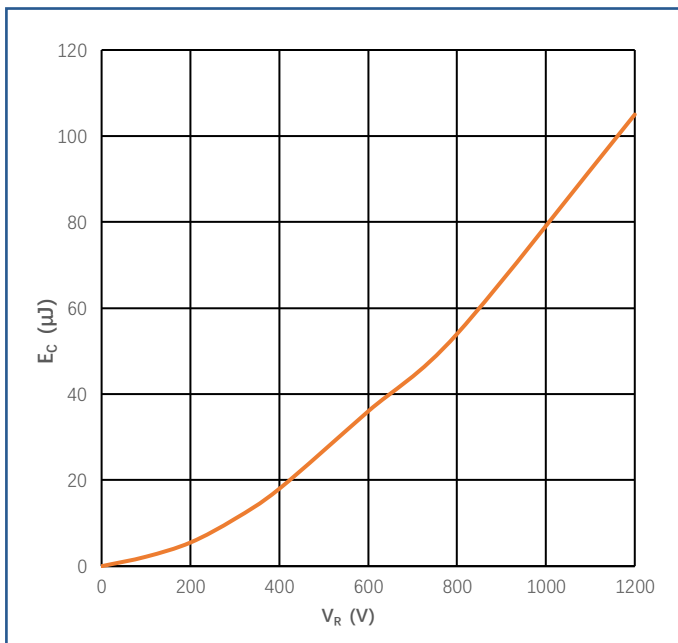


Figure 4

Capacitance Stored Energy

Typical Performance

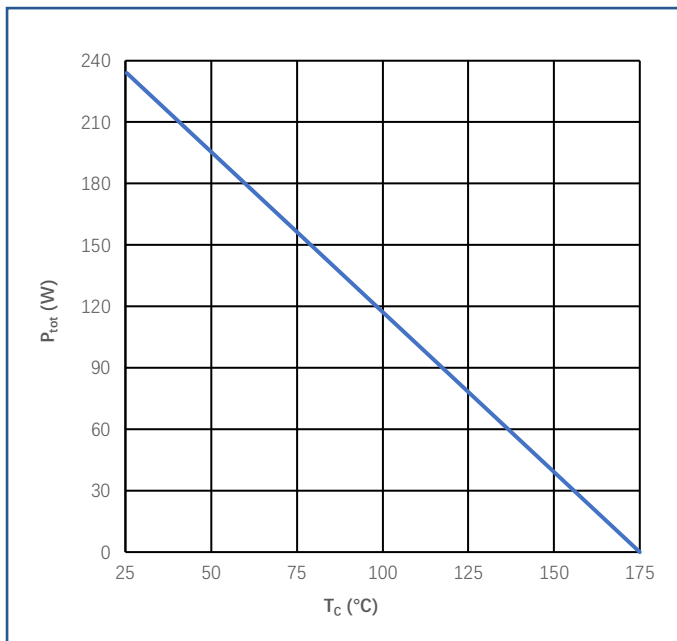


Figure 5
Power Derating

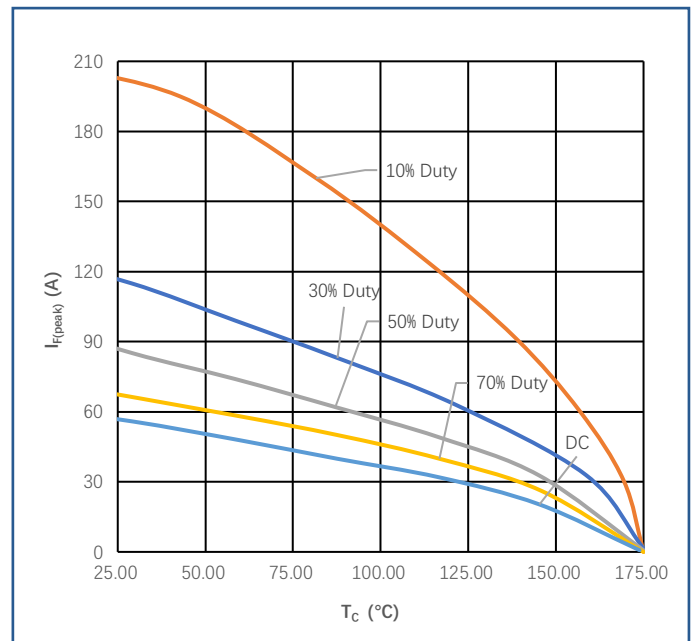


Figure 6
Current Derating

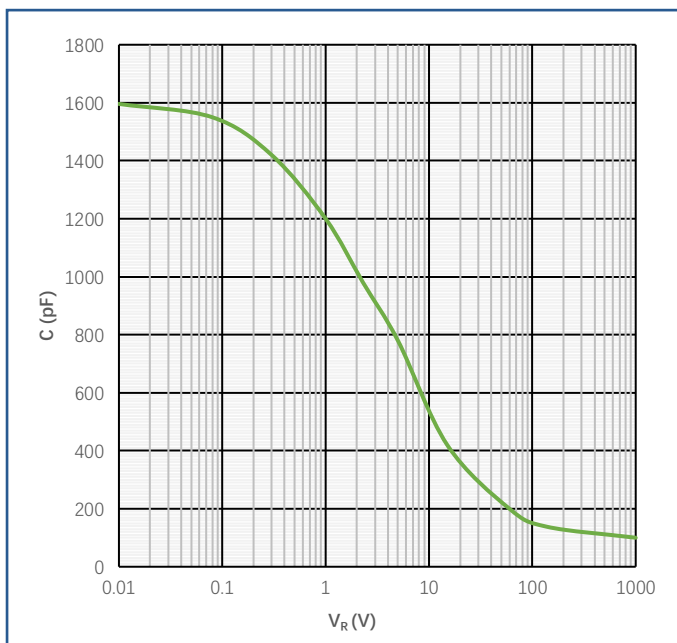


Figure 7
Capacitance vs. Reverse Voltage

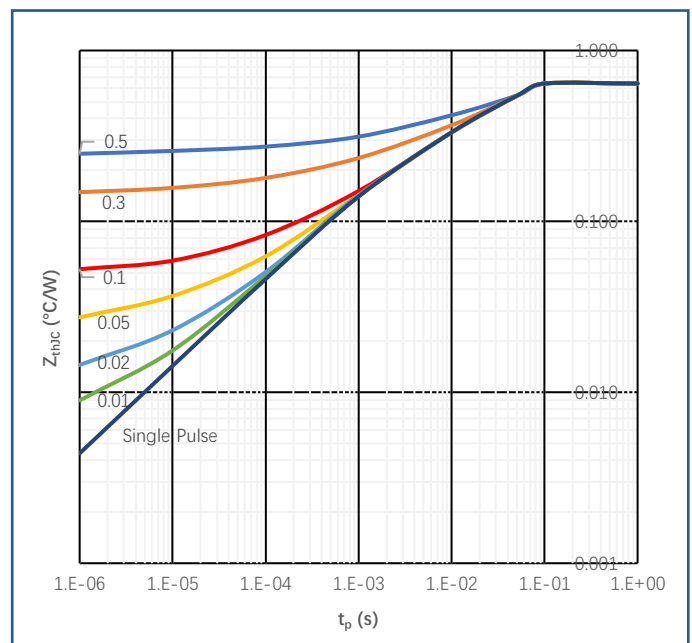
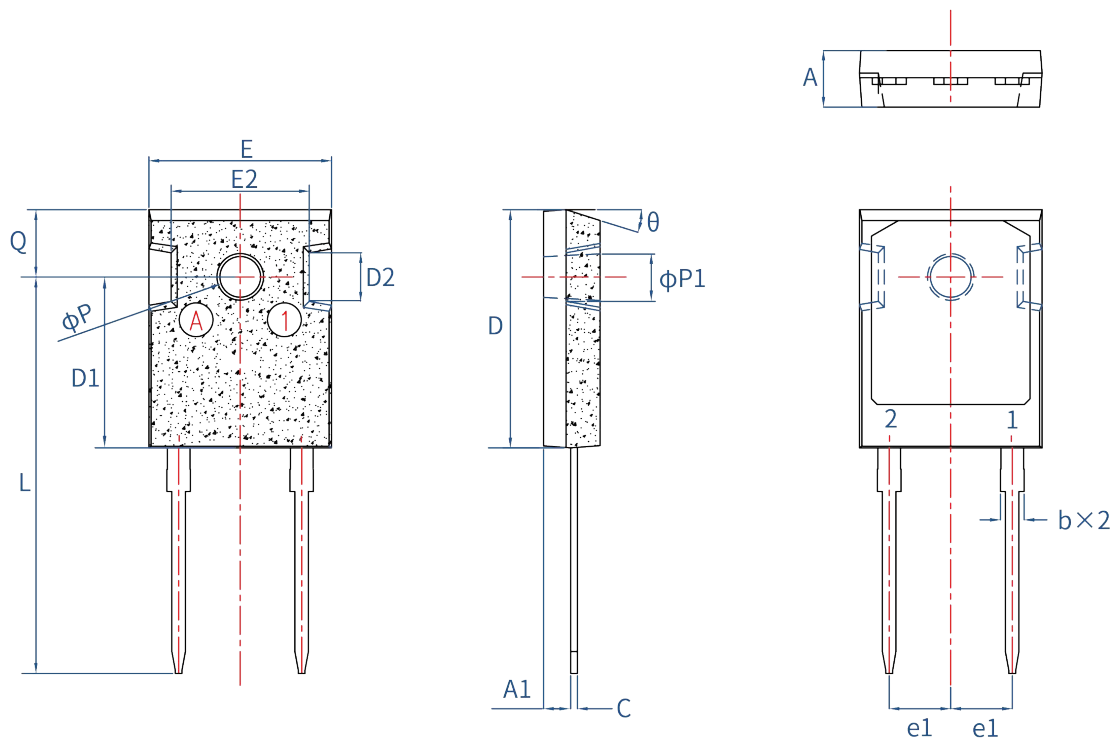


Figure 8
Transient Thermal Impedance

Package Dimensions (mm)

Package Type: TO-247-2L



Symbol	Millimeters		
	Min.	Type.	Max.
A	4.80	5.00	5.20
A1	2.25	2.40	2.55
b	2.03	2.65	2.10
C	0.55	0.60	0.65
D	20.80	21.00	21.20
D1	15.11		
D2	4.30		
e1	5.29	5.44	5.59
E	15.95	16.15	16.35
E1	12.00	12.20	12.40
L	34.65	35.05	35.45
Q	5.85	5.95	6.05
ϕP	3.45	3.60	3.75
$\phi P1$	4.12		
θ	17.50°		

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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