

General Description

The SRD28V120D is a Silicon Carbide Schottky Diode, which offers ultra low I_R and low V_F for high frequency applications such as PFC, Power Supply, Inverter, etc.

The SRD28V120D package is TO-247-2.

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175°C Operating Junction Temperature

Application

- Switch Mode Power Supplies
- Motor Driver, PV Inverter
- PFC Application
- High Frequency Operation
- Non-Automotive Qualified

Symbol



Figure 1 Symbol of SRD28V120D

Package Type

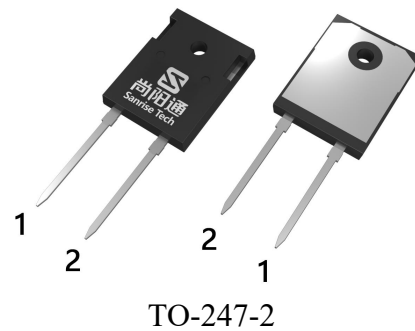
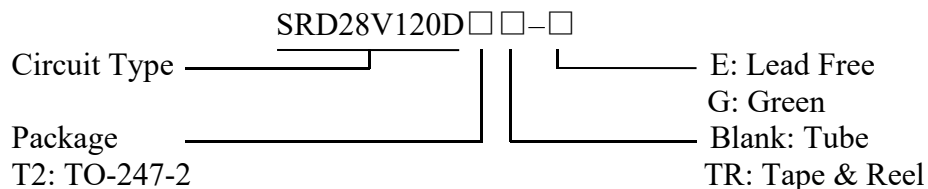


Figure 2 Package Type of SRD28V120D

Ordering Information



Package	Part Number	Marking ID	Packing Type
TO-247-2	SRD28V120DT2-G	SRD28V120DT2G	Tube

Absolute Maximum Ratings

Parameter	Test Conditions	Symbol	Value	Unit
Repetitive Peak Reverse Voltage		V_{RRM}	1200	V
Surge Peak Reverse Voltage		V_{RSM}	1200	V
Forward Current	$T_C \leq 150^\circ\text{C}$	I_F	28	A
Non-Repetitive Forward Surge Current	$t_p=10\text{ms}$, Half Sine Wave	I_{FSM}	220	A
	$T_C=110^\circ\text{C}$		205	
Power Dissipation		P_{tot}	250	W
i^2t value	$t_p=10\text{ms}$	$\int i^2 dt$	242	A^2S
	$T_C=110^\circ\text{C}$		210	
Operating Junction Temperature	-	T_J	-55 ~ 175	$^\circ\text{C}$
Storage Temperature	-	T_{STG}	-55 ~ 175	$^\circ\text{C}$
Soldering Temperature	-	T_{sold}	260	$^\circ\text{C}$
Single Pulse Avalanche Energy	$L=2\text{mH}$, $I_{AS}=15\text{A}$ $V_{R(\text{peak})}>1500\text{V}$	EAS	225	mJ

Note:

 $T_C = 25^\circ\text{C}$ unless otherwise specified

Thermal Resistance

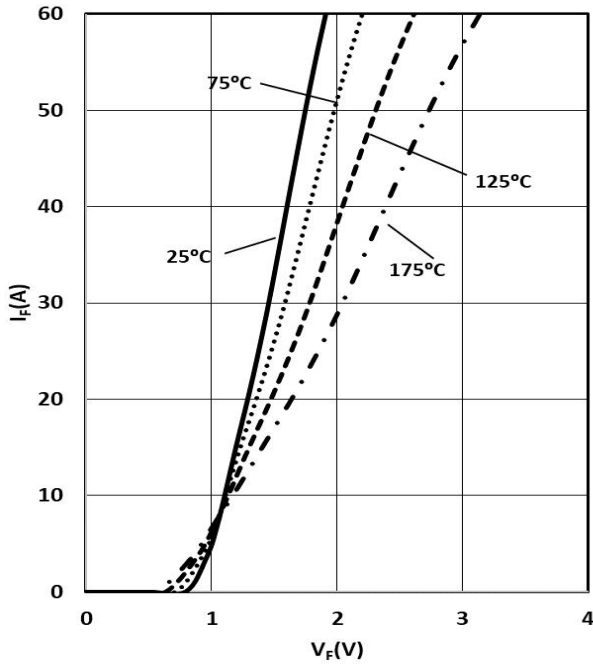
Parameter	Symbol	Min	Typ.	Max	Unit
Thermal Resistance, Junction-to-Case	R_{thJC}	-	0.45	0.6	$^\circ\text{C}/\text{W}$
Thermal Resistance, Junction-to-Ambient	R_{thJA}	-	-	62	

Electrical Characteristics

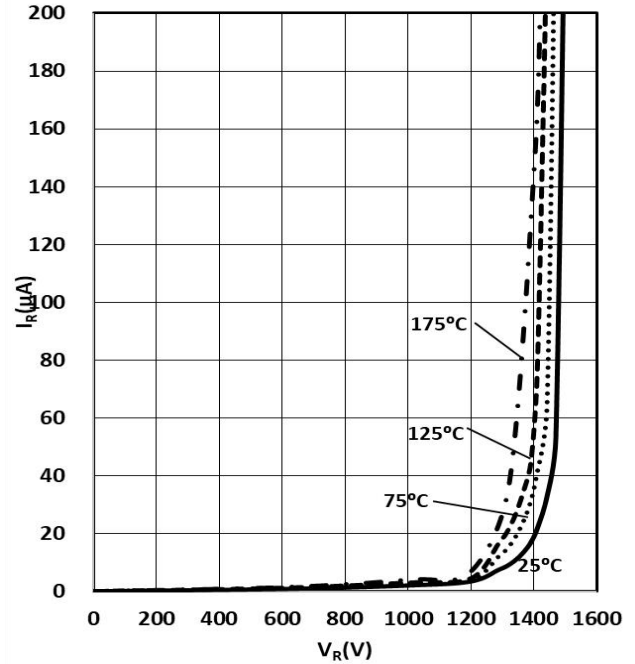
Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
DC Blocking Voltage	V_{DC}	$I_R=250\mu A$	1200	-	-	V
Forward Voltage	V_F	$I_F=28A$	-	1.40	1.7	V
		$I_F=28A, T_J=175^\circ C$	-	1.95		
Reverse Current	I_R	$V_R=1200V$	-	3	50	μA
		$V_R=1200V, T_J=175^\circ C$	-	7		
Total Capacitance	C	$V_R=1V, f=100kHz$	-	1380	-	pF
		$V_R=400V, f=100kHz$	-	120	-	
		$V_R=800V, f=100kHz$	-	85	-	
Total Capacitive Charge	Q_C	$V_R=800V, I_F=28A$ $dI_F/dt=300A/\mu s$	-	138	-	nC

Note:

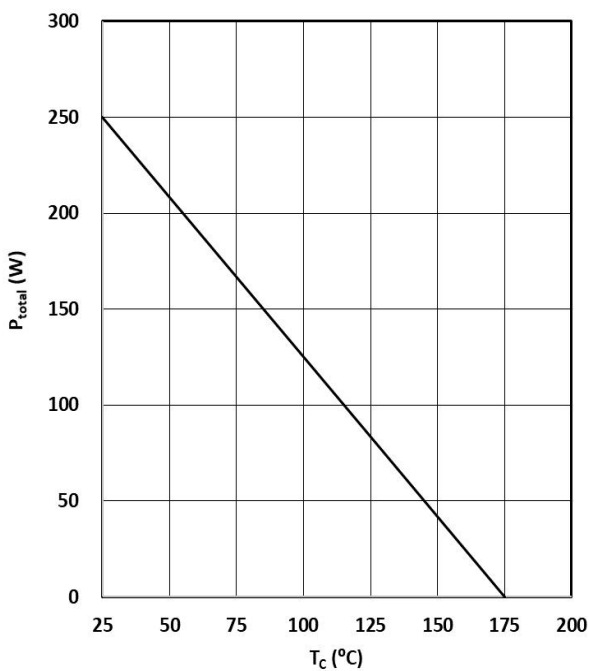
 $T_J=25^\circ C$ unless otherwise specified

Typical Performance Characteristics
Figure 3: Forward Characteristics


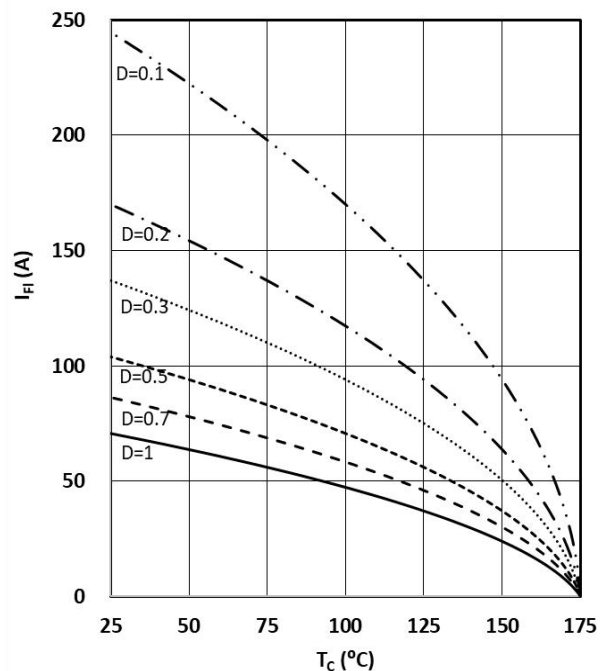
$$I_F = f(V_F)$$

Figure 4: Reverse Characteristics


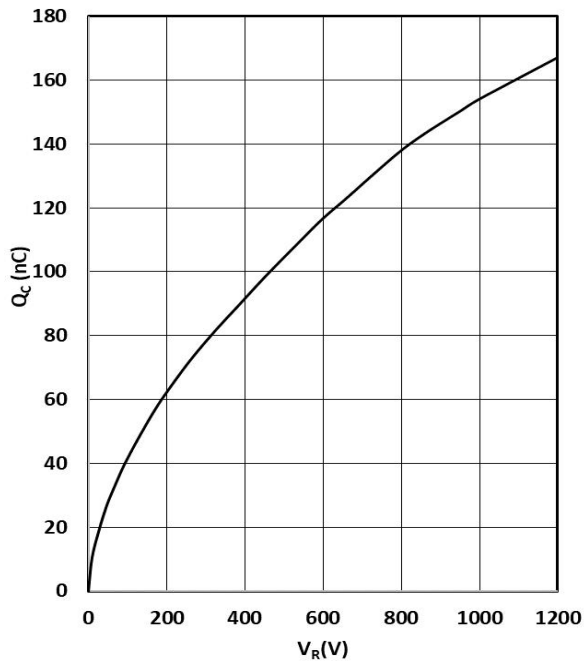
$$I_R = f(V_R)$$

Figure 5: Power Derating


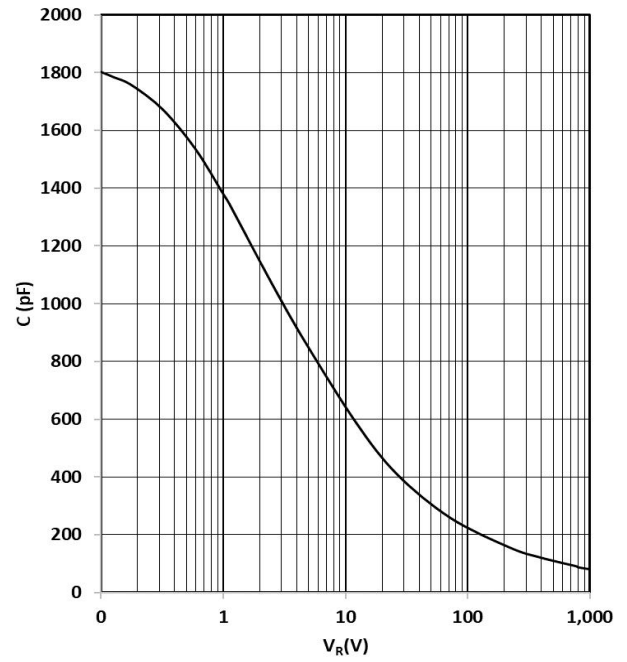
$$P_{tot} = f(T_c)$$

Figure 6: Diode Forward Current


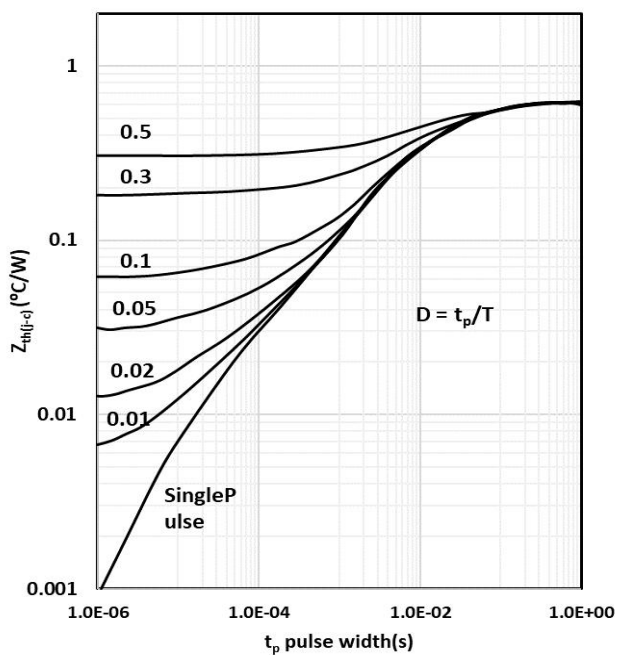
$$I_{F(peak)} = f(T_c)$$

Figure 7: Total Capacitive Charge


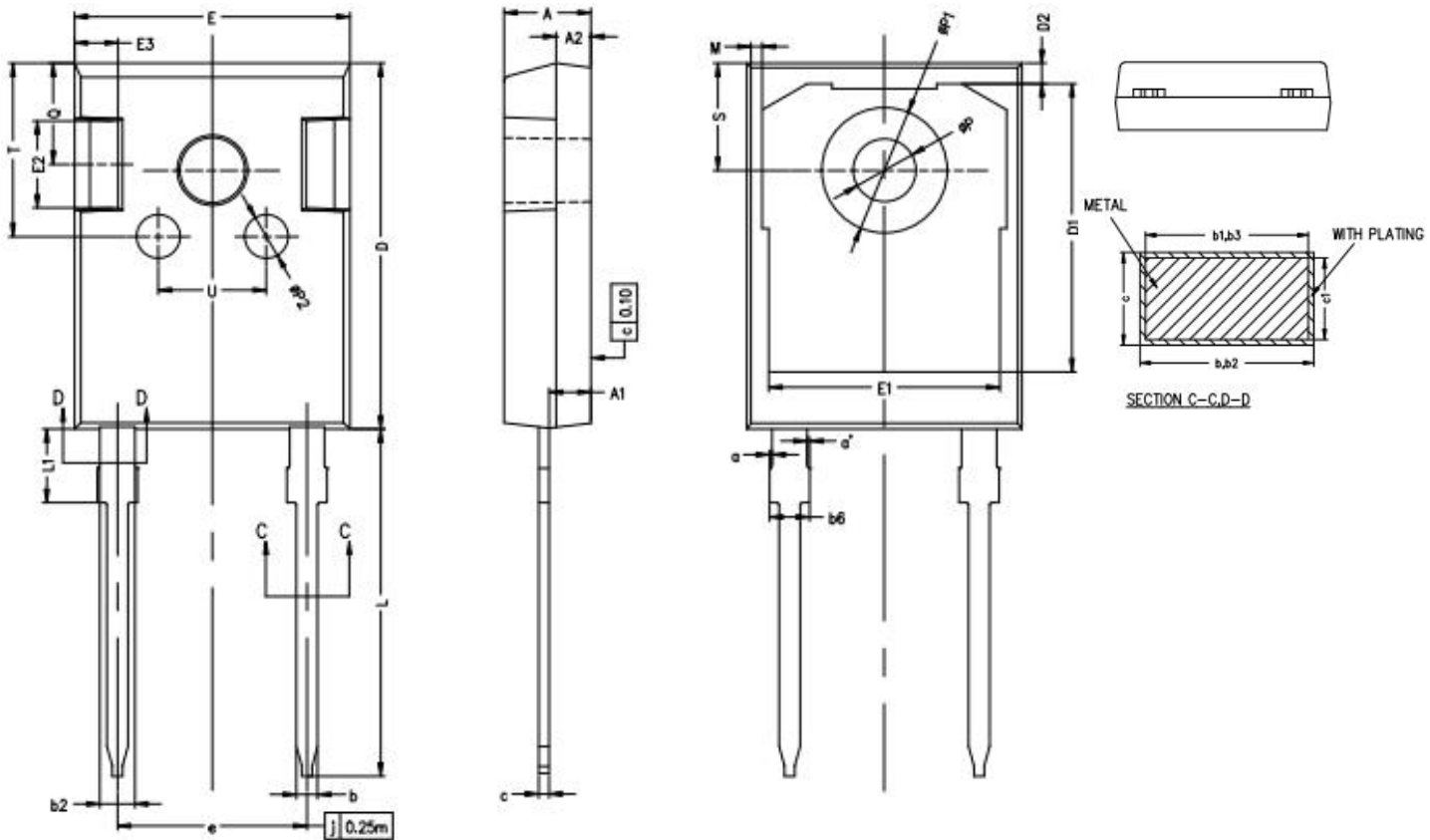
$$Q_C = f(V_R)$$

Figure 8: Total Capacitance


$$C = f(V_R); f = 100\text{kHz}$$

Figure 9: Transient Thermal Impedance


$$Z_{th(jc)} = f(t_p)$$

Mechanical Dimensions
TO-247-2
Unit: mm


Symbol	Dimensions (mm)			Symbol	Dimensions (mm)		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.90	5.00	5.10	E	15.70	15.80	15.90
A1	2.31	2.41	2.51	E1	13.06	13.26	13.46
A2	1.90	2.00	2.10	E2	4.90	5.00	5.10
a	0	-	0.15	E3	2.40	2.50	2.60
a'	0	-	0.15	e	10.78	10.88	10.98
b	1.16	-	1.29	L	19.80	19.92	20.10
b1	1.15	1.20	1.25	L1	3.93	-	4.46
b2	1.96	-	2.06	M	0.35	-	0.95
b3	1.95	2.00	2.02	P	3.50	3.60	3.70
b6	-	-	2.25	P1	7.00	-	7.40
c	0.59	-	0.66	P2	2.40	2.50	2.60
c1	0.58	0.60	0.62	Q	5.60	-	6.00
D	20.90	21.00	21.10	S	6.05	6.15	6.25
D1	16.25	16.55	16.85	T	9.80	-	10.20
D2	1.05	1.20	1.35	U	6.00	-	6.40



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