30A 1200V Silicon Carbide Schottky Diode SRD30V120Q

General Description

The SRD30V120Q 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 SRD30V120Q package is TO-247-2.

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature-independent Switching
- 175℃ Operating Junction Temperature
- 100% Avalanche Energy Test

Application

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

Symbol

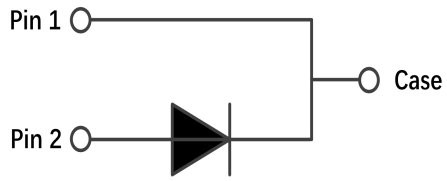
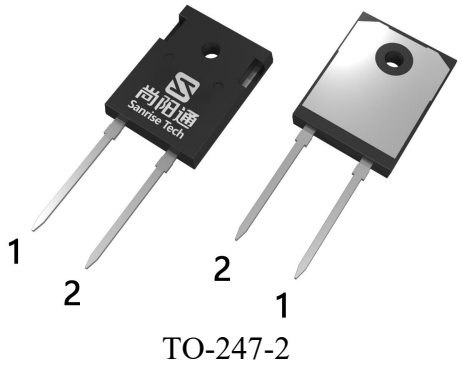


Figure 1 Symbol of SRD30V120Q

Package Type



TO-247-2

Figure 2 Package Type of SRD30V120Q

Ordering Information

SRD30V120Q□□–□

Circuit Type

Package
T2: TO-247-2

E: Lead Free
G: Green

Blank: Tube
TR: Tape & Reel

Package	Part Number	Marking ID	Packing Type
TO-247-2	SRD30V120QT2-G	SRD30V120QT2G	Tube

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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	$T_C \leq 152^oC$	I_F	30	A
Non-Repetitive Forward Surge Current	tp=10ms, Half Sine Wave	I_{FSM}	200	A
Power Dissipation		P_{tot}	394	W
i^2t value	t_p=10ms	$\int i^2dt$	215	A^2S
Operating Junction Temperature	-	T_J	-55 ~ 175	°C
Storage Temperature	-	T_{STG}	-55 ~ 175	°C
Soldering Temperature	-	T_{sold}	260	°C
Single Pulse Avalanche Energy	L=2mH, I_{AS}=15A $V_{R(peak)}$>1500V	EAS	225	mJ

Note:
T_C= 25℃ unless otherwise specified

Thermal Resistance

Parameter	Symbol	Min	Typ.	Max	Unit
Thermal Resistance，Junction-to-Case	R_{thJC}	-	0.38	-	°C/W
Thermal Resistance，Junction-to-Ambient	R_{thJA}	-	-	62	

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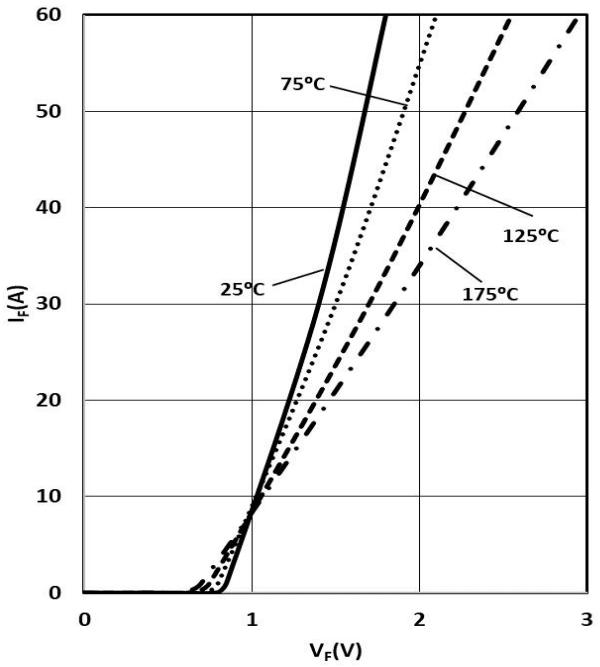
Electrical Characteristics

Parameter	Symbol	Test Conditions	Min	Typ.	Max	Unit
DC Blocking Voltage	V_{DC}	I_R=250uA	1400	-	-	V
Forward Voltage	V_F	I_F=30A	-	1.40	1.6	V
		I_F=30A, T_J=175ºC	-	1.9	2.2	
Reverse Current	I_R	V_R=1200V	-	1	100	μA
		V_R=1200V, T_J=175ºC	-	15	200	
Total Capacitance	C	V_R=1V, f=100kHz	-	2400	-	pF
		V_R=400V, f=100kHz	-	147	-	
		V_R=800V, f=100kHz	-	108	-	
Total Capacitive Charge	Q_C	V_R=800V, I_F=30A dI_F/dt=300A/us	-	162	-	nC

Note:
T_J= 25℃ unless otherwise specified

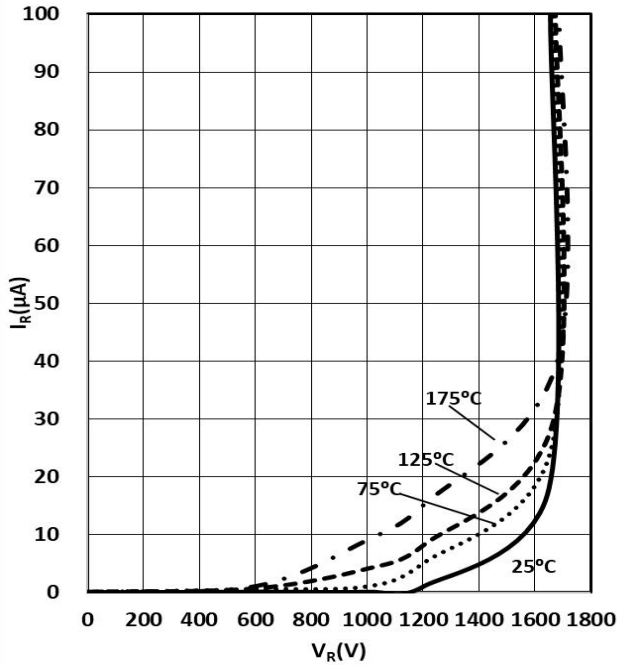
Typical Performance Characteristics

Figure 3: Forward Characteristics



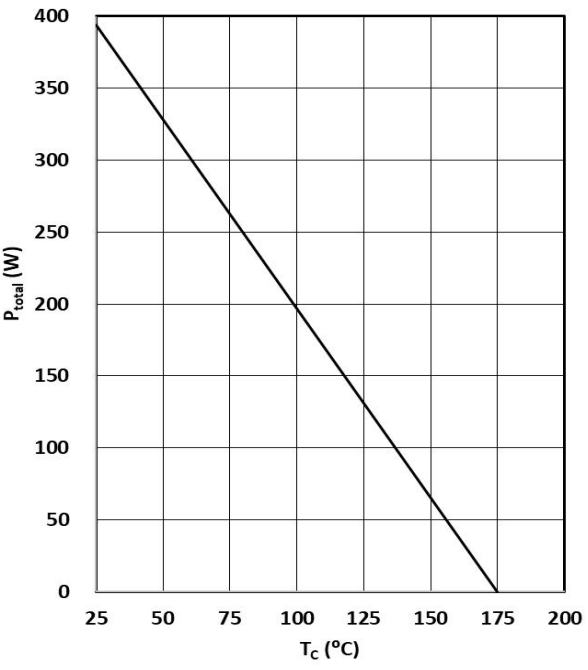
$I_F=f(V_F)$

Figure 4: Reverse Characteristics



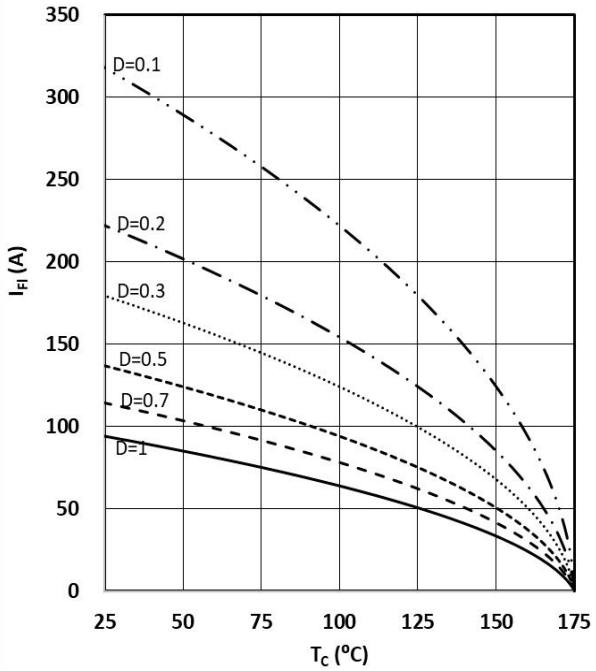
$I_R=f(V_R)$

Figure 5: Power Derating



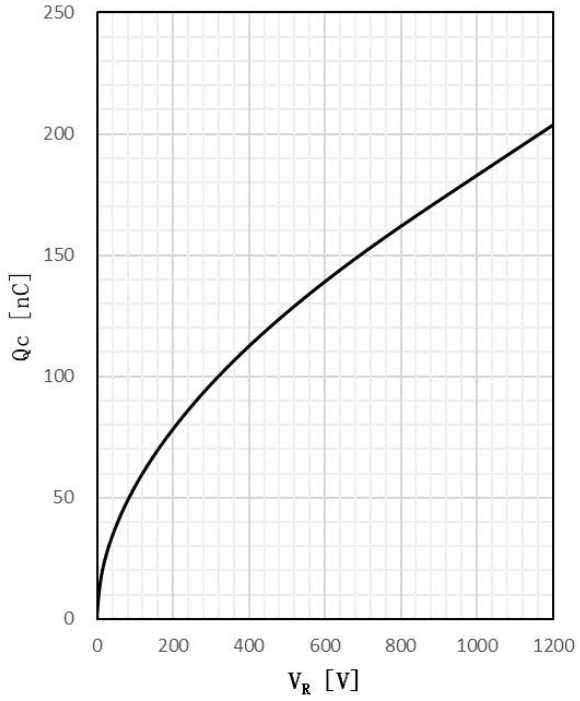
$P_{tot}=f(T_C)$

Figure 6: Diode Forward Current



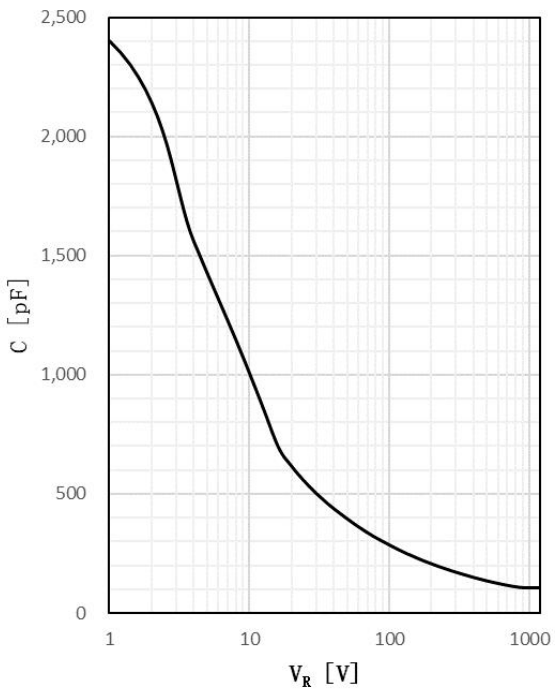
$I_{F(peak)}=f(T_C)$

Figure 7: Total Capacitive Charge



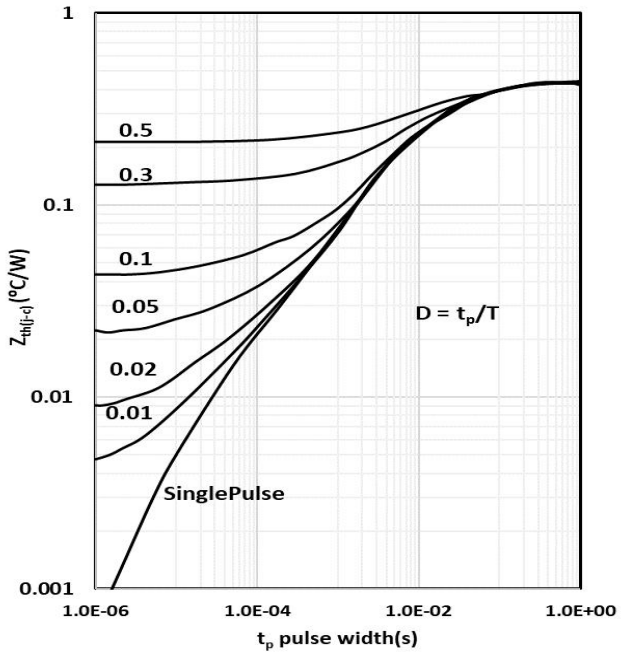
$Q_C=f(V_R)$

Figure 8: Total Capacitance



$C=f(V_R)$; f=100kHz

Figure 9: Transient Thermal Impedance



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

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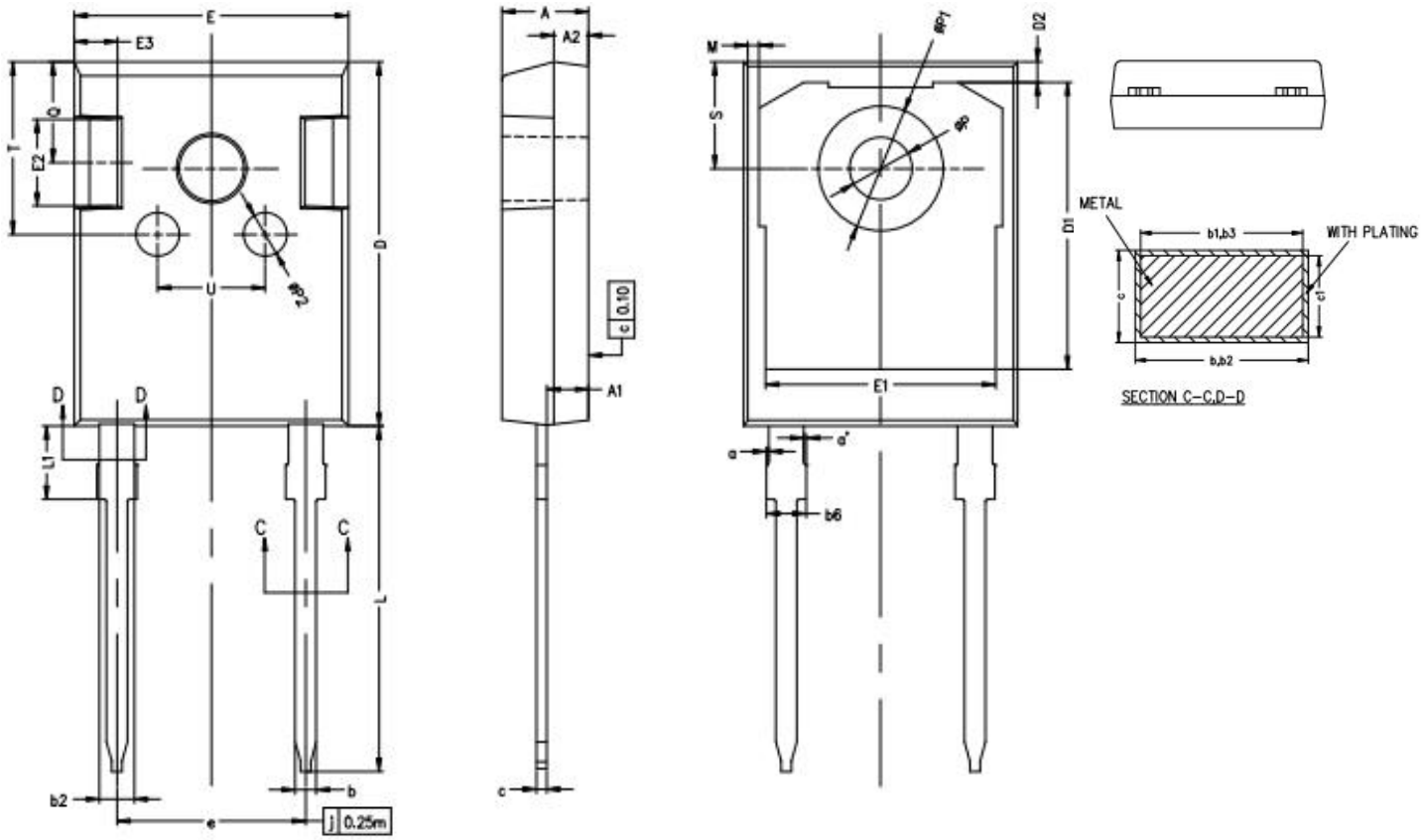
Mechanical Dimensions

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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