JCD20S120T7
Silicon Carbide Schottky Diode

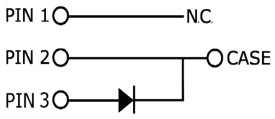
V_{RRM}	1200	V
$I_{F,}$ T_C=150℃	20	A
Q_C	51	nC

Features

- Positive temperature coefficient, for use in parallel
- Zero Reverse Recovery Current
- Low leakage current
- Temperature-Independent Switching Behavior
- Positive Temperature Coefficient for VF

Package

TO-247-3



Halogen-Free

RoHS

Benefits

- Unipolar Rectifier
- Essentially No Switching Losses
- Higher Efficiency
- Less Heat Sink Requirements
- Parallel Devices Without Thermal Runaway

JCD20S120T7 = Productnumber
XXXX HXXX = Wafer-batch Packaging-batch

Applications

- Switch Mode Power Supplies (SMPS)
- 5g base station
- High efficiency power supply
- Photovoltaic inverter
- Solar / new energy vehicles

Part Number	Package	Marking
JCD20S120T7	TO-247-3	JCD20S120T7

Maximum Ratings (T_C = 25°C unless otherwise specified)

Symbol	Parameter	Value	Unit	Test Conditions	Note
V_{RRM}	Repetitive Peak Reverse Voltage	1200	V		
V_{RSM}	Surge Peak Reverse Voltage	1200	V		
V_{DC}	DC Blocking Voltage	1200	V		
I_F	Continuous Forward Current	48 26 20	A	T_C=25°C T_C=135°C T_C=150°C	Fig. 3
I_{FRM}	Repetitive Peak Forward Surge Current	90 80	A	T_C=25°C, t_p = 10 ms, Half Sine Wave T_C=110°C, t_p = 10 ms, Half Sine Wave	
I_{FSM}	Non-Repetitive Peak Forward Surge Current	195 186	A	T_C=25°C, t_p = 10 ms, Half Sine Wave T_C=110°C, t_p = 10 ms, Half Sine Wave	Fig. 8
$I_{F,Max}$	Non-Repetitive Peak Forward Surge Current	1336 1055	A	T_C=25°C, t_p = 10 μs, Pulse T_C=110°C, t_p = 10 μs, Pulse	Fig. 8
P_{tot}	Power Dissipation	298 130	W	T_C=25°C T_C=110°C	Fig. 4
T_J , T_{stg}	Operating Junction and Storage Temperature	-55 to +175	°C		

Electrical Characteristics (Per Leg)

Symbol	Parameter	Typ.	Max.	Unit	Test Conditions	Note
V_F	Forward Voltage	1.42 2.20	1.8 3.0	V	I_F = 20 A T_J=25°C I_F = 20 A T_J=175°C	Fig. 1
I_R	Reverse Current	5.7 29	200 400	μA	V_R = 1200 V T_J=25°C V_R = 1200 V T_J=175°C	Fig. 2
Q_C	Total Capacitive Charge	51		nC	V_R = 800 V, I_F = 20 A d*i*/d*t* = 200 A/μs T_J = 25°C	Fig. 5
C	Total Capacitance	1130 81 64		pF	V_R = 0 V, T_J = 25°C, f = 1 MHz V_R = 400 V, T_J = 25°C, f = 1 MHz V_R = 800 V, T_J = 25°C, f = 1 MHz	Fig. 6
E_C	Capacitance Stored Energy	20.5		μJ	V_R = 800 V	Fig. 7

Note: This is a majority carrier diode, so there is no reverse recovery charge.

Thermal Characteristics

Symbol	Parameter	Typ.	Unit	Note
$R_{\theta JC}$	Thermal Resistance from Junction to Case	0.5	°C/W	Fig. 9
$R_{\theta Ja}$	Thermal Resistance from junction to ambient	42.73	°C/W	

Typical Performance

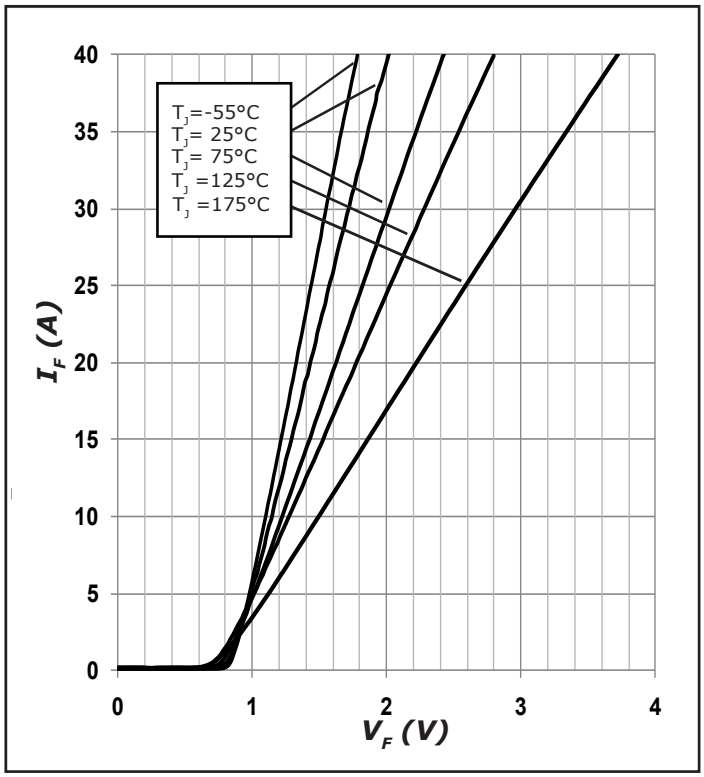


Figure 1. Forward Characteristics

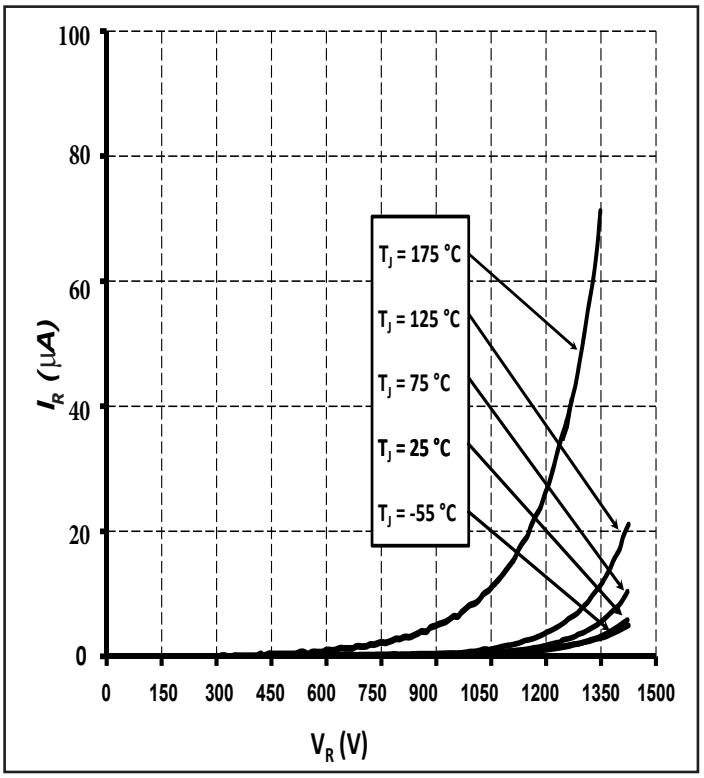


Figure 2. Reverse Characteristics

Typical Performance

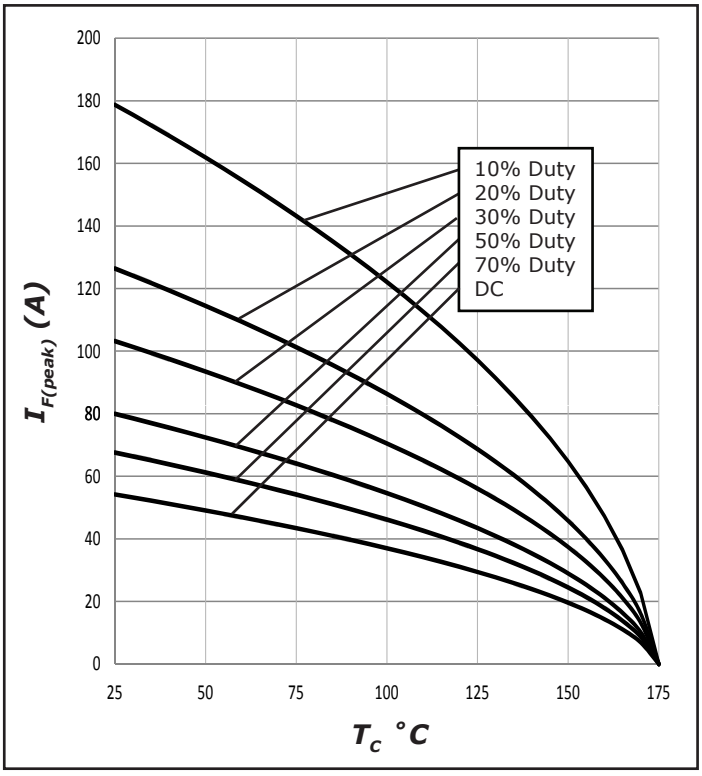


Figure 3. Current Derating

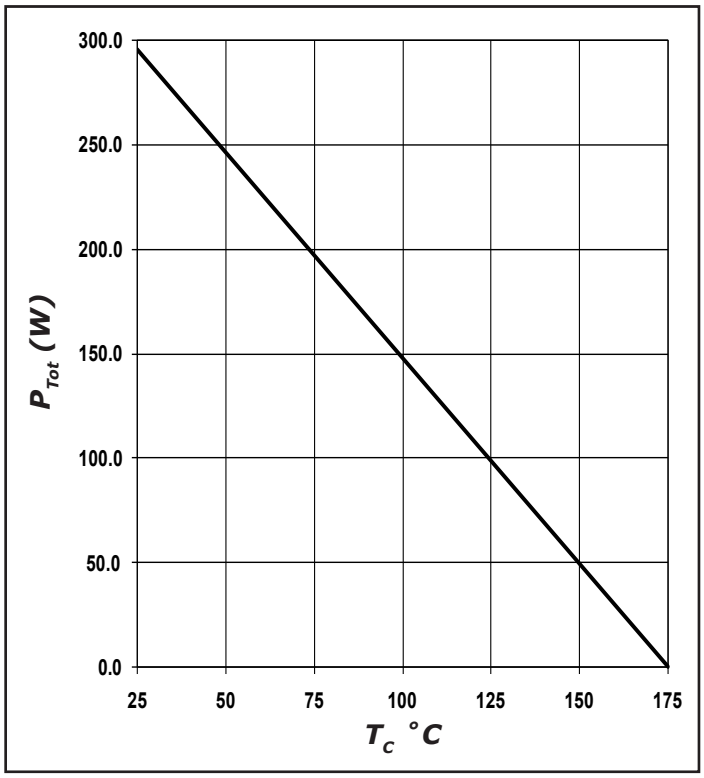


Figure 4. Power Derating

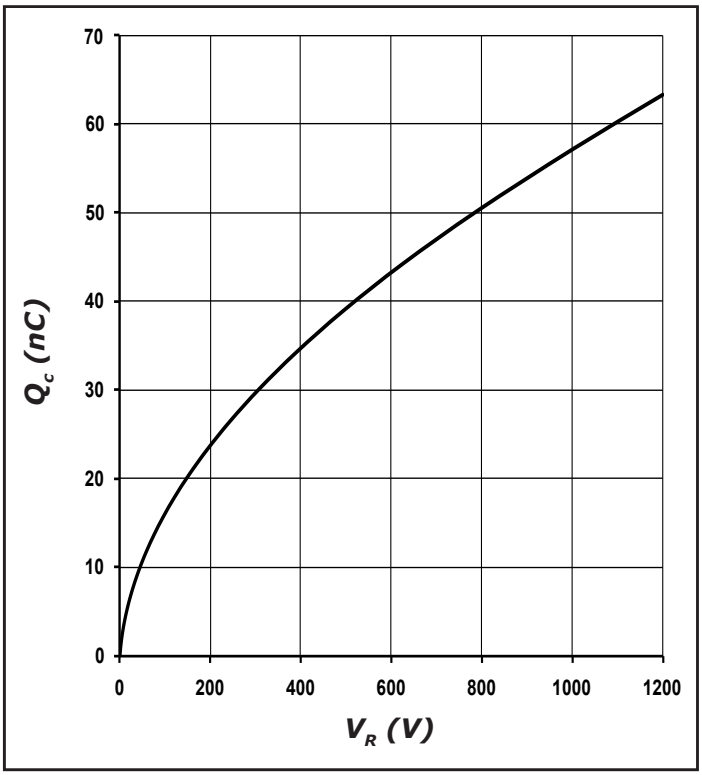


Figure 5. Total Capacitance Charge vs. Reverse Voltage

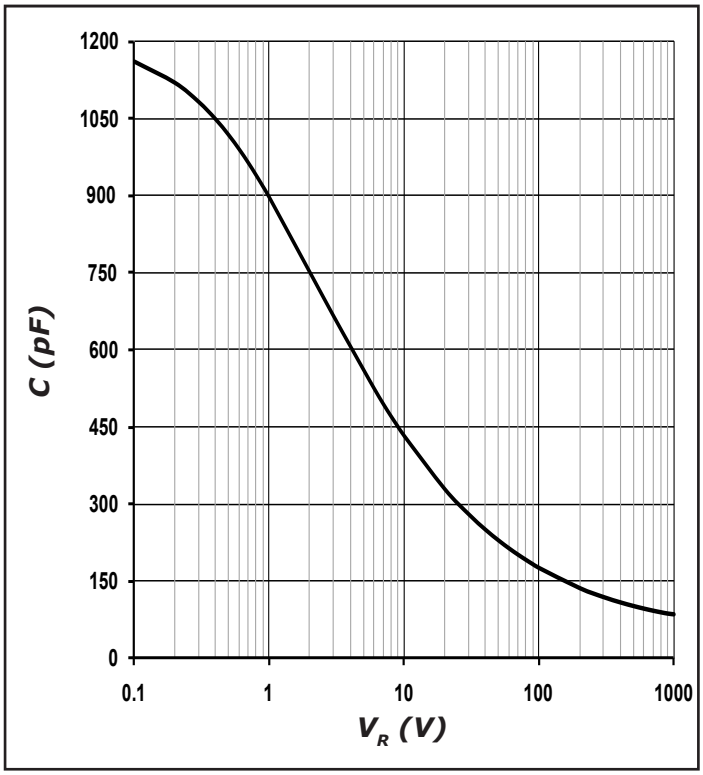


Figure 6. Capacitance vs. ReVoltage

Typical Performance

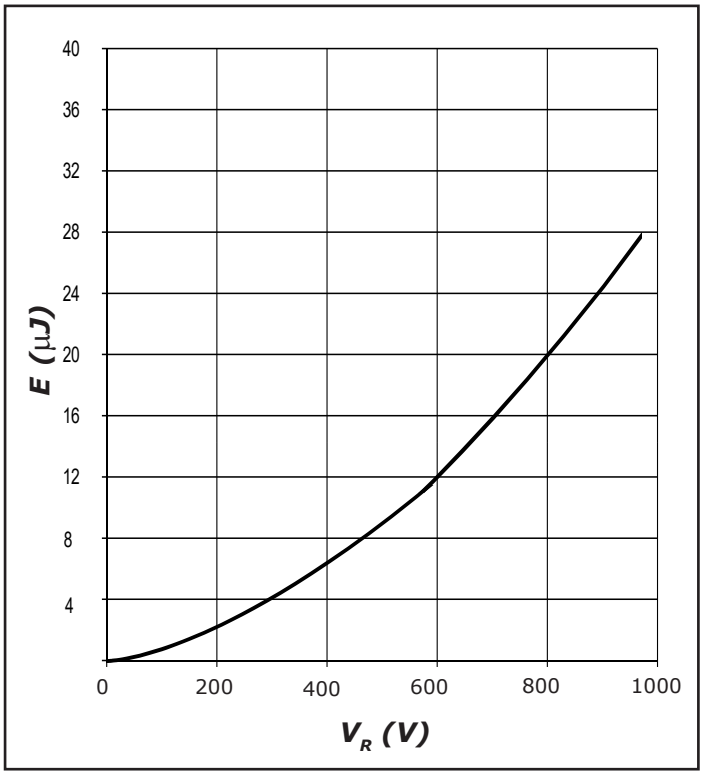


Figure 7. Capacitance Stored Energy

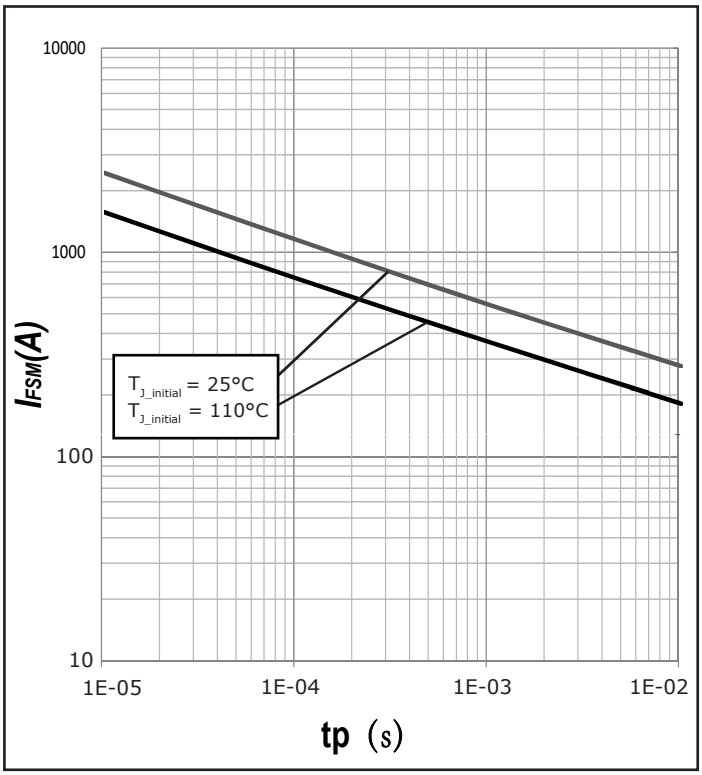


Figure 8. Non-repetitive peak forward surge current versus pulse duration (sinusoidal waveform)

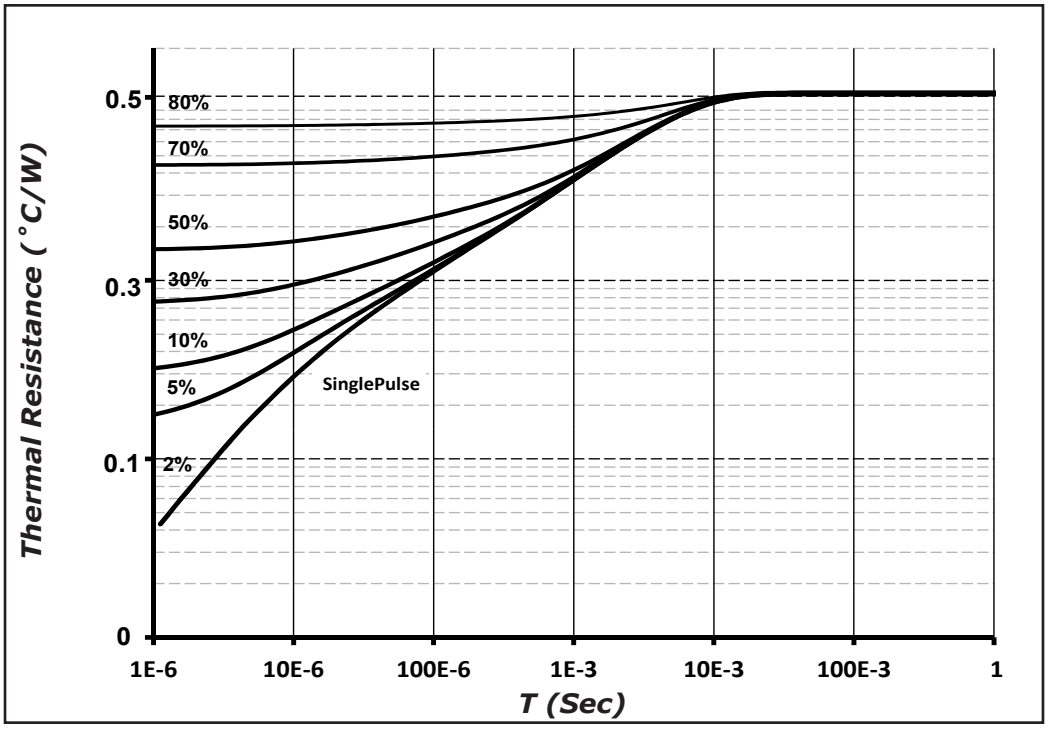
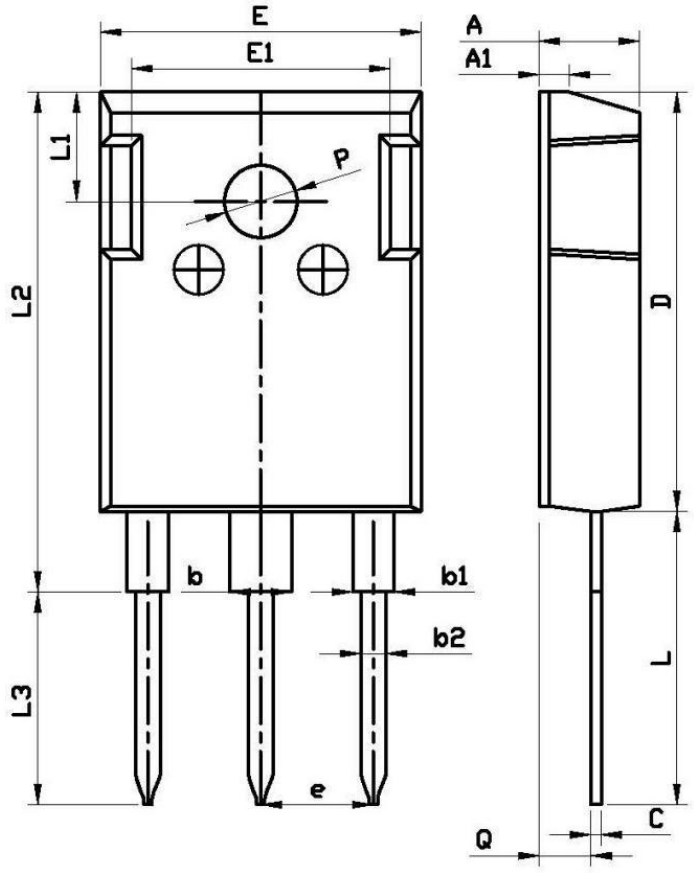


Figure 9. Transient Thermal Impedance

Package Dimensions

Package TO-247-3



COMMON DIMENSIONS (UNITS OF MEASURE=MILLIMETER)			
SYMBOL	MIN	NOM	MAX
A	4.60		5.15
A1	1.30		1.60
b	2.86		3.26
b1	1.86		2.26
b2		1.20	
C		0.50	
D	19.00		21.00
E	15.45		15.75
E1	12.00		13.06
e		5.45	
L	14.00		14.60
L1	5.20		5.88
L2	24.00		24.40
L3	10.00		10.60
P		3.50	
Q	2.30		2.70