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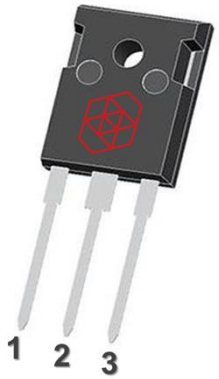
XD1220T4

1200V 20A SiC Schottky Barrier Diode in TO-247-3L Package

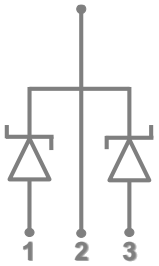
Datasheet version: 1.0 Preliminary

Features

BV_{dss}	$I_{f\ (135^oC)}$ **	$I_{f\ (155^oC)}$ **	Q_C*
1200 V	26A**	20 A*	51.4nC



- No reverse recovery
- High speed switching
- Low switching losses
- Low heatsink requirement
- Positive temperature coefficient



Applications

- Switching Power Supplies
- Power Factor Corrections
- Motor Drives
- Charging pile

Description

- These devices are 1200 SiC Schottky Barrier Diodes (SBD) with zero reverse recovery that allows systems to operate at higher switching frequencies. Lower heat dissipation requirements and higher system efficiency can be achieved in this TO-247-3L package. Two pins are in parallel to deliver 20A continuous current at 155°C.

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Device Characteristics

Static Parameters				**Test data**			
	Sym.	**Parameters**	**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	V_{DC}	DC Blocking Voltage	I_R=100 μA	1200	/	/	V
2	V_F	Forward Voltage	I_F=10A, T_j =25℃	/	1.5	1.8	V
			I_F=10A, T_j =175℃	/	2.2	2.7	
3	I_R	Reverse Current	V_R=1200V, T_j =25℃	/	5	30	μA
			V_R=1200V, T_j=175℃	/	30	200	
4	C	Total Capacitance	V_R=0V, f=1MHz	/	700	/	pF
			V_R=400V, f=1MHz	/	48.7	/	
			V_R=800V, f=1MHz	/	36.7	/	
5	Q_C	Total capacitive charge	V_R=800V	/	51.4.	/	nC
6	E_C	Capacitance Stored Energy	V_R=800V	/	15	/	μJ

Thermal Parameters				**Test data**			
	Sym.	**Parameters**	**Conditions**	**Min**	**Typical**	**Max**	**Unit**
1	$R_{th(j-c)}$	Thermal resistance	Per device or per leg	/	1.2*/0.6**	/	℃/w

** Per device * Per leg

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Absolute Max. Ratings

	Symbols	Parameters	Test Conditions	Value	Unit
1	$V_{RR\text{-}max}$	Reverse Voltage (Repetitive Peak)	T_C =25℃	1200	V
2	$V_{RS\text{-}max}$	Reverse Voltage (Surge Peak)	T_C =25℃	1200	V
3	$V_{dc\text{-}max}$	Reverse Voltage (DC)	T_C =25℃	1200	A
4	$I_{F\text{-}max}$	Continuous Forward Current (per device)	T_C =25℃	29/58	A
			T_C =135℃	13/26	
			T_C =155℃	10/20	
5	$I_{FS\text{-}max}$	Non-repetitive Forward Current (Surge)	T_C =25℃ t_p =10ms Half Sine Pulse	95*	A
6	$P_{total\text{-}max}$	Total Power Dissipation	T_C =25℃	125*	W
7	$\int i^2dt\text{-}max$	i^2t value	T_C =25℃ t_p =10ms	45*	A^2s
8	$T_{o\text{-}max}$	Operation Temperature	/	-55 to 175	℃
9	$T_{S\text{-}storage}$	Storage temperature	/	-55 to 175	℃
10	M	Mounting Torque	M3 Screw	1	Nm

Ordering

Order Code	Package Type	Packaging Method	Qty
XD1220L3	TO-247F-3L	Tube	300

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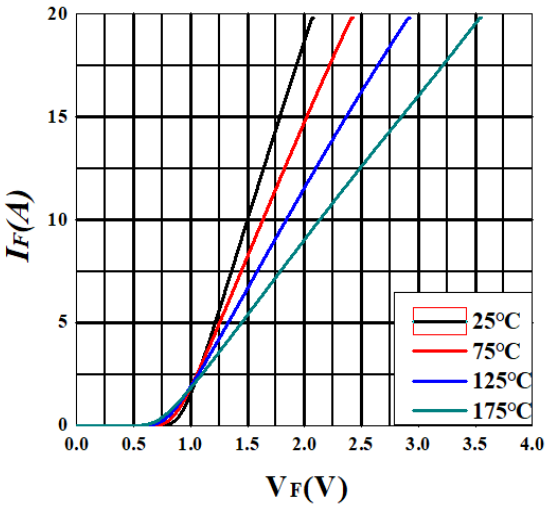
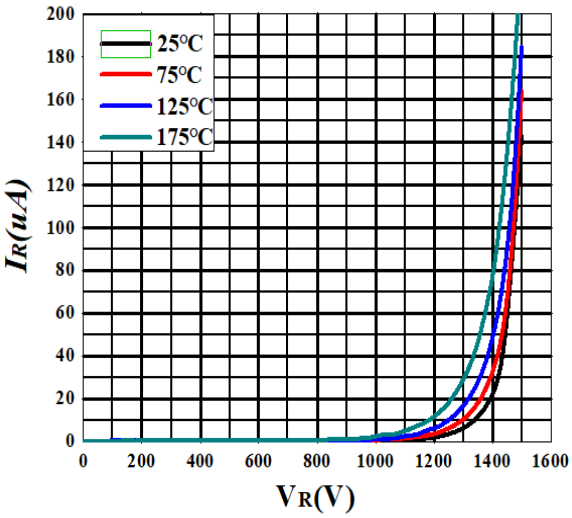
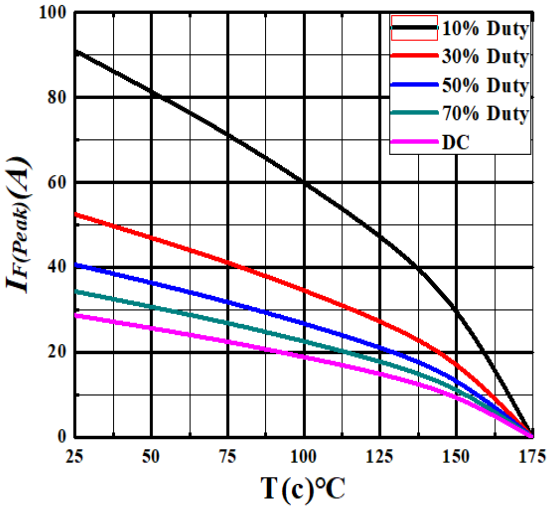
Electrical Performance



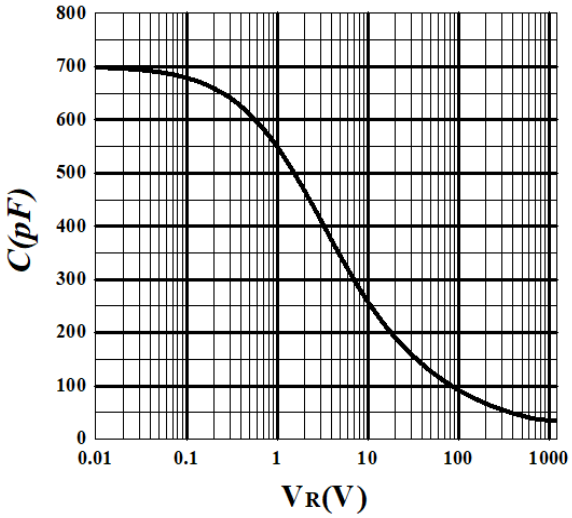
Forward Characteristics



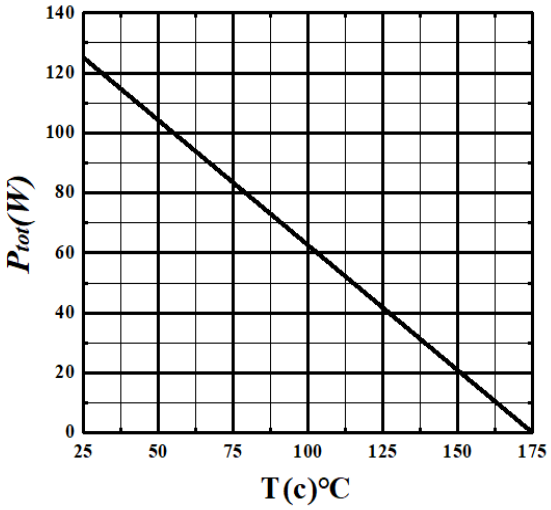
Reverse Characteristics



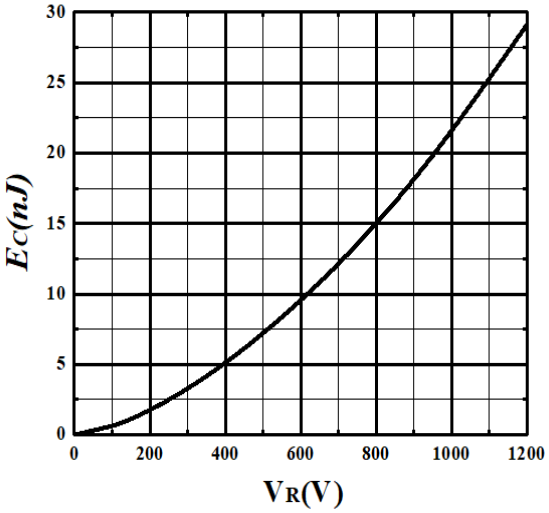
Current Derating



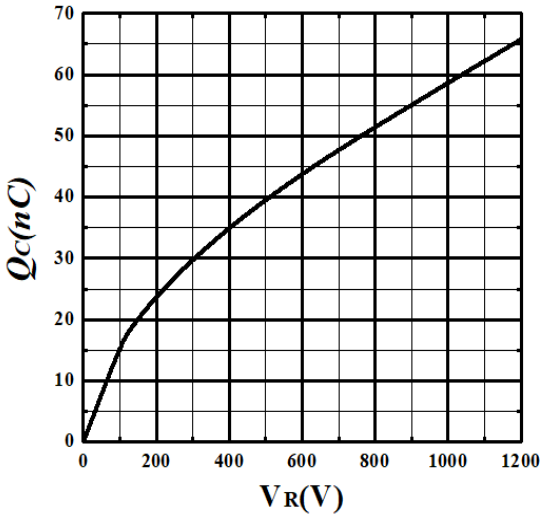
Capacitance vs. V_R



Power Derating



Capacitance Stored Energy



Total Capacitance Charge vs. V_R

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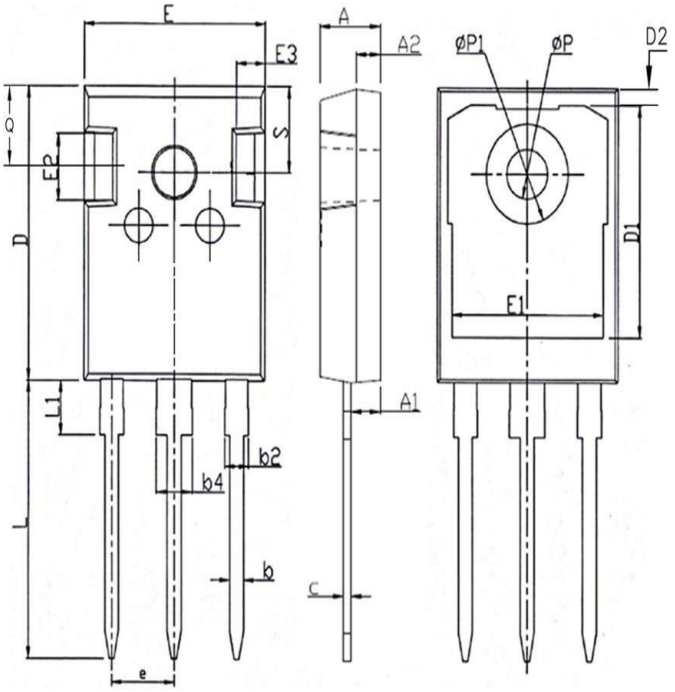
Package Information



SYMBOL	mm		
	MIN	NOM	MAX
A	4.8	5	5.2
A1	2.21	2.41	2.61
A2	1.85	2	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
b4	2.91	3.01	3.21
c	0.51	0.6	0.75
D	20.7	21	21.3
D1	16.25	16.55	16.85
D2	1	1.2	1.35
E	15.5	15.8	16.1
E1	13	13.3	13.6
E2	4.8	5	5.2
E3	2.3	2.5	2.7
e	5.44 BSC		
L	19.62	19.92	20.22
L1	-	-	4.3
øP	3.4	3.6	3.8
øP1	-	-	7.3
Q	5.4	5.8	6.2
S	6.20 BSC		