650V SIC Junction Barrier Schottky Diode

Features

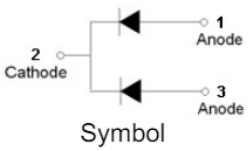
- High surge current capability
- No reverse recovery
- Positive Temperature Coefficient
- Temperature-Independent switching behavior
- Halogen-free / RoHS compliant

Application

- Solar inverter
- Power factor correction
- Industrial power supplies
- Switch mode power supply

Key Performance Parametes

Parameter	Value	Unit
V_{RRM}	650	V
I_F	50	A
Q_C	132.5	nC



Schematic Diagram

TO-247 top view

RoHS

Device/Ordering Code	Marking	Package	Reel Size	Tape width	Quantity
SJT65D50JC	SJT65D50JC	TO-247-3L	\	\	\

Table 1. Absolute Maximum Ratings (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		650	V
$I_{F(AV)}$	Average forward current	Tc=154°C	50	A
I_{FSM}	Non-repetitive forward surge current	tp=10ms,Half sine pulse	400	A
P_{tot}	Power dissipation	Tc=25°C	250	W
		Tc=110°C	108	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range		-55 To 175	℃

Table 2. Thermal Characteristic

Symbol	Parameter	Typ	Max	Unit
$R_{\theta JC}$	Thermal Resistance, Junction-to-Case		0.6	℃/W

Table 3. Electrical Characteristics (T_J=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Static Characteristics						
V_{DC}	DC blocking voltage	T_J=25℃	650			V
V_F	Diode forward voltage	I_F=50A T_J=25℃		1.42		V
V_F	Diode forward voltage	I_F=50A T_J=125℃		1.51		V
V_F	Diode forward voltage	I_F=50A T_J=175℃		1.56		V
I_R	Reverse current	V_R=650V T_J=25℃		0.27		μA
I_R	Reverse current	V_R=650V T_J=175℃		6.7		μA
AC Characteristics						
Q_C	Total capactive charge	V_R =400V T_J=25℃		132.5		nC
E_C	Capacitance stored energy	V_R =400V		15.6		μJ
C	Total capacitance	V_R =1V f=1MHz		2005		pF
		V_R =300V f=1MHz		218		pF
		V_R =600Vf=1MHz		192		pF

Typical Electrical And Thermal Characteristics (Curves)

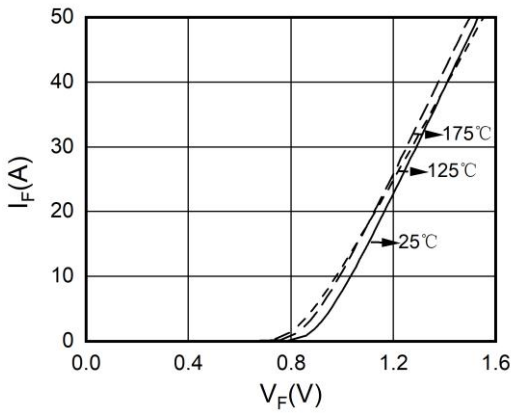
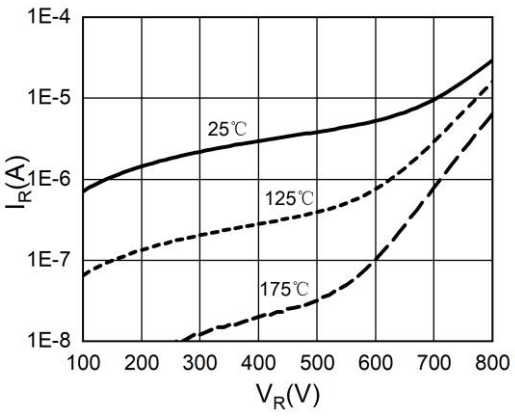
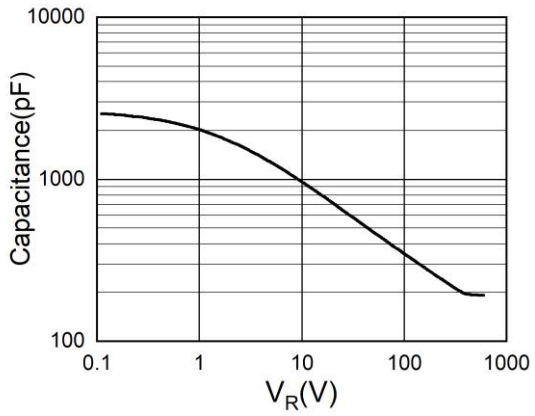
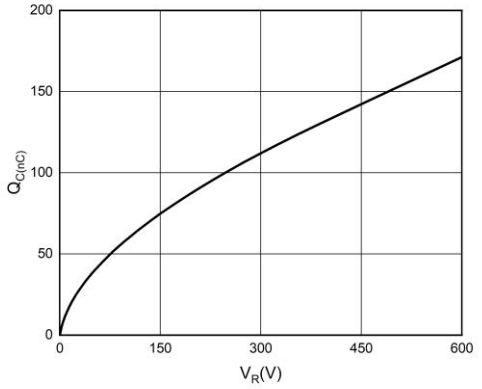
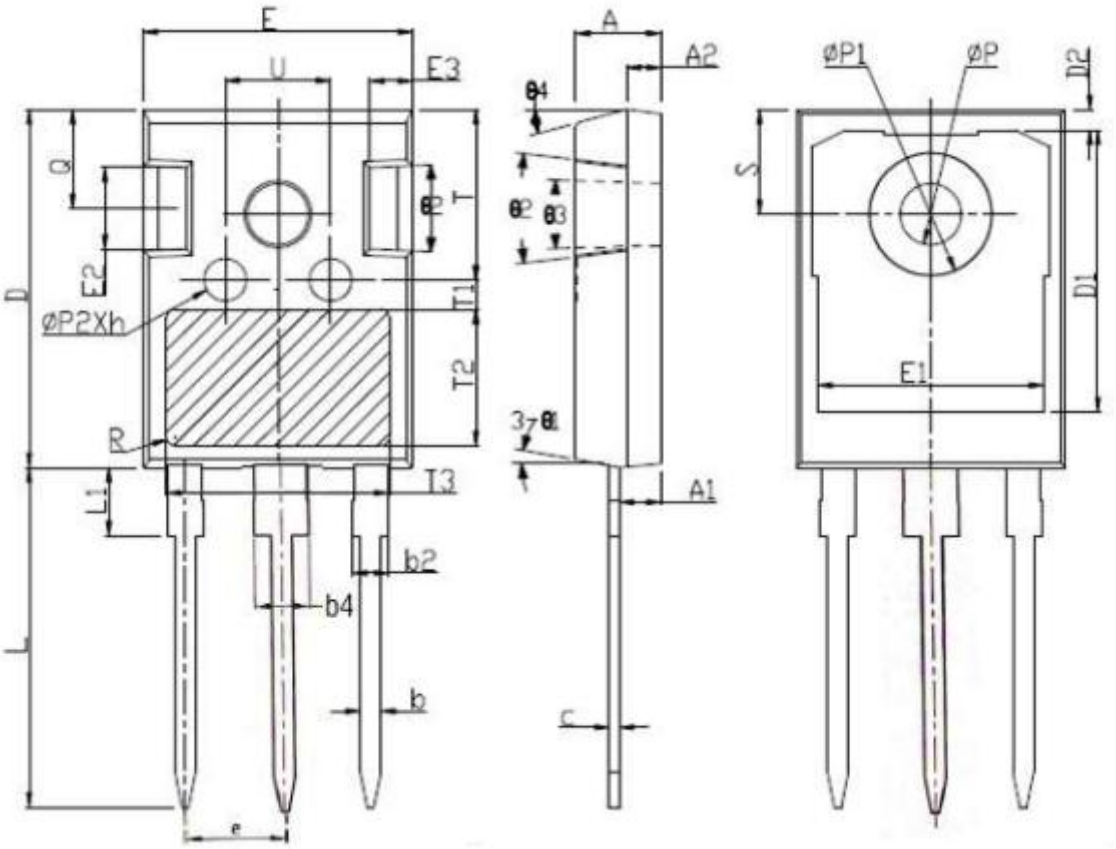
Figure 1. . Typical forward characteristics	Figure 2. Transfer Characteristics
	

Figure 3. Typical capacitance as function of reverse voltage	Figure 4. Typical reverse charge as function of reverse voltage
	

TO-247-3L Package Information



Symbol	Min	Nom	Max	Symbol	Min	Nom	Max
A	4.9	5.0	5.1	e		5.44BSC	
A1	2.3	2.4	2.5	h	0.05	0.10	0.15
A2	1.9	2.0	2.1	L	19.6	19.9	20.2
b	1.10	1.20	1.25	L1			4.3
b2	1.90	2.00	2.25	Φp	3.5	3.6	3.75
b4	2.90	3.00	3.25	Φp1			7.3
c	0.50	0.60	0.70	Φp2	2.4	2.5	2.6
D	20.8	21.0	21.2	Q	5.3		5.9
D1	16.25	16.55	16.85	S		6.15BSC	
D2	1.05	1.20	1.35	T	9.8		10.2
E	15.6	15.8	16.0	T1		1.65REF	
E1	13.1	13.3	13.5	T2		8.0REF	
E2	4.9	5.0	5.1	T3		12.8REF	
E3	2.4	2.5	2.6	U	6.0		6.4

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