



DESCRIPTION

The S20SC650V is available in TO-247 packages.

V _{RRM}	I _F	Q _c
650V	20A (TC=154°C)	30nC

APPLICATION

- Switch mode power supply
- Solar inverter
- Data Center
- Uninterruptible power supply

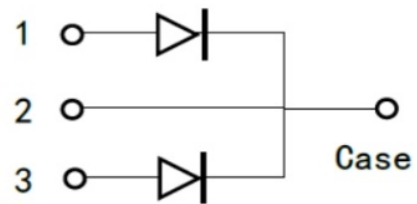
ORDERING INFORMATION

Package Type	Part Number
TO-247-3	S20SC650V
Note	SPQ: 25pcs/Tube
AiT provides all RoHS products	

FEATURE

- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- High frequency
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability

PIN DESCRIPTION



Pin	PIN DESCRIPTION
1	Gate
2	Drain
3	Source



ABSOLUTE MAXIMUM RATINGS

T _C =25°C , unless otherwise noted		Min	Max	Unit
V _{RRM} , Repetitive peak reverse voltage			650	V
I _F , Continuous forward current, see Fig 3.	T _C =25°C	32	64	A
	T _C =135°C	15	30	
	T _C =154°C	10	20	
I _{FSM} , Non-repetitive forward surge current	T _C =25°C, t _p =10ms,Half sine pulse	92	184	A
	T _C =110°C, t _p =10ms,Half sine pulse	88	176	
I _{FRM} , Repetitive Peak Forward Surge Current	T _C =25°C, t _p =10ms,Half sine pulse	85	170	A
∫i ² dt, i ² t value	T _C =25°C, t _p =10ms	40	169	A ² S
	T _C =110°C, t _p =10ms	38	154	
P _{tot} , Power Dissipation, see Fig 4.	T _C =25°C	130	260	W
	T _C =110°C	56	112	
	T _C =150°C	21	42	
T _J , Storage Temperature				+175°C
T _{stg} , Storage Temperature				-55°C~+175°C
R _{th(j-c)} , Thermal resistance (Junction to case)				1.15°C/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_C = 25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
DC blocking voltage	V _{DC}		650	-	-	V
Forward voltage, see Fig 1.	V _F	I _F =5A	-	1.17	-	V
		I _F =10A, T _C =25°C	-	1.37	1.6	V
		I _F =10A, T _C =175°C	-	1.66	-	V
Reverse current, see Fig 2.	I _R	V _R =650V, T _C =25°C	-	5	60	uA
		V _R =650V, T _C =175°C	-	12	-	Ua
Total capacitive charge, see Fig 6.	Q _C	V _R =400V,	-	30	-	nC
Total capacitance, see Fig 5.	C	V _R =1V, f=1MHZ	-	455	-	pF
		V _R =200V, f=1MHZ	-	57	-	pF
		V _R =400V, f=1MHZ	-	56	-	pF
Capacitance Stored Energy, see Fig 7.	E _C	V _R =400V	-	4.9	-	uJ



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Forward Characteristics

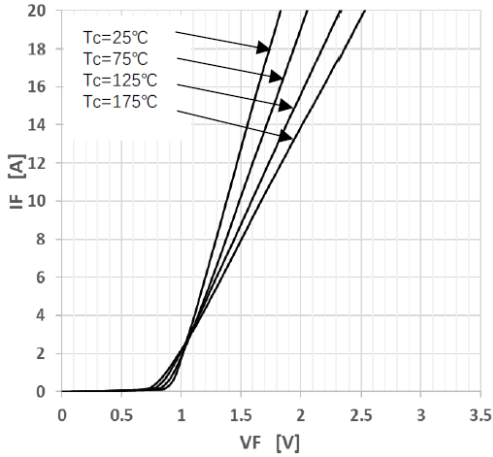


Fig 2. Reverse Characteristics

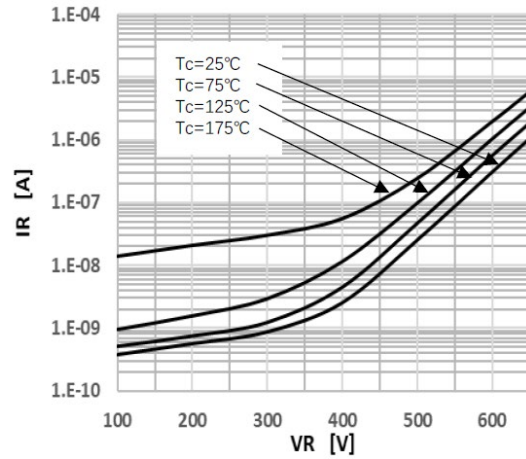


Fig 3. Peak Forward Current Derating

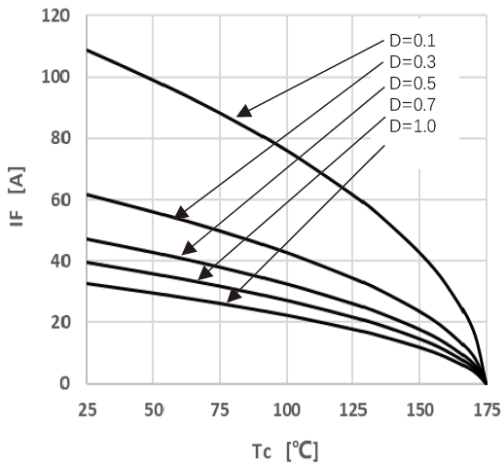


Fig 4. Power Dissipation

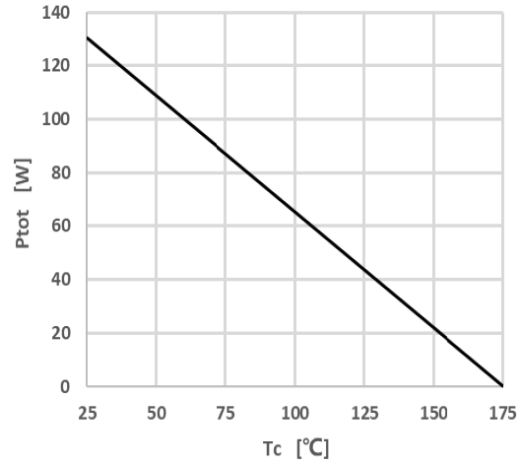


Fig 5. Capacitance vs. Reverse Voltage

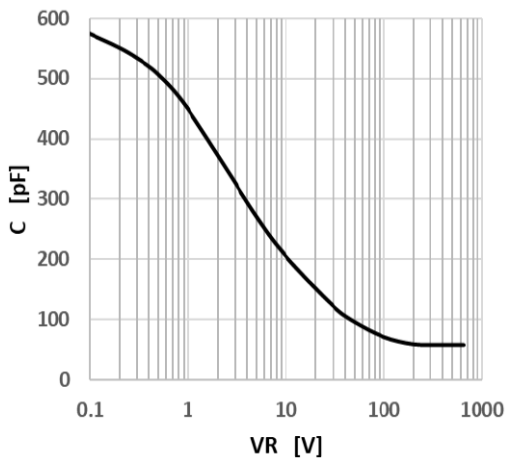


Fig 6. Capacitance Charge vs. Reverse Voltage

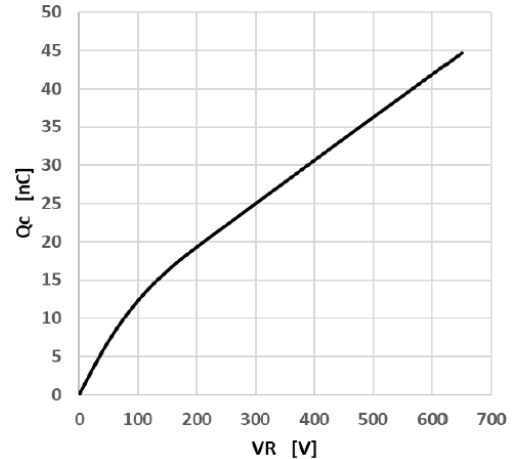




Fig 7. Capacitance Stored Energy

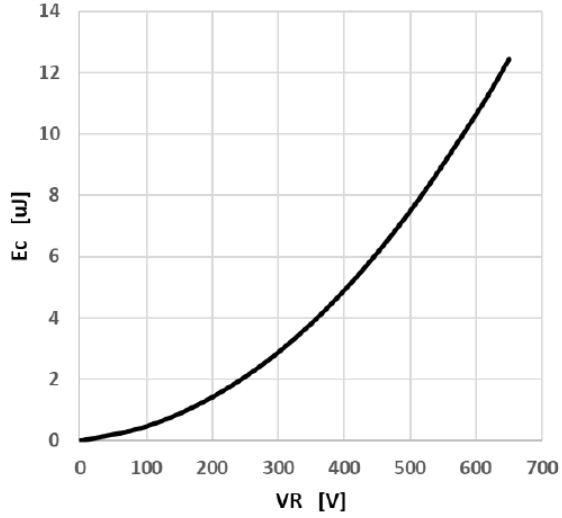
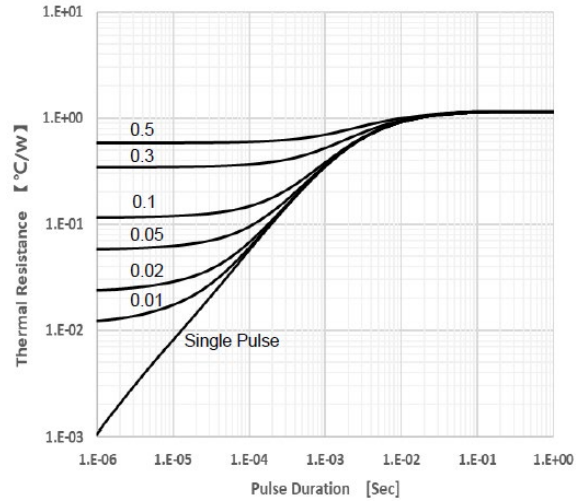


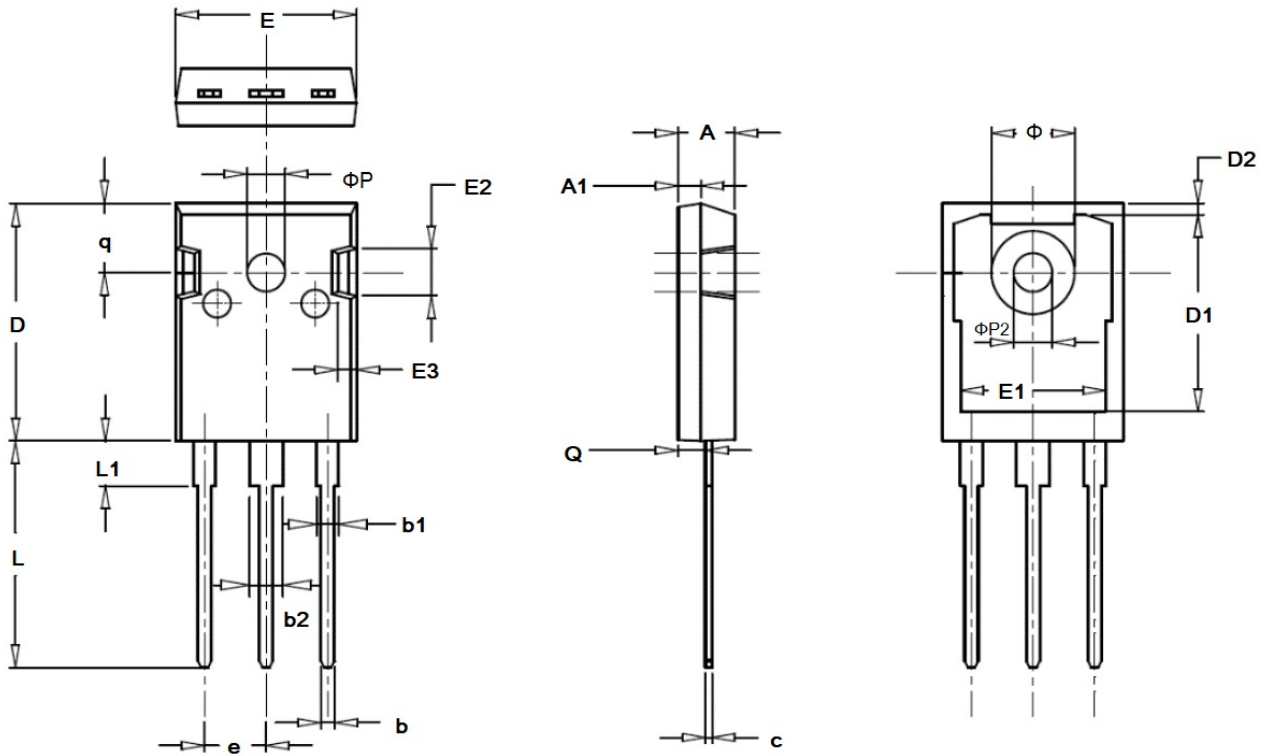
Fig 8. Transient Thermal Impedance





PACKAGE INFORMATION

Dimension in TO-247 (Unit: mm)



Symbol	Min.	Max.
A	4.680	5.360
A1	1.900	2.100
Q	2.300	2.600
c	0.480	0.720
b	1.000	1.400
b1	1.900	2.300
b2	2.900	3.300
D	20.800	21.800
E	15.380	16.200
L	19.500	20.500
L1	3.750	4.350

Symbol	Min.	Max.
ΦP	3.450	3.850
e	BSC	
q	5.990	6.580
ΦP2	3.240	3.640
Φ	7.100	7.300
D1	16.100	17.100
D2	0.800	1.360
E1	13.000	13.520
E2	5.10	6.100
E3	1.900	2.700



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