DESCRIPTION

The S10SC650VQ is available in TO-220-2 package.

V_{RRM}	I_F	Q_C
650V	10A (TC=154℃)	30nC

APPLICATION

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

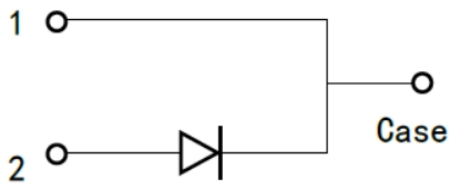
ORDERING INFORMATION

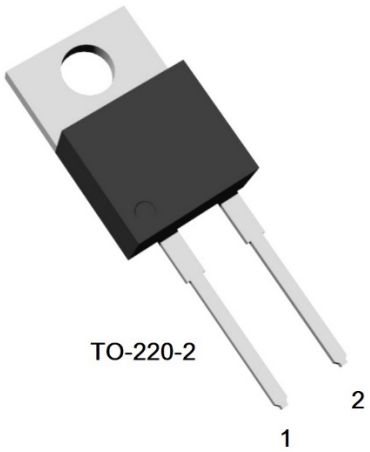
Package Type	Part Number
TO-220-2	S10SC650V
Note	SPQ: 50pcs/Tube
AiT provides all RoHS products	

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	CATHODE
2	ANODE

ABSOLUTE MAXIMUM RATINGS

T_C=25°C , unless otherwise noted

V_{RRM}, Repetitive peak reverse voltage		650V
I_F, Continuous forward current	Tc=25℃	32A
	Tc=135℃	15A
	Tc=154℃	10A
I_{FSM}, Non-repetitive forward surge current see Fig 3.	Tc=25℃, tp=10ms,Half sine pulse	96A
	Tc=110℃, tp=10ms,Half sine pulse	83A
I_{FRM}, Repetitive Peak Forward Surge Current	Tc=25℃, tp=10ms,Half sine pulse	85A
$\int i^2$ dt, i^2t value	Tc=25℃, tp=10ms	60.5A^2S
	Tc=110℃, tp=10ms	44 A^2S
P_{tot}, Power Dissipation, see Fig 4.	Tc=25℃	127W
	Tc=110℃	55 W
	Tc=150℃	21 W
Tj, Tstg, Operating and Storage Temperature		-55℃~+175℃
$R_{th(j-c)}$, Thermal resistance (Junction to case) , see Fig 8.		1.175℃/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℃	-	1.37	1.6	V
		I_F=10A, T_C=175℃	-	1.66	-	V
Reverse current, see Fig 2.	I_R	V_R=650V, T_C=25℃	-	5	60	uA
		V_R=650V, T_C=175℃	-	12	-	-
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	-	4.8	-	uJ

TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Forward Characteristics

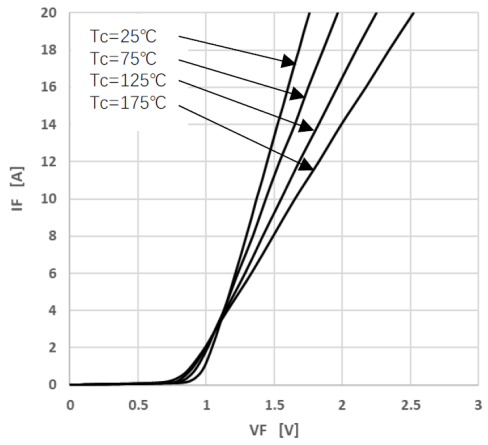


Fig 2. Reverse Characteristics

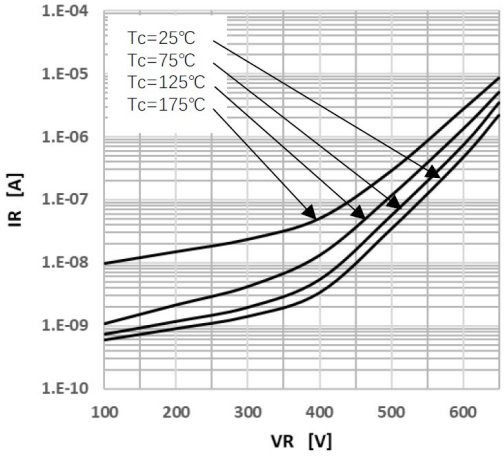


Fig 3. Peak Forward Current Derating

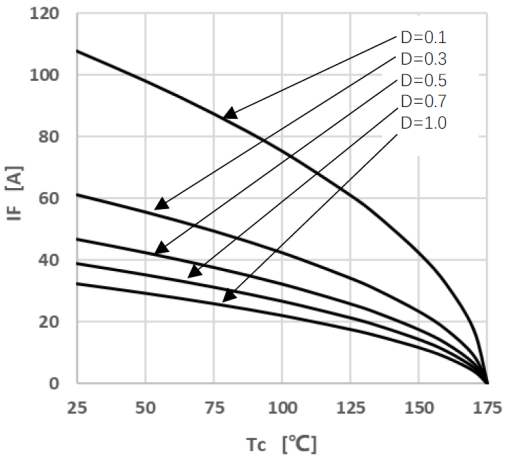


Fig 4. Power Dissipation

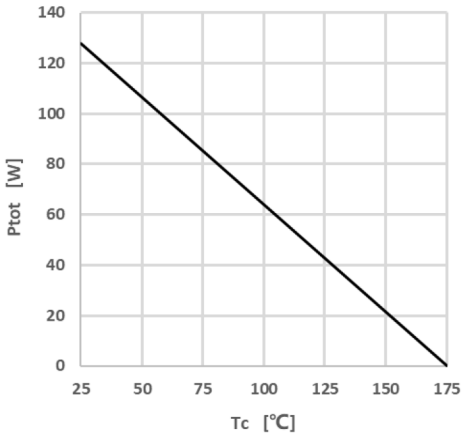


Fig 5. Capacitance vs. Reverse Voltage

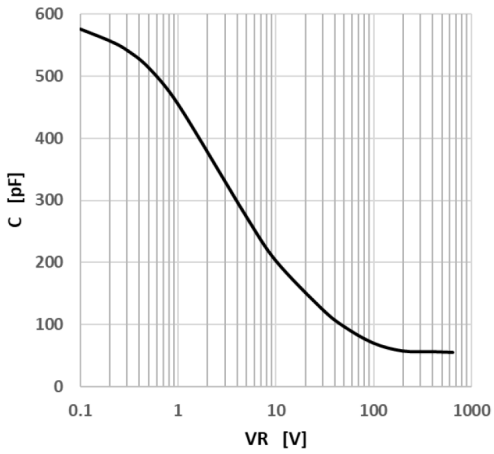


Fig 6. Capacitance Charge vs. Reverse Voltage

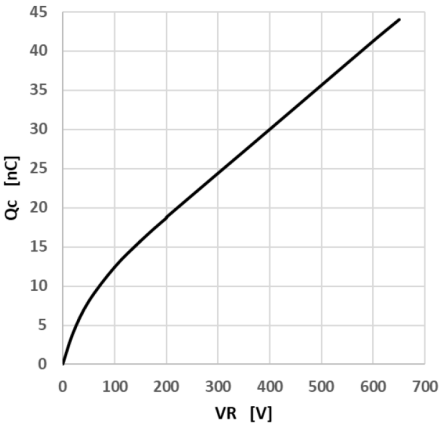


Fig 7. Capacitance Stored Energy

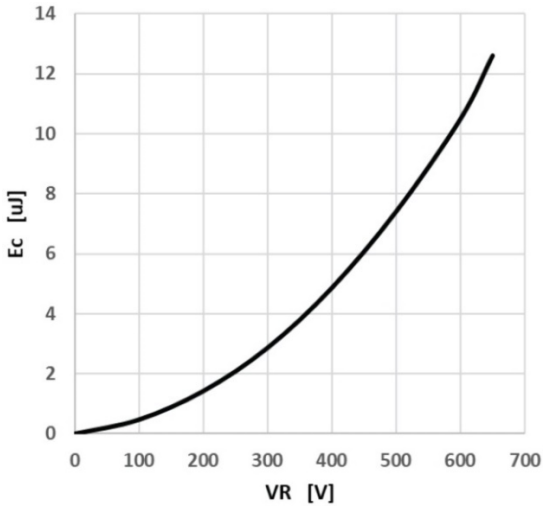
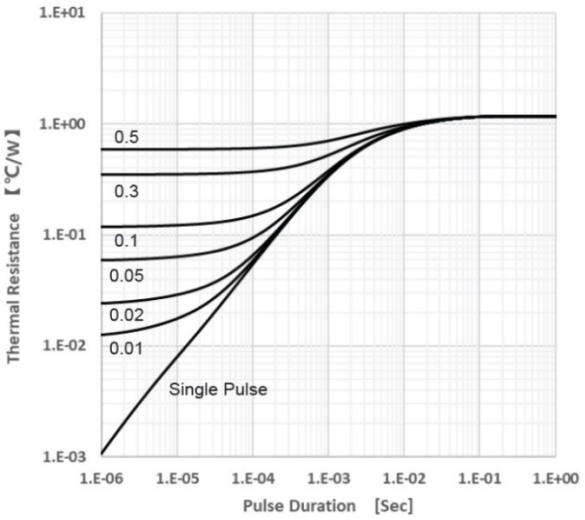
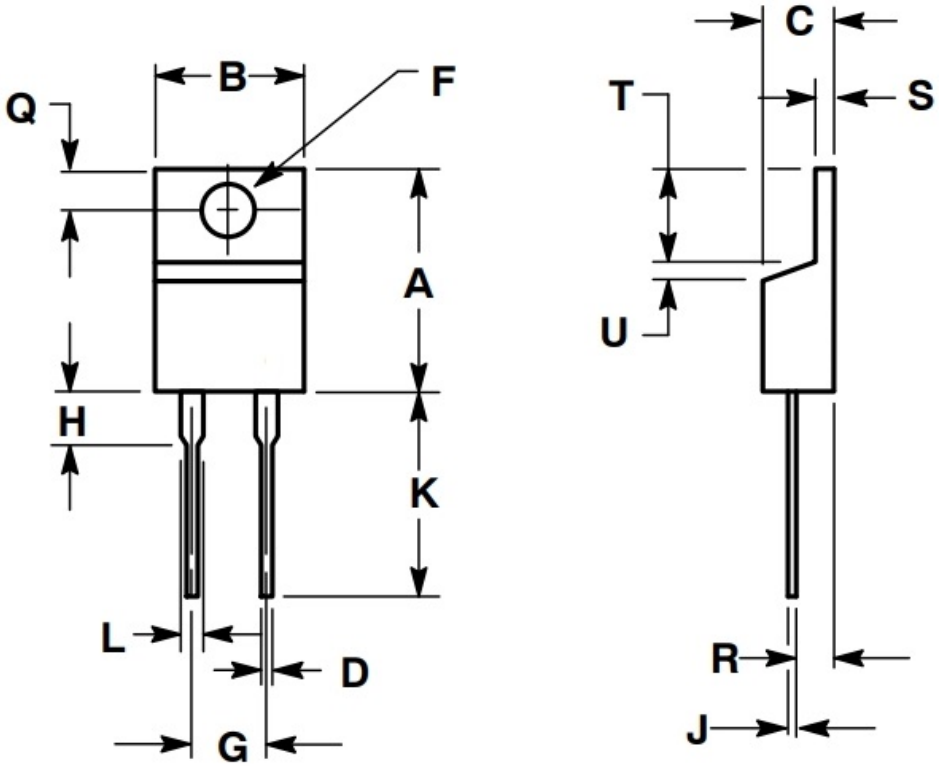


Fig 8. Transient Thermal Impedance



PACKAGE INFORMATION

Dimension in TO-220-2 (Unit: mm)



Symbol	Min.	Normal	Max.
A	4.44	4.56	4.65
A1	1.14	1.27	1.39
A2	2.54	2.60	2.79
b	0.69	0.85	0.94
b1	0.38	0.83	0.97
b2	1.20	1.33	1.45
b3	1.20	1.33	0.56
c	0.36	0.50	0.56
c1	0.36	0.48	15.32
D	14.95	15.25	8.89
D1	8.50	8.75	13.30

Symbol	Min.	Normal	Max.
D2	12.20	12.85	13.30
E	10.11	10.18	10.40
E1	8.25	8.57	8.89
e	2.41	2.54	2.67
e1	4.95	5.08	5.20
H1	6.09	6.20	6.40
L	13.52	13.60	14.00
L1	3.56	3.60	3.80
L2	0	-	0.35
ΦP	3.70	3.80	3.91
Q	2.62	2.80	2.87
R			0.20

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