



DESCRIPTION

The S10SC650D is available in TO-252 Packages.

APPLICATION

- Uninterruptible power supply
- Switch mode power supply
- Power factor correction
- Solar inverter

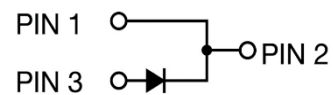
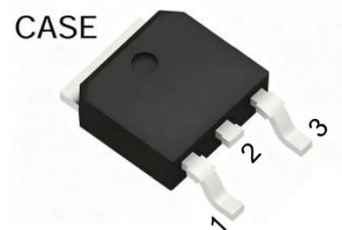
ORDERING INFORMATION

Package Type	Part Number
TO-252	S10SC650D
Note	SPQ:2,500pcs/Reel
AiT provides all RoHS products	

FEATURE

- 650-Volt SiC JBS Rectifier
- Zero Reverse Recovery
- Positive Temperature Coefficient on VF
- Temperature-Independent Switching Behavior
- Extremely Fast Switching
- Extremely Low Leakage Current

PIN DESCRIPTION



PIN#	DESCRIPTION
1	Cathode
2	Anode
3	CASE (Cathode)



ABSOLUTE MAXIMUM RATINGS

T_A = 25°C, unless otherwise specified.

Parameter		Symbol	Value	Unit
Maximum Repetitive Peak Reverse Voltage		V _{RRM}	650	V
Continuous Forward Current for R _{th} (j-c, max)	T _C = 25°C	I _F	27	A
	T _C = 110°C		17	
	T _C = 147°C		10	
Peak Forward Surge Current, 8.3 ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)		I _{FSM}	75	A
Operating Temperature Range		T _J	175	°C
Storage Temperature Range		T _{STG}	-55 to +175	°C
Typical Thermal Resistance ⁽¹⁾		R _{θJC}	1.55	°C/W

(1) Thermal resistance from Junction to case per leg mounted on heatsink.

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_A = 25°C, unless otherwise specified.

Parameter	Symbol	Condition	Min	Typ.	Max	Unit
Forward Voltage ⁽²⁾	V _F	I _F = 10A, T _J = 25°C	-	1.36	1.65	V
		I _F = 10A, T _J = 175°C	-	1.66	-	
Reverse Current	I _R	V _R = 650V, T _J = 25°C	-	1	40	uA
		V _R = 650V, T _J = 175°C	-	8.5	-	
Total Capacitive Charge	Q _C	V _R = 400V, T _J = 25°C	-	29	-	nC
Total Capacitance	C	T _J = 25°C, V _R = 1V, f = 1Mhz	-	390	-	pF
		T _J = 25°C, V _R = 200V, f = 1Mhz	-	56	-	
		T _J = 25°C, V _R = 400V, f = 1Mhz	-	41	-	
Capacitance Stored Energy	E _C	V _R = 400V, T _J = 25°C	-	4.2	-	nC

(2) Pulse test: 30us pulse width, 1% duty cycle



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Forward Characteristics

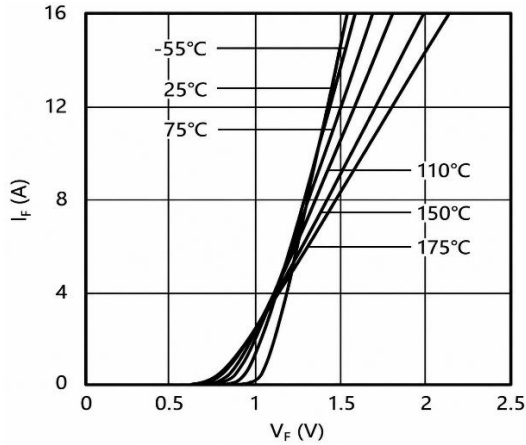


Fig 2. Typical Reverse Characteristics

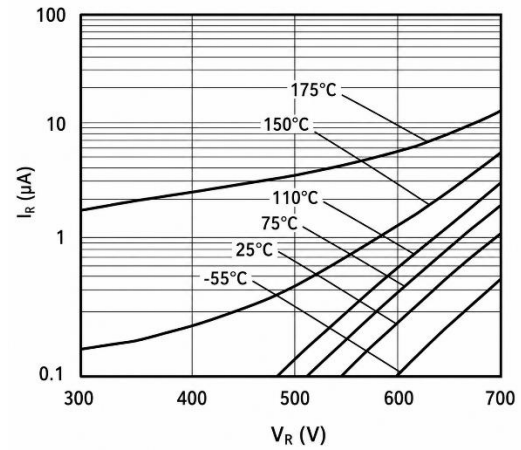


Fig 3. Total Capacitance Charge Characteristics

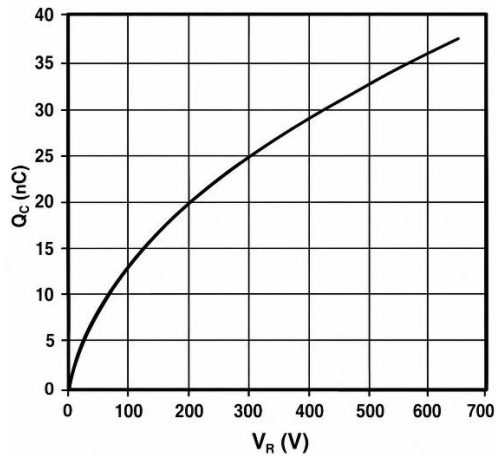


Fig 4. Total Capacitance Characteristics

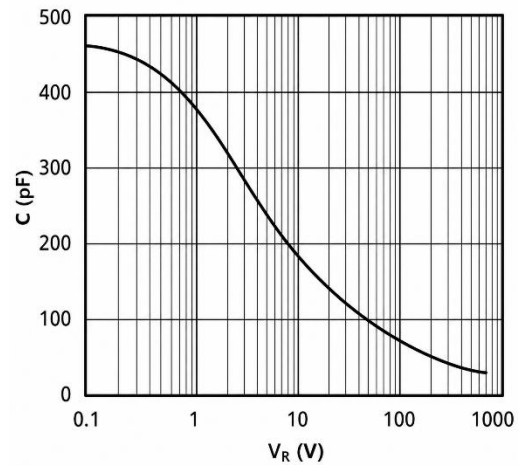


Fig 5. Power dissipation as function of case temperature

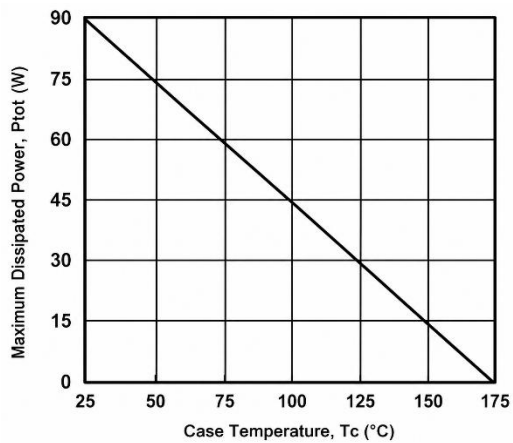


Fig 6. Capacitance Stored Energy

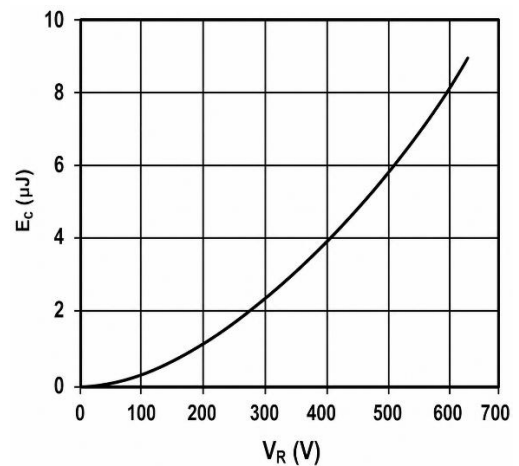
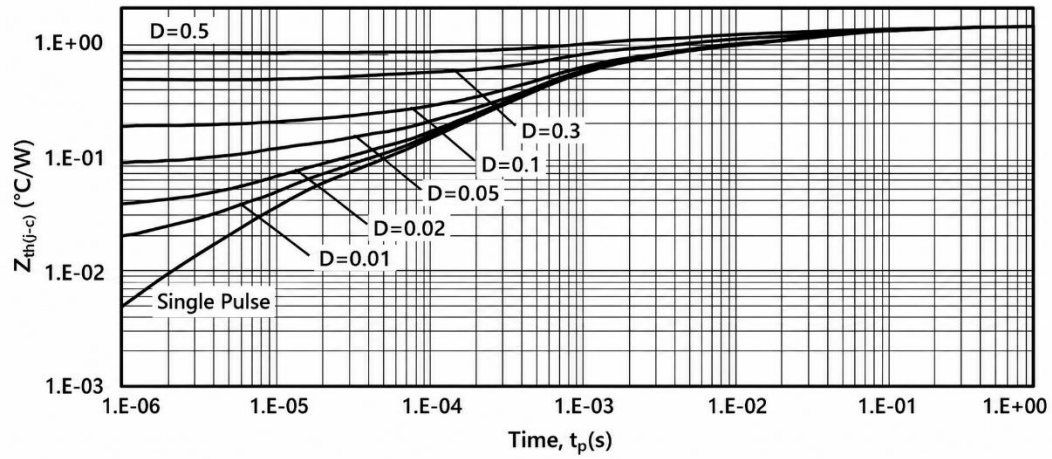




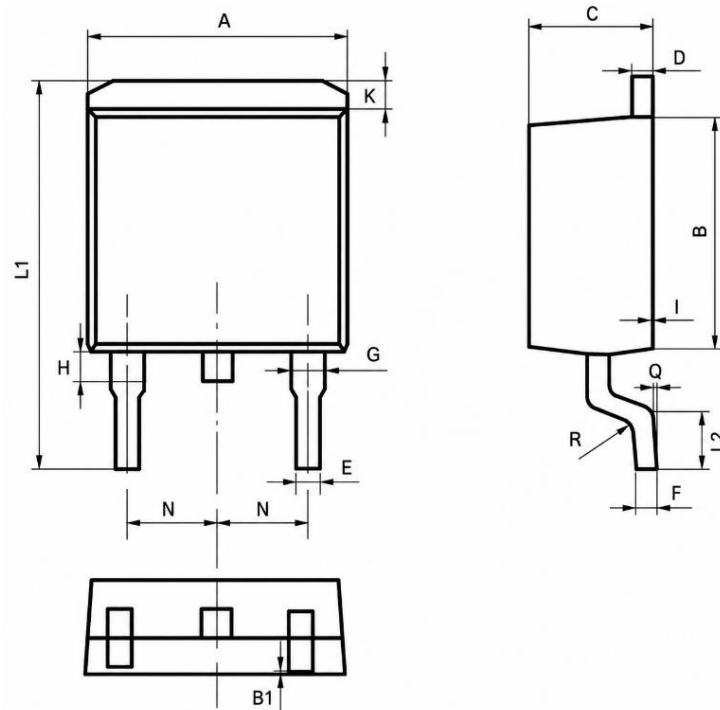
Fig 7. Max. transient thermal impedance, $Z_{th, j-c}=f(t_p)$, parameter: $D=t_p/T$





PACKAGE INFORMATION

Dimension in TO-252 (Unit: mm)



Symbol	Min.	Max.
A	9.800	10.40
B	8.900	9.500
B1	0	0.100
C	4.400	4.800
D	1.160	1.370
E	0.700	0.950
F	0.300	0.600
G	1.070	1.470
H	1.300	1.800
K	0.950	1.370
L1	14.50	16.50
L2	1.600	2.300
I	0	0.2
Q	0°	8°
R	0.4	
N	2.390	2.690



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