

Q-SSC2090-T7

900V Silicon Carbide Schottky Diode

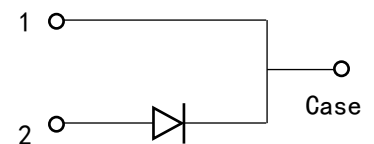
Features

- Negligible reverse recovery
- High-speed switching
- Positive Temperature Coefficient
- Temperature-Independent Switching
- Pb-free / RoHS compliant

V_{RRM}	900V
I_F	20A (TC=157°C)
Q_C	106nC

Benefits

- Higher frequency
- Low heat dissipation requirements
- Reduce size and cost of the system
- High-reliability



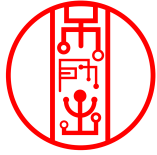
Applications

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

Marking	Package
Q-SSC2090-T7	TO-247-2

Thermal Characteristics

Symbol	Parameter	Value		Unit	Note
		Typ.	Max.		
$R_{th(j-c)}$	Thermal resistance (Junction to case)	0.415	-	°C/W	Figure 8



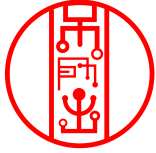
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Maximum Ratings (Tc=25°C unless otherwise noted)

Symbol	Parameter		Value	Unit	Note
V_{RRM}	Repetitive peak reverse voltage		900	V	
I_F	Continuous forward current	Tc=25°C	64	A	Figure 3
		Tc=135°C	31	A	
		Tc=157°C	20	A	
I_{FSM}	Non-repetitive forward surge current	Tc=25°C, $t_p=10ms$, Half sine pulse	125	A	
		Tc=110°C, $t_p=10ms$, Half sine pulse	98	A	
I_{FRM}	Repetitive Peak Forward Surge Current	Tc=25°C, $t_p=10ms$, Half sine pulse	110	A	
		Tc=110°C, $t_p=10ms$, Half sine pulse	95	A	
$\int i^2 dt$	i^2t value	Tc=25°C, $t_p=10ms$	72	A ² S	
		Tc=110°C, $t_p=10ms$	48	A ² S	
P_{tot}	Power Dissipation	Tc=25°C	361	W	Figure 4
		Tc=110°C	156	W	
		Tc=150°C	60	W	
T_j, T_{stg}	Operating and Storage Temperature		-55 to +175	°C	

Electrical Characteristics (Tc=25°C unless otherwise noted)

Symbol	Parameter	Test Conditions	Value			Unit	Note
			Min.	Typ.	Max.		
V_{DC}	DC blocking voltage		900	-	-	V	
V_F	Forward voltage	$I_F=10A$	-	1.16	-	V	Figure 1
		$I_F=20A$, Tc=25°C	-	1.39	1.6	V	
		$I_F=20A$, Tc=125°C	-	1.69	-	V	
		$I_F=20A$, Tc=175°C	-	1.89	-	V	
I_R	Reverse current	$V_R=900V$, Tc=25°C	-	4	200	uA	Figure 2
		$V_R=900V$, Tc=125°C	-	10	-	uA	
		$V_R=900V$, Tc=175°C	-	20	-	uA	
Q_C	Total capacitive charge	$V_R=600V$	-	106	-	nC	Figure 6
C	Total capacitance	$V_R=1V$, f=1MHZ	-	1362	-	pF	Figure 5
		$V_R=300V$, f=1MHZ	-	126	-	pF	
		$V_R=600V$, f=1MHZ	-	91	-	pF	
E_C	Capacitance Stored Energy	$V_R=600V$	-	22.5	-	uJ	Figure 7



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Electrical Characteristic Curves

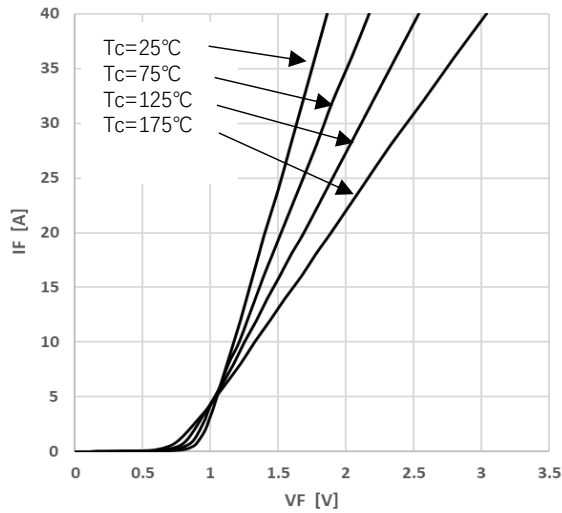


Figure 1 Forward Characteristics

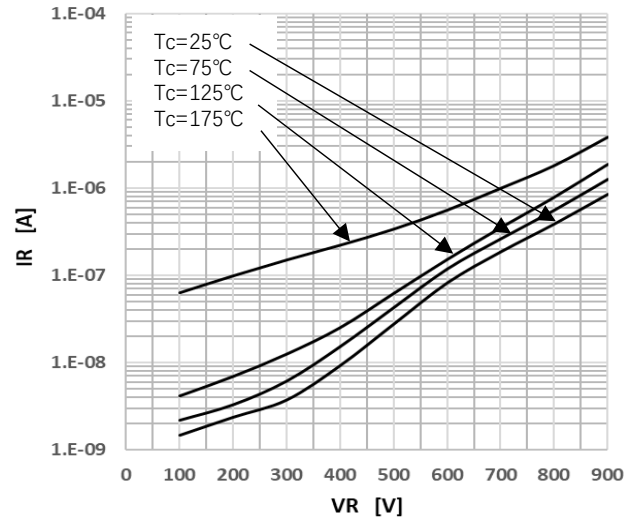


Figure 2 Reverse Characteristics

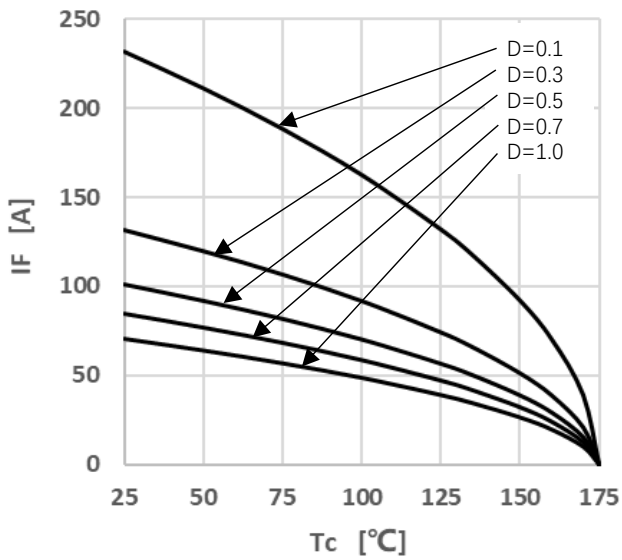


Figure 3 Peak Forward Current Derating

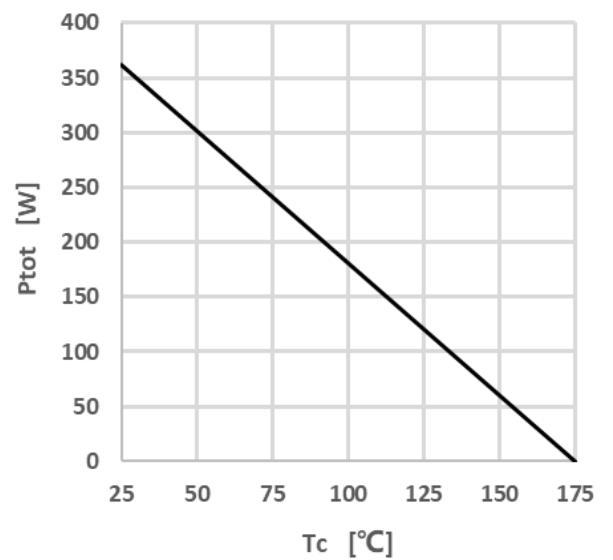
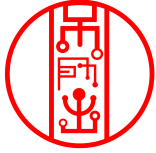


Figure 4 Power Dissipation



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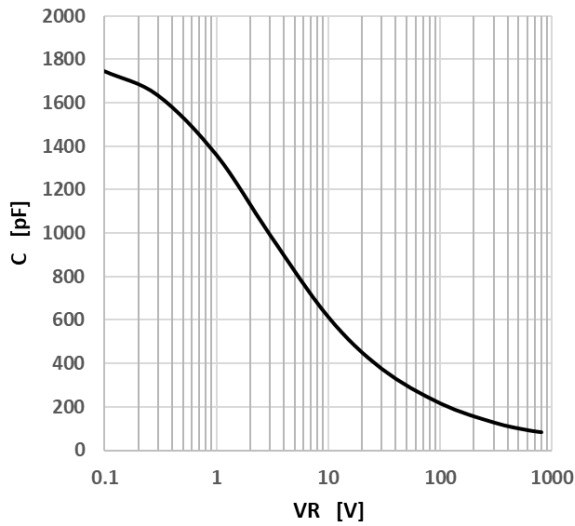


Figure 5 Capacitance vs. Reverse Voltage

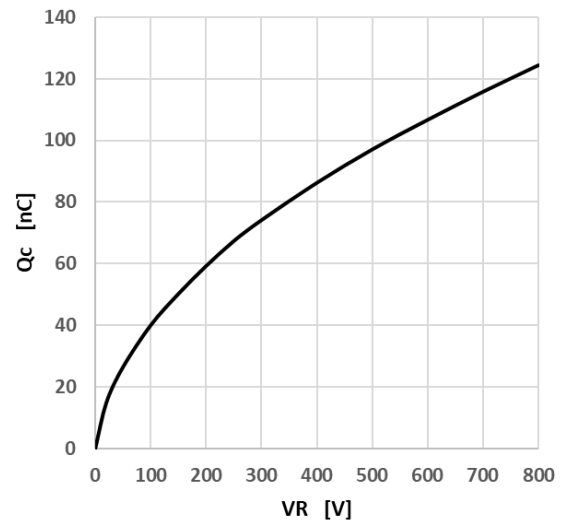


Figure 6 Capacitance Charge vs. Reverse Voltage

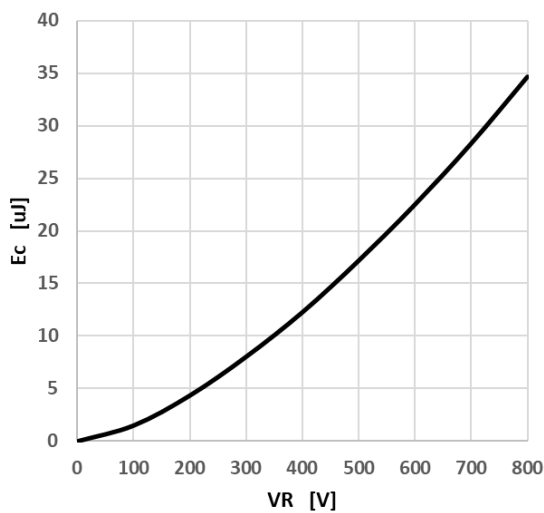


Figure 7 Capacitance Stored Energy

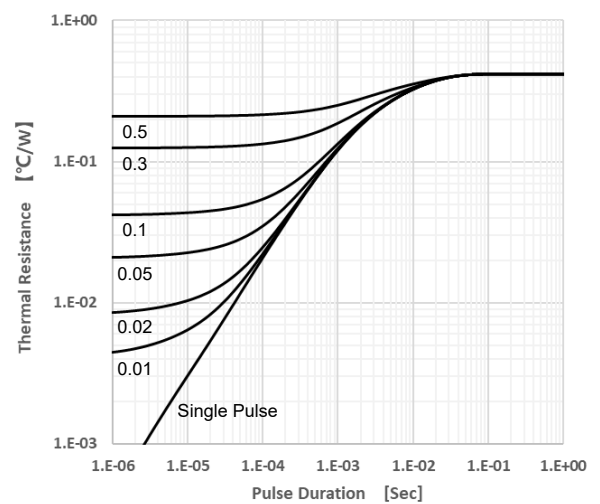
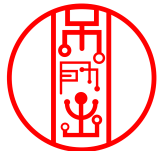


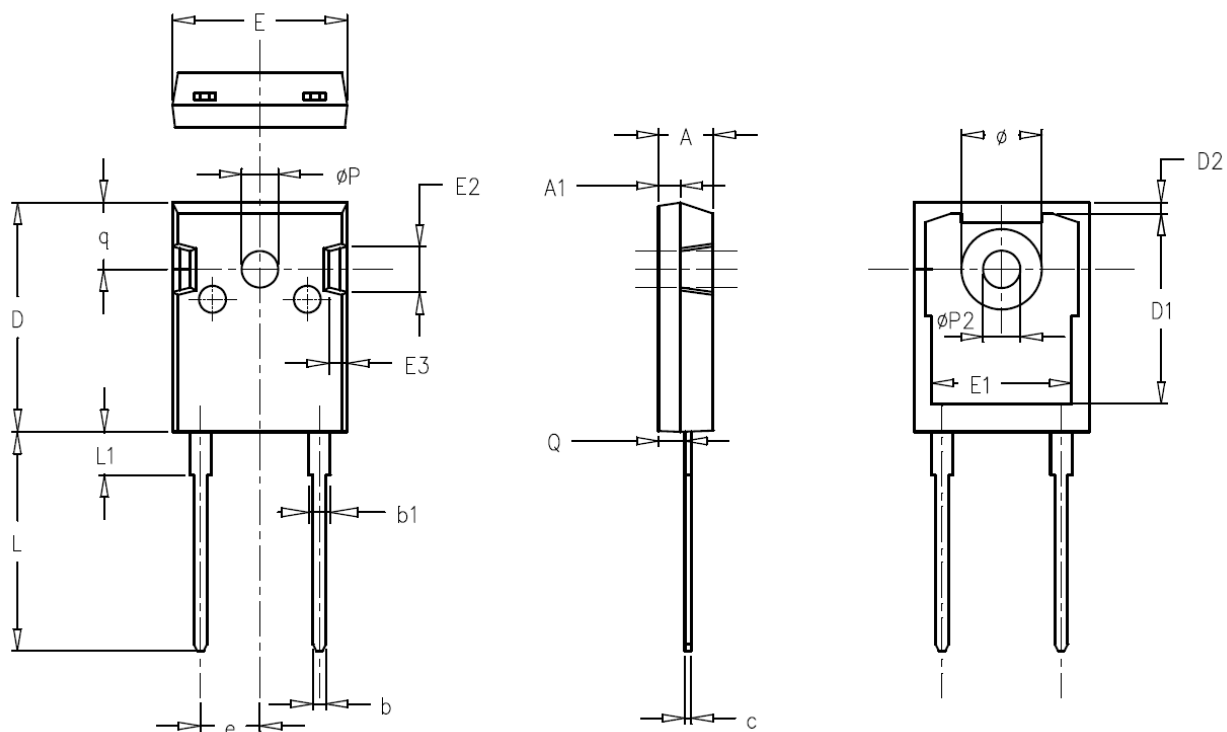
Figure 8 Transient Thermal Impedance



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Package Dimensions

To-247-2



SYMBOL	MILLIMETERS			N OTES	SYMBOL	MILLIMETERS			N OTES
	N ormal	MIN.	MAX.			Normal	MIN.	MAX.	
A	4.98	4.68	5.36		øP	3.66	3.45	3.85	
A 1	1.99	1.90	2.10		e	5.44	BSC		
Q	2.41	2.30	2.60		q	6.24	5.99	6.58	
c	0.60	0.48	0.72		øP2	3.45	3.24	3.64	
b	1.20	1.00	1.40		ø	7.14	7.10	7.30	
b1	2.07	1.90	2.30		D1	16.56	16.10	17.10	
D	21.10	20.80	21.80		D2	0.98	0.80	1.36	
E	15.98	15.38	16.20		E1	13.30	13.00	13.52	
L	20.28	19.50	20.50		E2	5.64	5.10	6.10	
L1	4.01	3.75	4.35		E3	2.33	1.90	2.70	