NWK710TJ1-2

1700V Silicon Carbide Schottky Diode

Parameter	Value	Unit
V_{RRM}	1700	V
Q_C	116	nC
I_F (T_C = 160℃)	10	A

Features

- 1700 V Schottky Rectifier
- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Excellent Surge Current Capability
- Positive Temperature Coefficient on V_F
- Temperature-Independent Switching
- High Frequency Operation

TO-247-2

Applications

- Switch Mode Power Supplies
- Uninterruptible Power Supplies
- Power Factor Correction
- Motor Drivers

Description

The NWK710TJ1-2 is a 1700V, SiC Schottky Barrier Diode (SBD) based on NovaWave's advanced SiC power technology resulting in high performance and long-term reliability. It supports high-temperature operation while showing minimal losses, zero reverse recovery, and low leakage current.

Part Description

Part Number	Package	Marking
NWK710TJ1-2	TO-247-2	NWK710TJ1-2

Absolute Maximum Ratings

T_J = 25 °C except as noted. Exceeding the maximum ratings may damage the device.

Parameter	Symbol	Value	Unit	Test conditions
Repetitive Peak Reverse Voltage	V_{RRM}	1700	V	
Continuous Forward Current	I_F	43 10	A	T_C = 25 °C T_C = 160 °C
Non-Repetitive Forward Surge Current	I_{FSM}	145	A	T_C = 25 °C, t_p = 10 ms, Half Sine Wave
i^2t value	$\int i^2dt$	105	A^2s	T_C=25°C, t_p=10ms
Power Dissipation	P_{tot}	294 127	W	T_C = 25 °C T_C = 110 °C
Operating Junction Range	T_J	-55 to +175	°C	-
Storage Temperature Range	T_{stg}	-55 to +175	°C	-

Thermal Characteristics

Parameter	Symbol	Min.	Typ.	Max.	Unit
Thermal Resistance from Junction to Case	$R_{TH,J-C}$		0.51		°C/W

Electrical Characteristics

Parameters	Symbol	Min	Typ	Max	Unit	Condition
DC blocking voltage	V_{DC}	1700	--	--	V	T_C = 25 °C
Forward Voltage	V_F	--	1.38 1.75 1.98	1.60 2.35 2.72	V	I_F=10 A, T_C = 25 °C I_F=10 A, T_C = 135 °C I_F=10 A, T_C = 175 °C
Reverse Current	I_R	--	0.5 6	200 400	μA	V_R=1700 V, T_C = 25 °C V_R=1700 V, T_C = 175 °C
Total Capacitive Charge	Q_c	--	116	--	nC	V_R=1700 V, T_C = 25 °C, $Q_C=\int_0^{VR}C(V)dV$
Total Capacitance	C	--	662 53 43	--	pF	V_R=1 V, T_C = 25 °C, f= 1 MHz V_R=800 V, T_C = 25 °C, f= 1 MHz V_R=1700 V, T_C = 25 °C, f= 1 MHz
Capacitance Stored Energy	E_C	--	72	--	μJ	V_R=1700 V, T_C = 25 °C

Electrical Performance Graphs

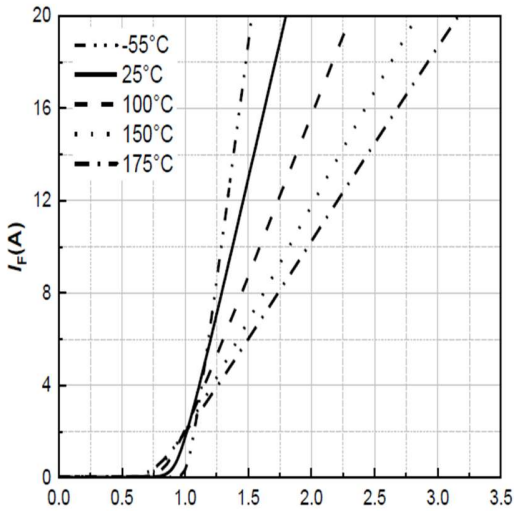


Figure 1: Typical Forward Characteristics

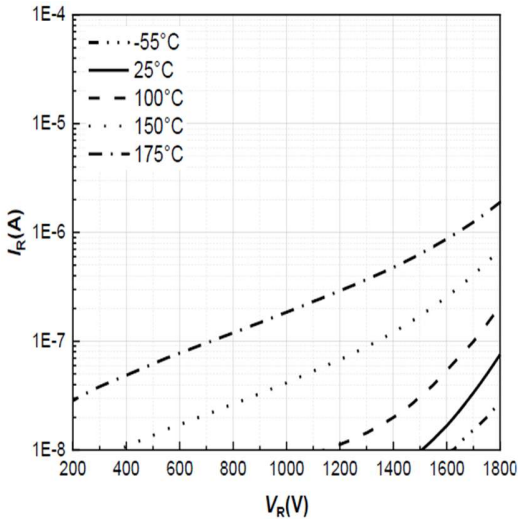


Figure 2: Typical reverse current as function of reverse voltage

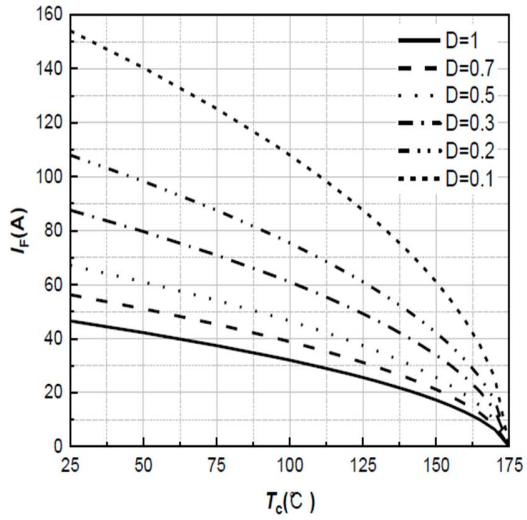


Figure 3: Diode forward current as function of temperature, D=duty cycle

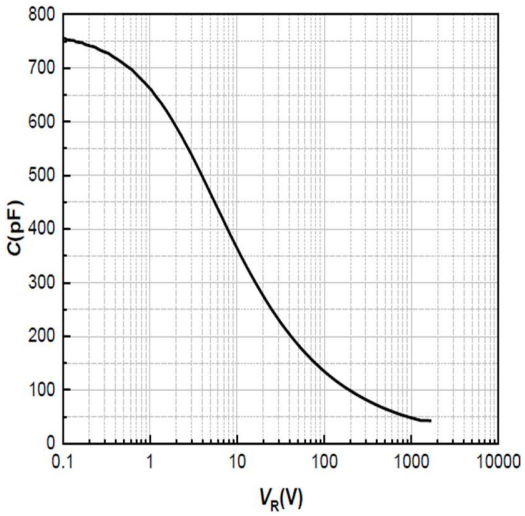


Figure 4: Typical capacitance as function of reverse voltage, C=f(V_R);
T_j=25°C; f=1 MHz

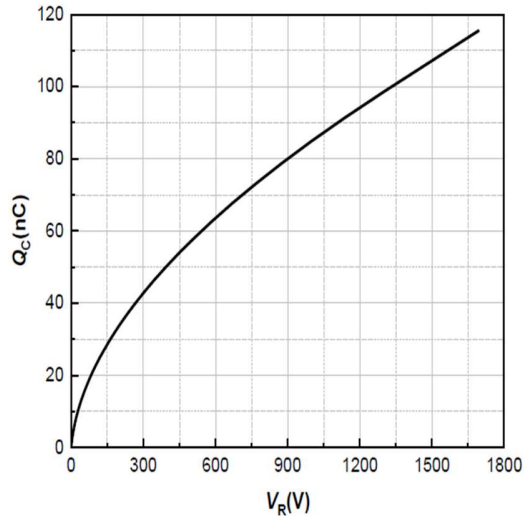


Figure 5: Typical reverse charge as function of reverse voltage

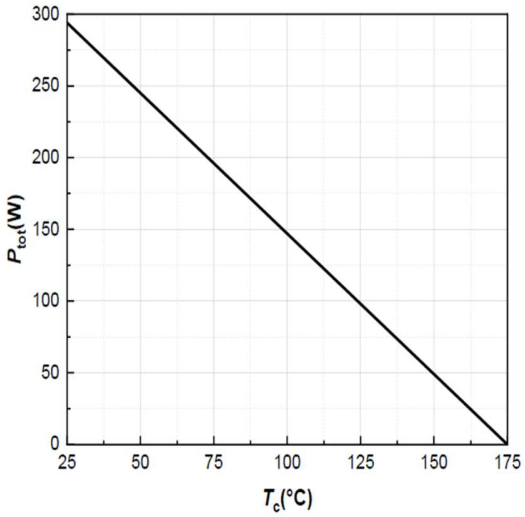


Figure 6: Power dissipation as function of case temperature

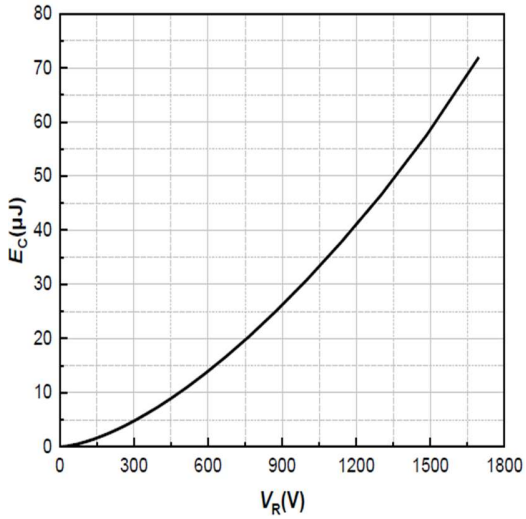


Figure 7: Typical Capacitance Stored Energy

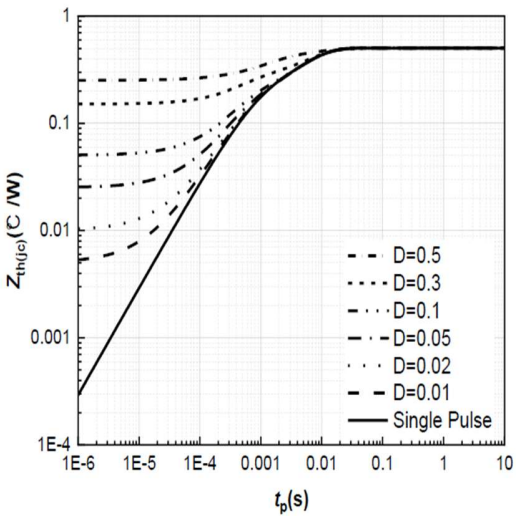
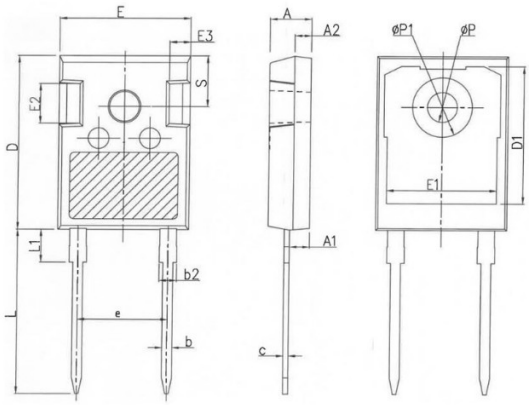


Figure 8: Max. transient thermal impedance, $Z_{th(jc)}= f(t_p)$, parameter: $D = t_p/T$

Package Dimensions

Package： TO-247-2



SYMBOL	Unit:mm		
	MIN	NOM	MAX
A	4.80	5.00	5.20
A1	2.21	2.41	2.59
A2	1.85	2.00	2.15
b	1.11	1.21	1.36
b2	1.91	2.01	2.21
c	0.51	0.61	0.75
D	20.70	21.00	21.30
D1	16.25	16.55	16.85
E	15.50	15.80	16.10
E1	13.00	13.30	13.60
E2	4.80	5.00	5.20
E3	2.30	2.50	2.70
e	10.88 BSC		
L	19.62	19.92	20.22
L1	-	-	4.30
ϕP	3.40	3.60	3.80
ϕP1	-	-	7.30
S	6.15 BSC		

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