



DONGGUAN NANJING ELECTRONICS LTD.,

TO-252-2 Silicon Carbide Schottky Diode

NJ65C10T2 SiC Diode 650 V, 10 A, 38nC

Features

- ✓ Zero forward recovery voltage
- ✓ Zero reverse recovery current
- ✓ Excellent surge current capability
- ✓ Temperature independent switching
- ✓ Positive temperature coefficient on V_F
- ✓ High frequency operation

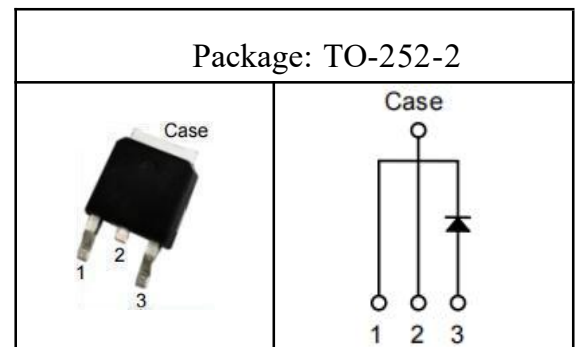
Benefits

- ✓ Increased Power Density
- ✓ Essentially no Switching Losses
- ✓ Reduction of Heat Sink Requirements
- ✓ Higher Efficiency
- ✓ Reduced EMI

Applications

- ✓ Uninterruptible power supplies
- ✓ Switch mode power supplies (SMPS)
- ✓ Power Factor Correction
- ✓ Motor Drivers

Part NO.	NJ65C10T2
V_{RRM}	= 650 V
$I_F(T_C=160^{\circ}\text{C})$	= 10A
Q_C	= 38nC



Typical Characteristics

Maximum ratings ($T_j=25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test conditions	Value	Unit
V_{RRM}	Repetitive peak reverse voltage		650	V
I_F	Continuous forward current	$T_c=25^{\circ}\text{C}$ $T_c=160^{\circ}\text{C}$	50 10	A
I_{FSM}	Non-Repetitive forward surge current	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	85	A
$\int i^2 dt$	i^2t value	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$	36	A^2S
P_{tot}	Power dissipation	$T_c=25^{\circ}\text{C}$ $T_c=110^{\circ}\text{C}$	197 85	W
T_j	Operating junction temperature		-55~175	$^{\circ}\text{C}$
T_{stg}	Storage temperature		-55~175	$^{\circ}\text{C}$

Electrical Characteristics

Static Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
V_{DC}	DC blocking voltage	$T_j=25^{\circ}\text{C}$	650			V
V_F	Diode forward voltage	$I_F=10\text{A}$, $T_j=25^{\circ}\text{C}$ $I_F=10\text{A}$, $T_j=175^{\circ}\text{C}$		1.29 1.43		V
I_R	Reverse current	$V_R=650\text{V}$, $T_j=25^{\circ}\text{C}$ $V_R=650\text{V}$, $T_j=175^{\circ}\text{C}$		1 9		μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	$V_R=400V$, $T_j=25^{\circ}C$ $Q_C = \int_0^V R \ C(V)dV$		38		nC
C	Total capacitance	$V_R=1V$ $f=1MHz$ $V_R=300V$ $f=1MHz$ $V_R=600V$ $f=1MHz$		551 63 57		pF
E_C	Capacitance stored energy	$V_R=400V$		5.7		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal Resistance from Junction to Case		0.76		$^{\circ} C/W$

Typical Performance

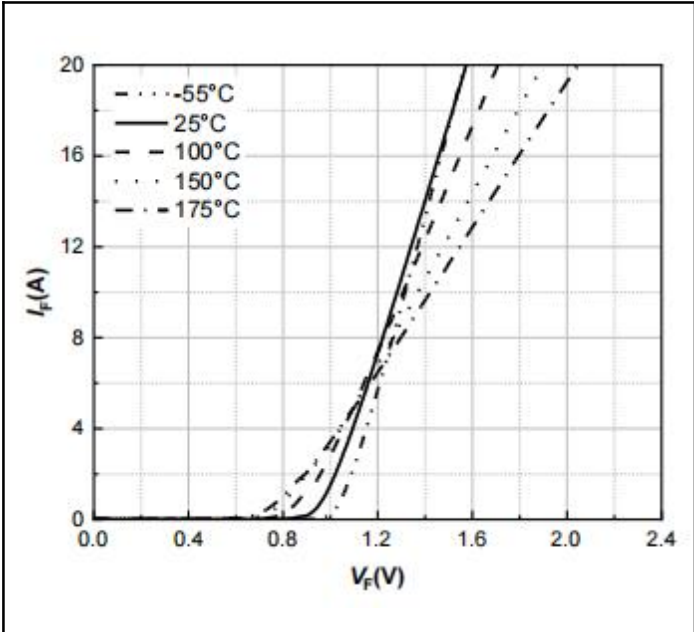


Figure 1. Typical forward characteristics

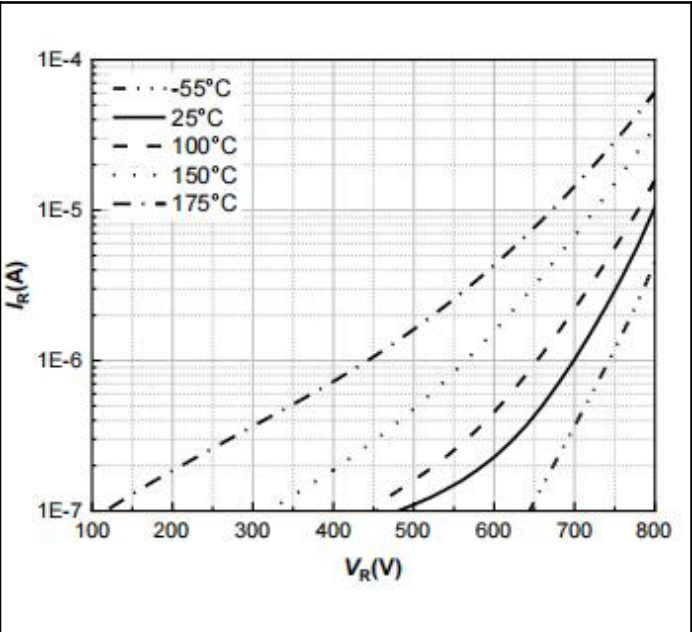


Figure 2. Typical reverse current as function of reverse voltage

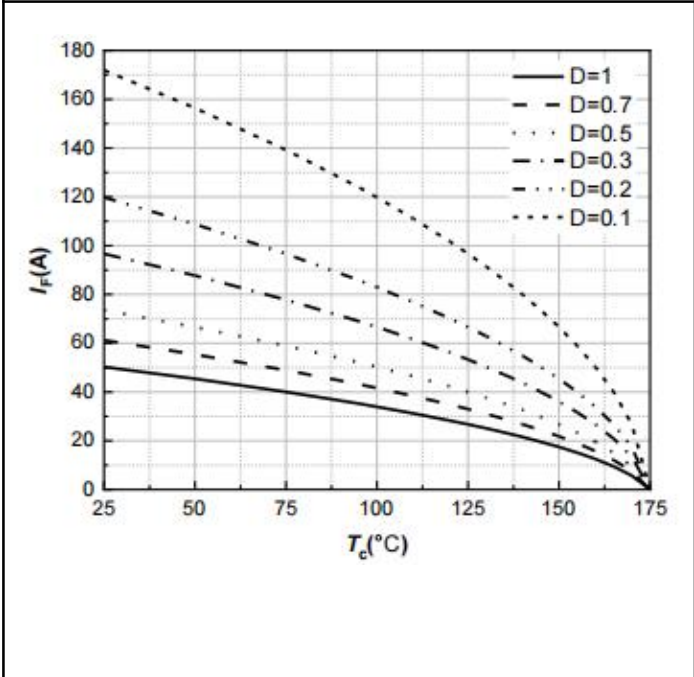


Figure 3. Diode forward current as function of temperature, D=duty cycle

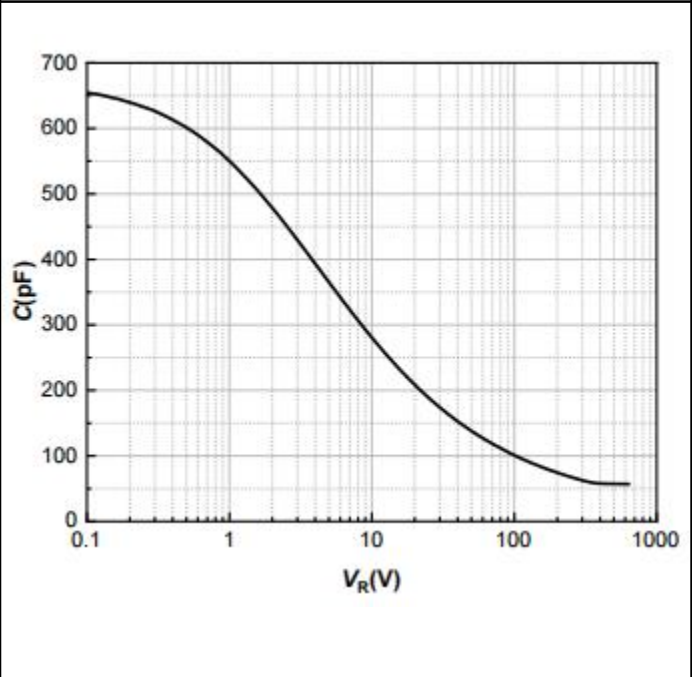


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_J=25^{\circ}\text{C}$; $f=1\text{ MHz}$

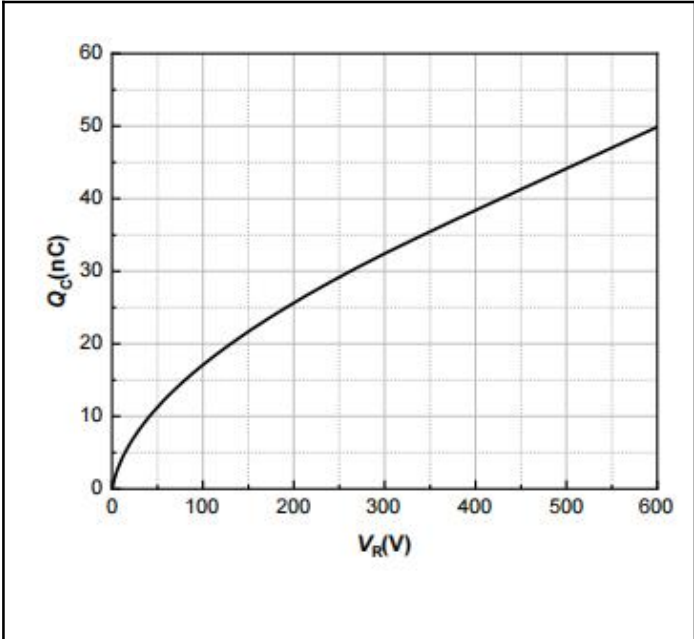


Figure 5. Typical reverse charge as function of reverse voltage

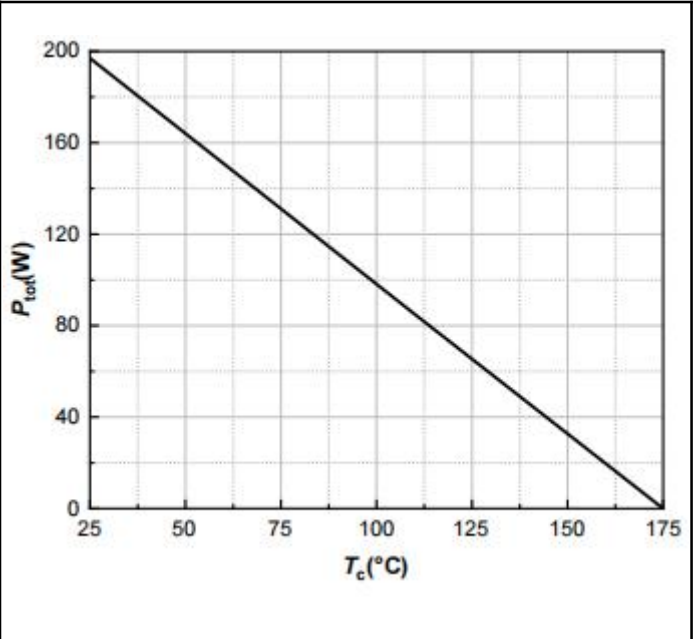


Figure 6. Power dissipation as function of case temperature

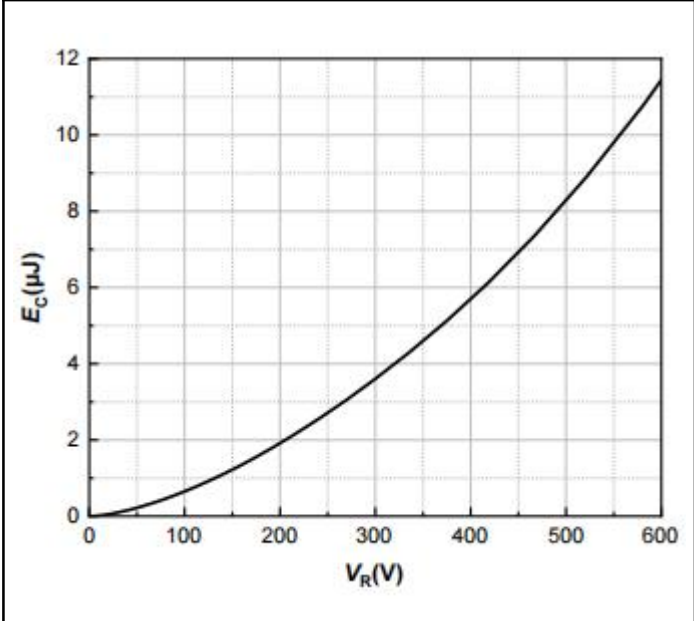


Figure 7. Capacitance stored energy

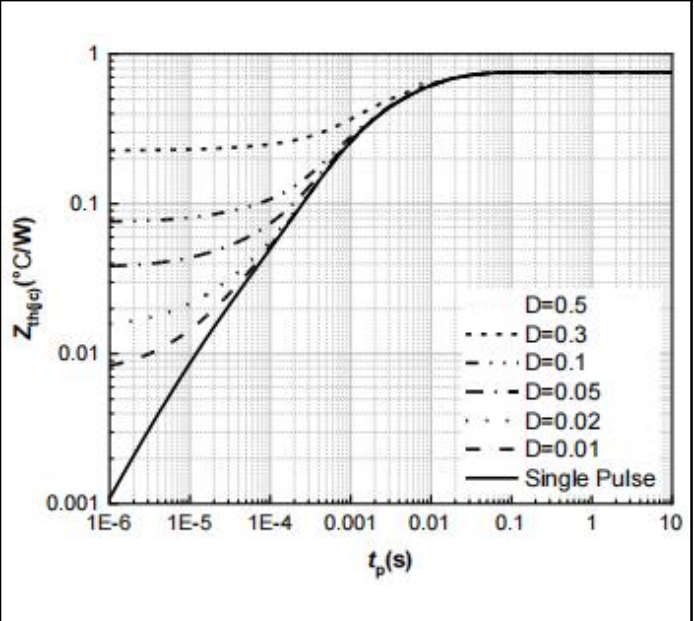
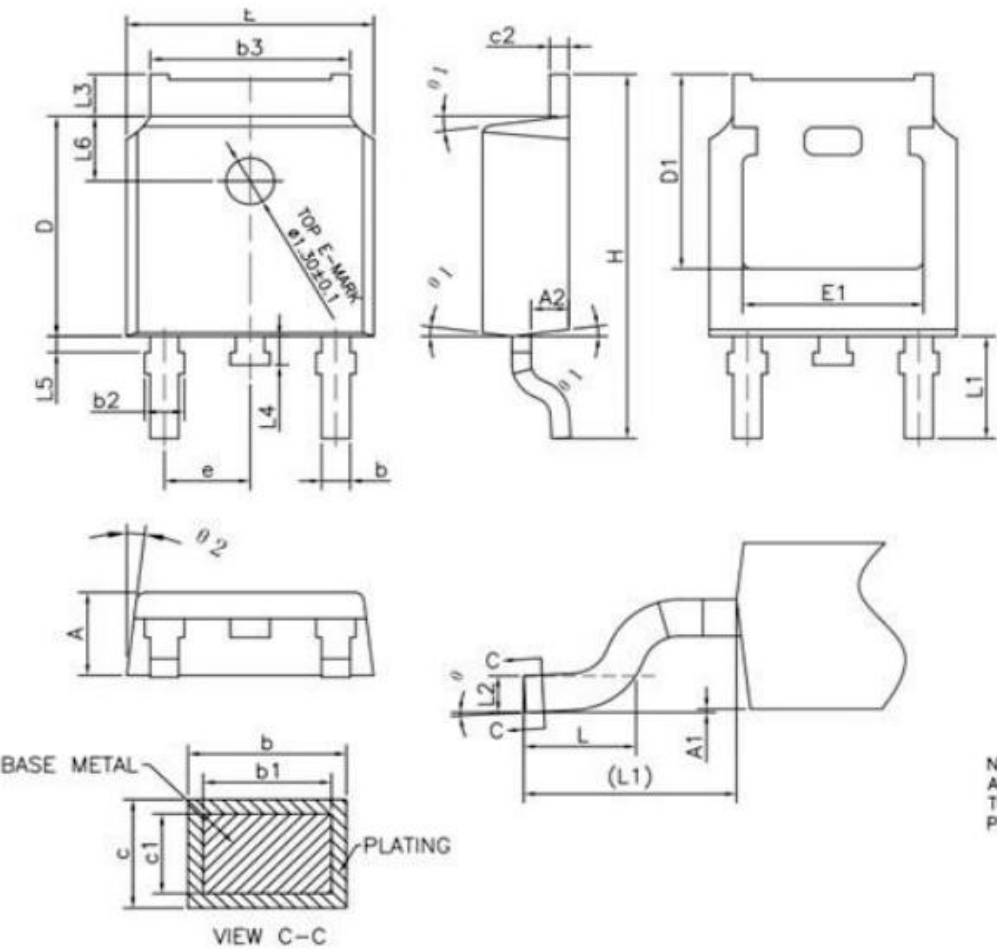


Figure 8. Max. transient thermal impedance, $Z_{th(jc)}=f(t_p)$, parameter: $D=t_p/T$

Package Outline Dimensions



COMMON DIMENSIONS
(UNITS OF MEASURE =MILLIMETER)

SYMBOL	MIN	NOM	MAX
A	2.20	2.30	2.38
A1	0	---	0.10
A2	0.90	1.01	1.10
b	0.72	---	0.85
b1	0.71	0.76	0.81
b2	0.72	---	0.90
b3	5.13	5.33	5.46
c	0.47	---	0.60
c1	0.46	0.51	0.56
c2	0.47	---	0.60
D	6.00	6.10	6.20
D1	5.25	---	---
E	6.50	6.60	6.70
E1	4.70	---	---
e	2.186	2.286	2.386
H	9.80	10.10	10.40
L	1.40	1.50	1.70
L1	2.90 REF		
L2	0.508 BSC		
L3	0.90	---	1.25
L4	0.60	0.80	1.00
L5	0.15	---	0.75
L6	1.80 REF		
θ	0°	---	8°
$\theta 1$	5°	7°	9°
$\theta 2$	5°	7°	9°

NOTES:
ALL DIMENSIONS REFER TO JEDEC STANDARD
TO-252 AA DO NOT INCLUDE MOLD FLASH OR
PROTRUSIONS