



DONGGUAN NANJING ELECTRONICS LTD.,

TO-252-2 Silicon Carbide Schottky Diode

NJ65C6T2 SiC Diode 650 V, 6 A, 25nC

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

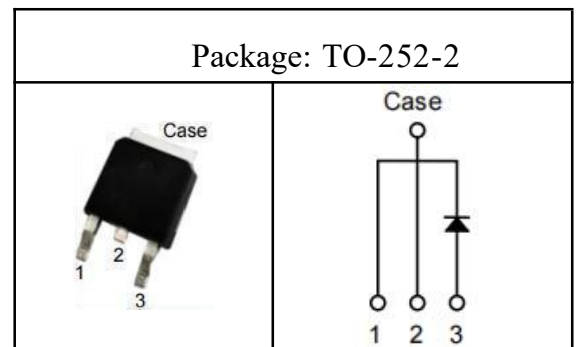
Benefits

- ✓ 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.	NJ65C6T2
V_{RRM}	= 650 V
$I_F(T_C=160^\circ\text{C})$	= 6A
Q_C	= 25nC



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	$T_c=25^{\circ}\text{C}$ $T_c=160^{\circ}\text{C}$	26 6	A
I_{FSM}	Non-Repetitive forward surge current	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$, Half Sine Wave	60	A
$\int i^2 dt$	i^2t value	$T_c=25^{\circ}\text{C}$, $t_p=10\text{ms}$	18	A^2S
P_{tot}	Power dissipation	$T_c=25^{\circ}\text{C}$ $T_c=110^{\circ}\text{C}$	103 44	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	$I_F=6\text{A}$, $T_j=25^{\circ}\text{C}$ $I_F=6\text{A}$, $T_j=135^{\circ}\text{C}$ $I_F=6\text{A}$, $T_j=175^{\circ}\text{C}$		1.25 1.32 1.38	1.48 1.74 1.90	V
I_R	Reverse current	$V_R=650\text{V}$, $T_j=25^{\circ}\text{C}$ $V_R=650\text{V}$, $T_j=175^{\circ}\text{C}$		0.5 15	50 200	μA

AC Characteristics

Symbol	Parameter	Test conditions	Value			Unit
			Min.	Typ.	Max.	
Q_C	Total capacitive charge	$V_R=400V$, $T_J=25^{\circ}C$ $Q_C = \int_0^V R \ C(V)dV$		25		nC
C	Total capacitance	$V_R=1V$ $f=1MHz$ $V_R=300V$ $f=1MHz$ $V_R=600V$ $f=1MHz$		350 42 36		pF
E_C	Capacitance stored energy	$V_R=400V$		3.8		μJ

Thermal Characteristics

Symbol	Parameter	Value			Unit
		Min.	Typ.	Max.	
$R_{th(jc)}$	Thermal Resistance from Junction to Case		1.45		$^{\circ} C/W$

Typical Performance

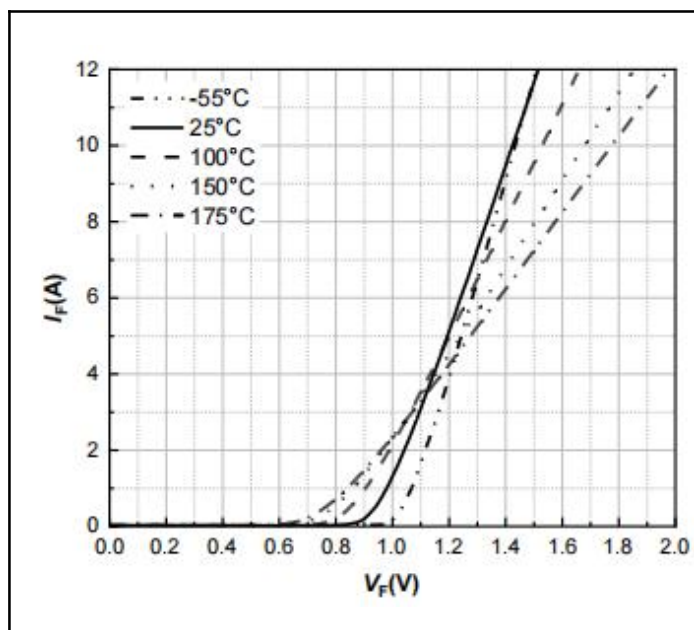


Figure 1. Typical forward characteristics

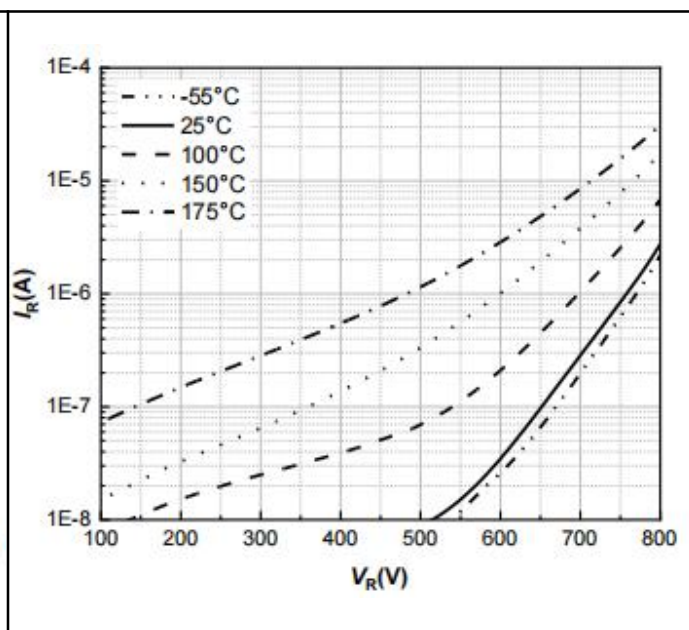


Figure 2. Typical reverse current as function of reverse voltage

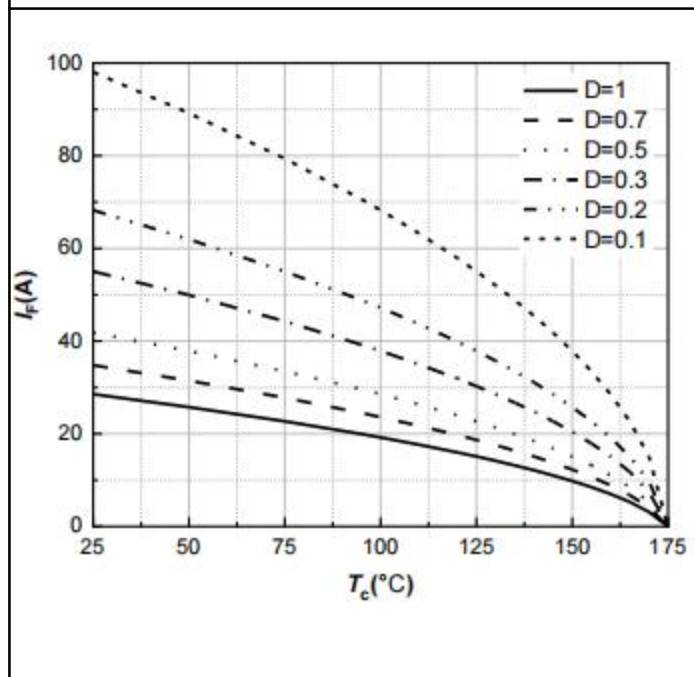


Figure 3. Diode forward current as function of temperature, D =duty cycle

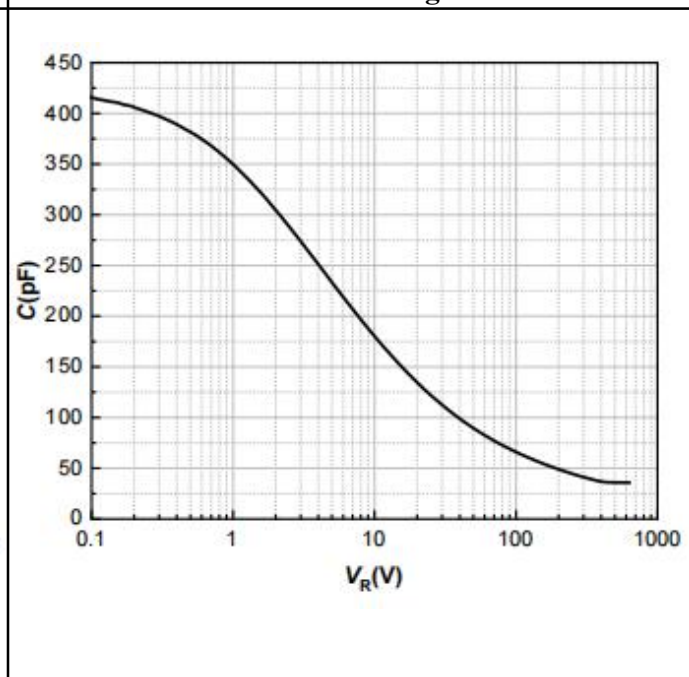


Figure 4. Typical capacitance as function of reverse voltage, $C=f(V_R)$; $T_j=25^\circ\text{C}$; $f=1\text{ MHz}$

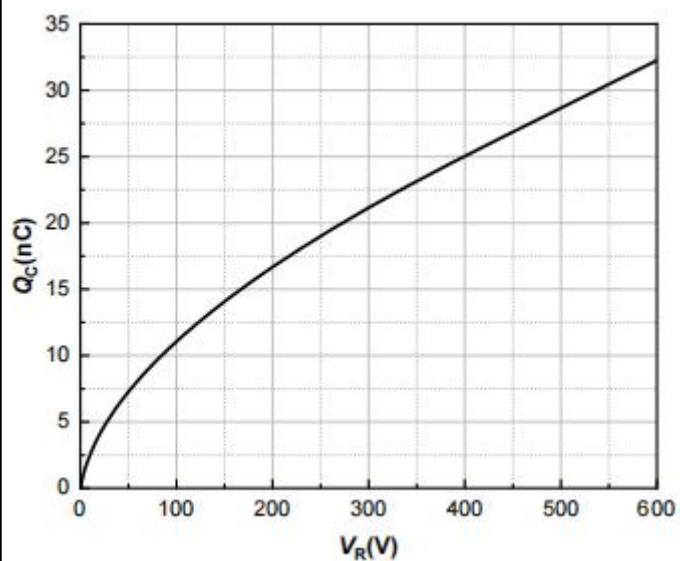


Figure 5. Typical reverse charge as function of reverse voltage

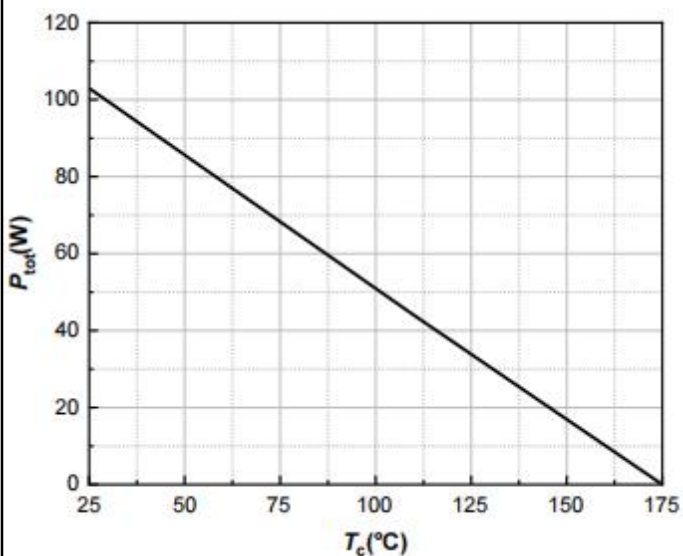


Figure 6. Power dissipation as function of case temperature

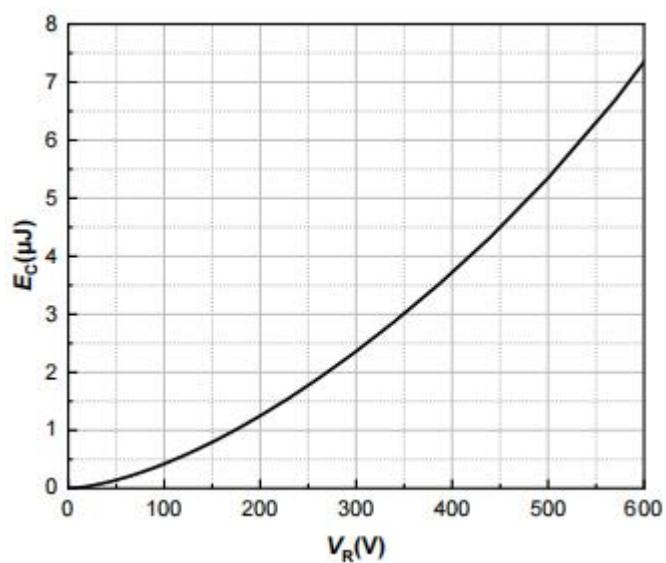


Figure 7. Capacitance stored energy

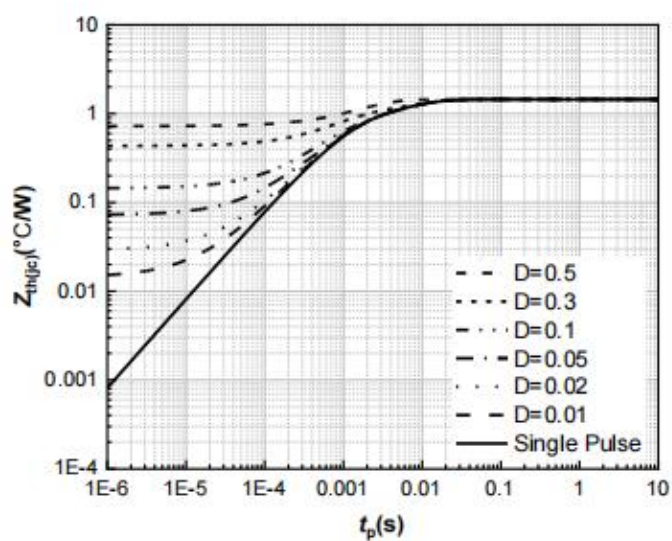
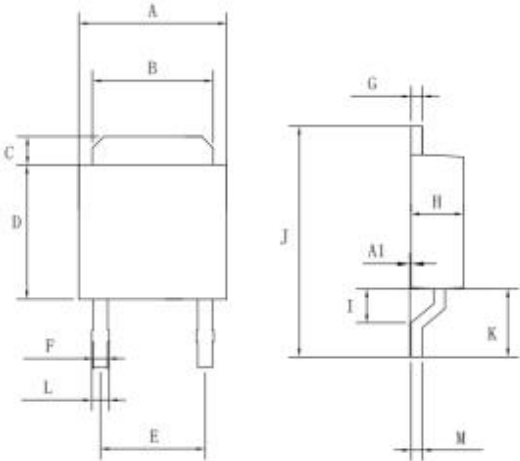


Figure 8. Max. transient thermal impedance, $Z_{th(jc)}=f(t_p)$, parameter: $D=t_p/T$

Package outlines

	DIM.	Unit(mm)		Unit(inch)	
		Min	Max	Min	Max
A		6.4	6.8	0.251	0.267
B		5.2	5.5	0.204	0.216
C		0.82	1.13	0.032	0.044
D		5.84	6.21	0.229	0.244
E		4.4	4.7	0.173	0.185
F		0.58	0.85	0.022	0.033
G		0.42	0.58	0.016	0.022
H		2.2	2.4	0.086	0.094
I		1.32	1.82	0.052	0.072
J		9.85	10.4	0.387	0.409
K		2.82	3.25	0.111	0.127
L		0.58	0.9	0.022	0.035
M		0.42	0.58	0.016	0.022
A1		0	0.127	0	0.005