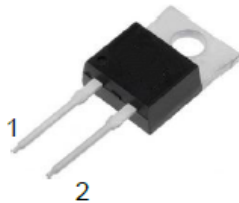


1. Descriptions

TO-220-2



SiC Schottky Diode



Key Performance Parameters

Parameters	Value	Unit
V_{DC}	650	V
$I_F (T_C \leq 135^\circ C)$	14	A
Q_C	21	nC

Features

- Zero Reverse Recovery Current
- Zero Forward Recovery Voltage
- Positive Temperature Coefficient on V_F
- Temperature Independent Switching Behavior
- $175^\circ C$ Operating junction temperature

Applications

- Switch Mode Power Supply
- Power Factor Correction
- Motor Drive, PV Inverter, Wind Power Station

Type/Ordering Code	Package	Marking	Related Links
CDH08G065D2	TO-220-2	CDH08G065D2	See Appendix A

Contents

1.	Descriptions	1
2.	Maximum Ratings.....	3
3.	Thermal Characteristics	3
4.	Electrical Characteristics	3
5.	Electrical Characteristics Diagrams	4
6.	Simplified Forward Characteristics Model	5
7.	Package Outlines	6
8.	Appendix.....	6

2. Maximum Ratings

Table 1. Maximum Ratings

Symbol	Parameter	Values			Unit	Test Condition
		Min.	Typ.	Max.		
V_{RRM}	Repetitive Peak Reverse Voltage	650	-	-	V	$T_C=25^{\circ}\text{C}$
I_F	Forward Current	-	-	31 14 8	A	$T_C \leq 25^{\circ}\text{C}$ $T_C \leq 135^{\circ}\text{C}$ $T_C \leq 156^{\circ}\text{C}$
I_{FSM}	Non-Repetitive Forward Surge Current	-	-	70	A	$T_C=25^{\circ}\text{C}$, $t_P=8.3\text{ms}$, Half Sine Wave
P_{tot}	Power Dissipation	-	-	107	W	$T_C=25^{\circ}\text{C}$
T_J, T_{stg}	Operating and Storage Temperature	-55	-	175	$^{\circ}\text{C}$	-
	TO-220-2 Mounting Torque			1	Nm	M3 Screw

3. Thermal Characteristics

Table 2. Thermal Characteristics

Symbol	Parameter	Values			Unit	Test Condition
		Min.	Typ.	Max.		
R_{thJC}	Thermal Resistance, Junction - Case	-	1.4	-	$^{\circ}\text{C/W}$	$T_C = 25^{\circ}\text{C}$
R_{thJA}	Thermal Resistance, Junction - Ambient	-	80	-	$^{\circ}\text{C/W}$	$T_C = 25^{\circ}\text{C}$
T_{sold}	Soldering Temperature, Wavesoldering Only Allowed at Leads	-	260	-	$^{\circ}\text{C}$	Soldering, 10 sec

4. Electrical Characteristics

At $T_J=25^{\circ}\text{C}$, unless otherwise specified

Table 3. Static Characteristics

Symbol	Parameter	Values			Unit	Test Condition
		Min.	Typ.	Max.		
V_F	Forward Voltage	-	1.27 1.38	1.5 1.6	V	$I_F=8\text{A}$, $T_J=25^{\circ}\text{C}$ $I_F=8\text{A}$, $T_J=175^{\circ}\text{C}$
I_R	Reverse Current	-	5 25	50 200	μA	$V_R=650\text{V}$, $T_J=25^{\circ}\text{C}$ $V_R=650\text{V}$, $T_J=175^{\circ}\text{C}$
C	Total Capacitance	-	530 54 39	-	pF	$V_R=0\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=200\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$ $V_R=400\text{V}$, $T_J=25^{\circ}\text{C}$, $f=1\text{MHz}$
Q_C	Total Capacitive Charge	-	21	-	nC	$V_R=400\text{V}$, $I_F=8\text{A}$ $di/dt=200\text{A}/\mu\text{s}$, $T_J=25^{\circ}\text{C}$

5. Electrical Characteristics Diagrams

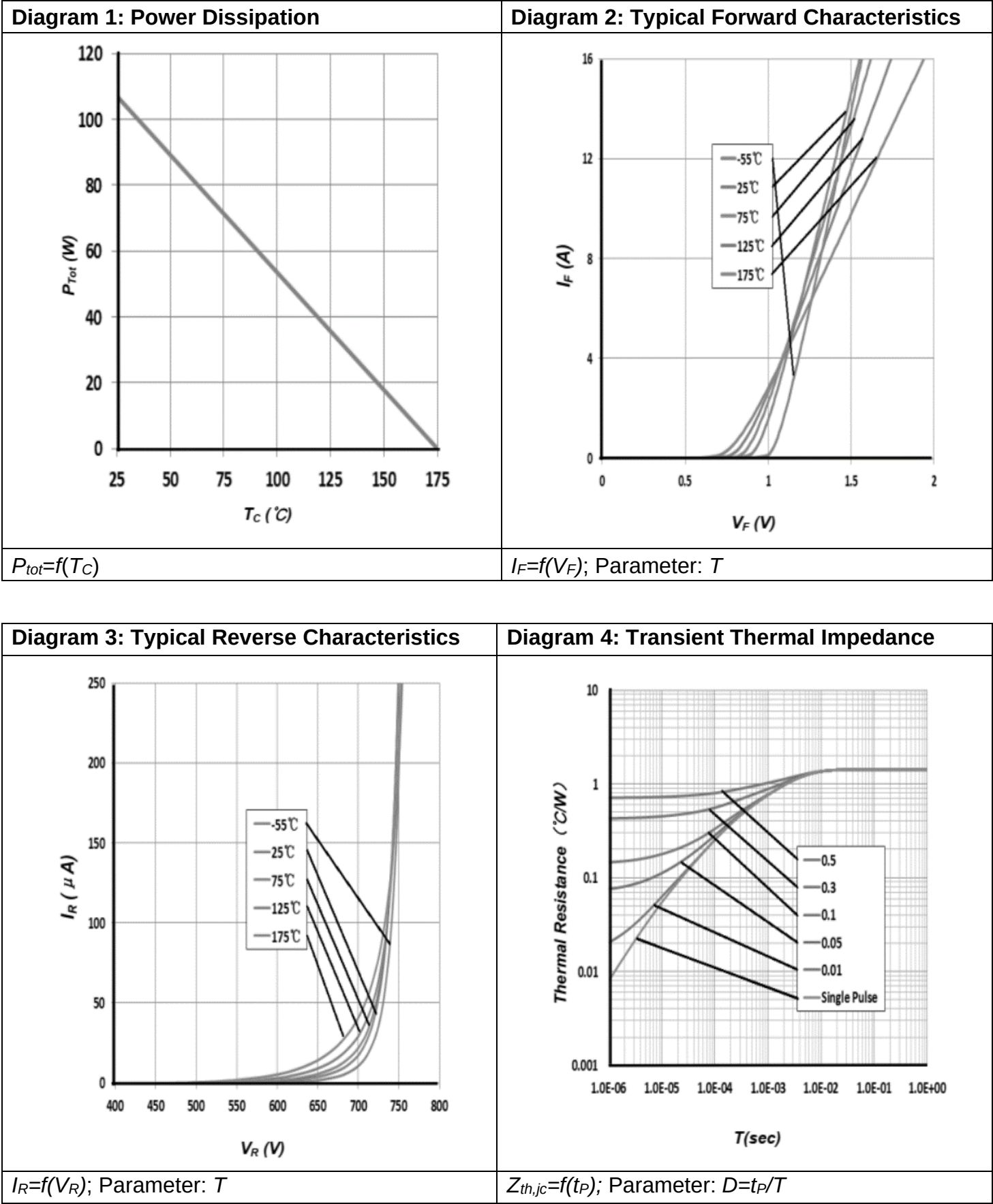
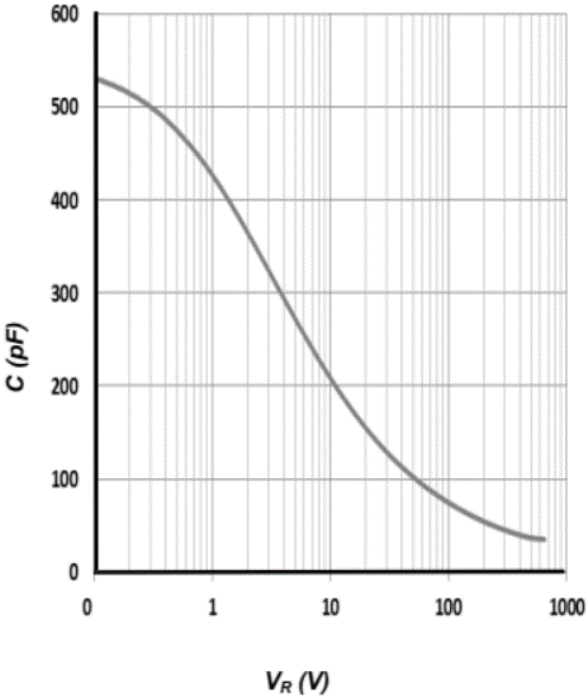
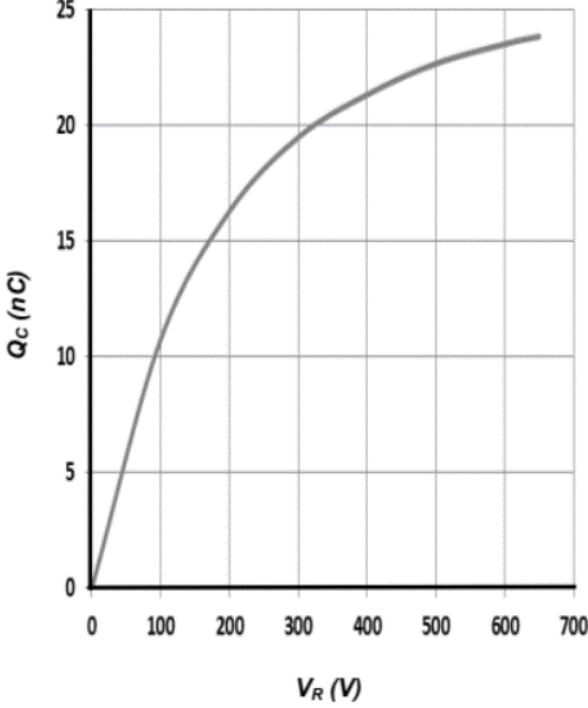
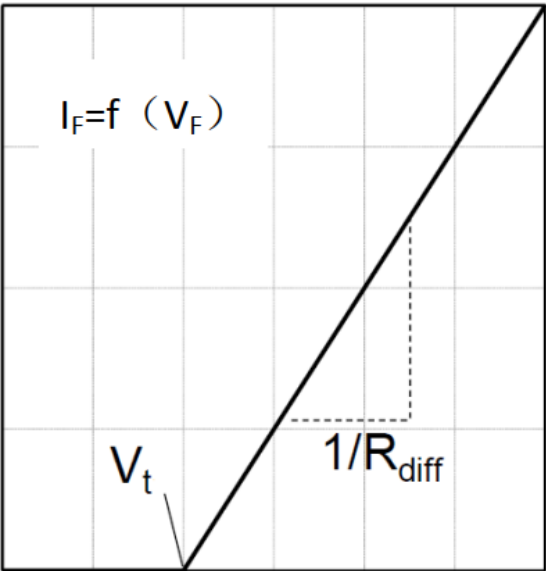


Diagram 5: Total Capacitance	Diagram 6: Total Capacitive Charge
	
$C=f(V_R); T_J=25^{\circ}\text{C}; f=1\text{ MHz}$	$Q_C=f(V_R);$

6. Simplified Forward Characteristics Model

Equivalent IV Curve for Model



Mathematical Equation

$$V_F=V_t + I_F\times R_{diff}$$

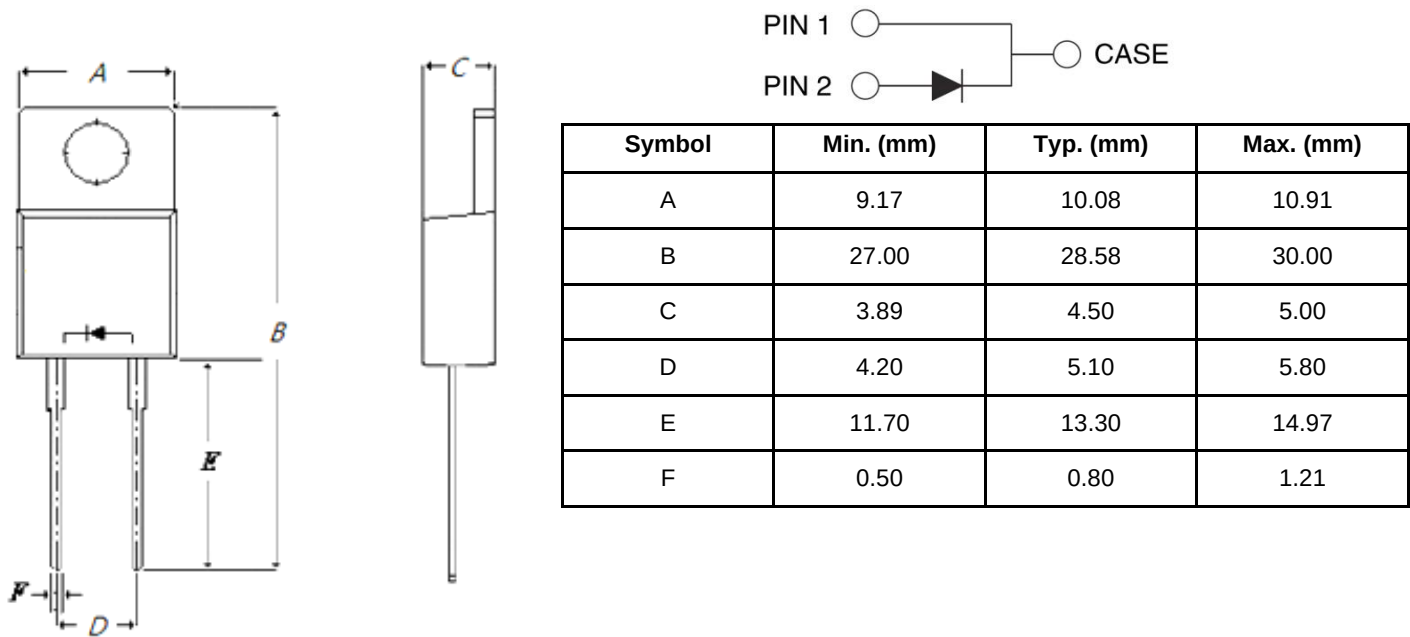
$$V_t = -0.001\times T_J + 0.99\text{ [V]}$$

$$R_{diff} = 8.7\times 10^{-7}\times T_J^2 + 5.4\times 10^{-5}\times T_J + 0.35\text{ [\Omega]}$$

Note:
T_J = Diode Junction Temperature In Degrees Celsius,
valid from 25°C to 175°C
I_F= Forward Current
Less than 16A

7. Package Outlines

Figure 1 Outline TO-220-2 Dimensions in mm



8. Appendix

CoolSemi CoolinSiC Webpage: www.coolsemi.com.