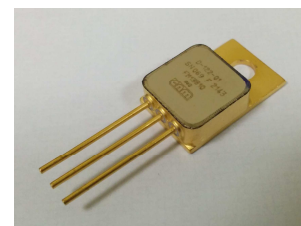


# SiC Schottky Diode

## Datasheet

### SiC5300280



### Features

The CNM & ALTER Silicon Carbide (SiC) Schottky diodes exhibit low forward voltage and superb very high temperature performance. These diodes are suitable for high-frequency and / or hard switching power space applications. The radiation tolerance, both for protons and gamma, of these diodes has been proved. The package is a TO257 hermetic metallic case (the diodes are electrically isolated from the case).

### Electrical Characteristics

The main characteristics are summarized in the following table:

Characteristics	Symbols	Maximum ratings	Unit	Remarks
Continuous Forward Current over full temperature range	$I_F$	5	A	Note 1
Reverse Voltage over full temperature range	$V_R$	300	V	Note 2
Forward Surge Current	$I_{FSM}$	25	A	Note 3
Repetitive Forward Surge Current	$I_{RFSM}$	15	A	Note 4
Operating Temperature Range (case temperature)	$T_{op}$	-170 to +320	°C	
Junction Temperature	$T_{j(max)}$	+330	°C	
Storage Temperature Range	$T_{stg}$	-170 to +320	°C	
Thermal Resistance, Junction to Case	$R_{th(j-c)}$	2	°C/W	Note 5
Reverse current @ 300 V and 280°C.	$I_R$	< 600	uA	Screening to better values is possible
Maximum forward voltage drop at nominal current and 280°C:	$V_F$	1.7	V	
Packaged diode weight	W	< 5	g	

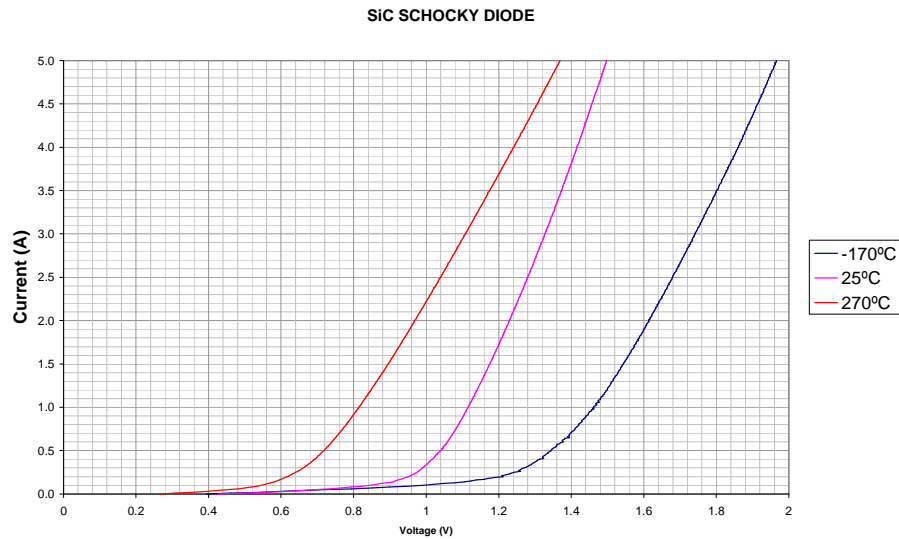
### NOTES:

1. Continuous constant current over full operating temperature range. Higher values are possible.
2. Continuous constant bias over full operating temperature range. These diodes have been tested till 600VR.
3. Single 10ms half sine pulse
4. Square pulses, 1kHz, 2% duty cycle
5. Over full operating temperature range and with case mounted on infinite heat sink. See details later in this document.



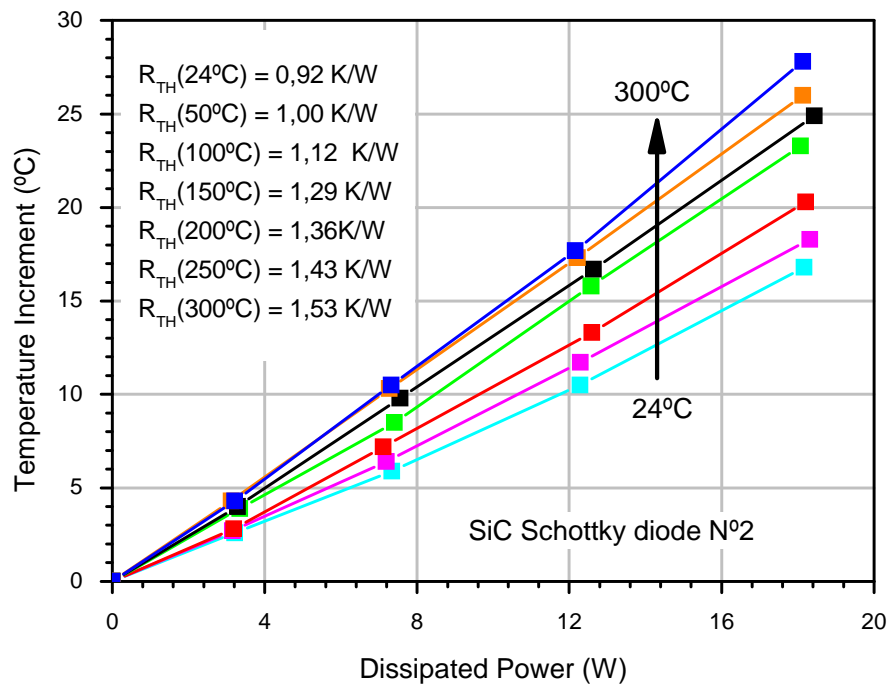
## Typical I-V Characteristics

The following picture shows the typical I-V characteristics over the entire temperature range



## Thermal Impedance

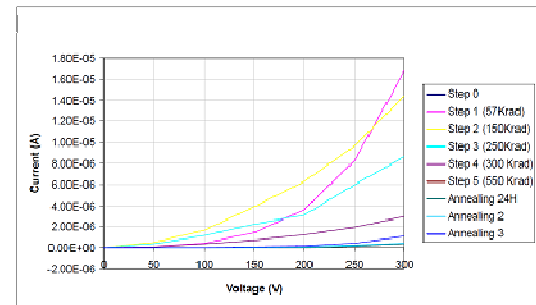
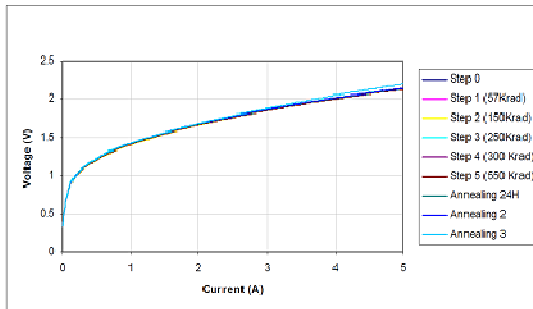
The following picture shows the typical thermal impedance results



## Radiation tolerance

### GAMMA RADIATION

Parts have been successfully tested up to 250Krad



### PROTON RADIATION

The following proton radiation test has been passed by the diodes:

- 100 MeV protons with a fluence up to  $1.6 \times 10^{11}$  with  $V_R=200V$
- 60 MeV protons with a fluence up to  $1.6 \times 10^{11}$  with  $V_R=200V$
- 15 MeV protons with a fluence up to  $1.6 \times 10^{11}$  with  $V_R=200V$

## Reliability Tests

TEST	CONDITIONS	REMARKS
Temperature Step Stress	Up to 370°C for 96 hours	No failures
Endurance	2000 hours, 5A, 285°C	No failures
	1000 hours, 2.5A, 265°C	No failures
	500 hours HTRB, 300VR, 265°C	
	500 hours, 2.5A, 265°C	
	1000 hours, 5A, 300°C	No failures
	500 hours, 5A, 320°C	No failures
Thermal cycling	More than 4000 cycles (-170°C to 270°C)	No failures
Power Step Stress	11A continuous current at 230°C	No failures

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