

# SiC10A065ND

## SILICON CARBIDE SCHOTTKY DIODE

**Voltage**

**650 V**

**Current**

**10 A**

### Features

- Temperature Independent Switching Behavior
- Low Conduction and Switching Loss
- High Surge Current Capability
- Positive Temperature Coefficient on  $V_F$
- Fast Reverse Recovery

### Mechanical Data

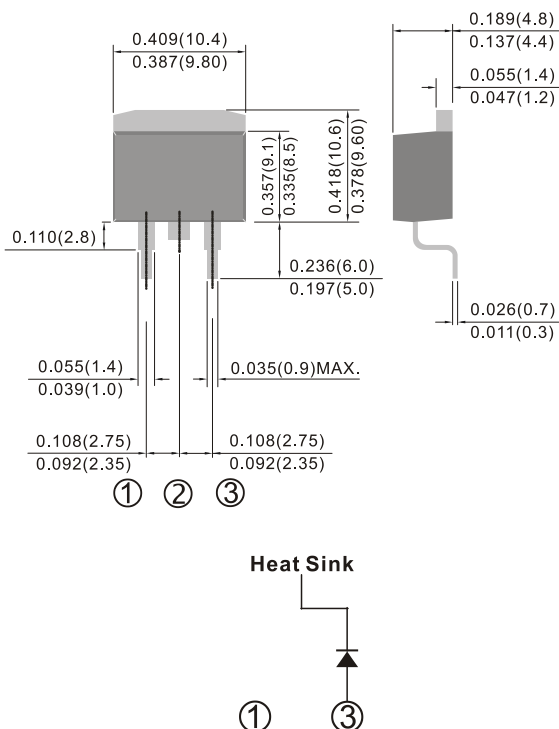
- Case: Molded plastic, TO-263
- Marking: 10A065ND

### Benefits

- High Frequency Operation
- Higher System Efficiency
- Environmental Protection
- Parallel Device Convenience
- Hard Switching & High Reliability
- High Temperature Application

TO-263

Unit: inch(mm)



## Maximum Ratings

| PARAMETER                                                                         | SYMBOL      | TEST CONDITIONS    | VALUE | UNITS |
|-----------------------------------------------------------------------------------|-------------|--------------------|-------|-------|
| Maximum Repetitive Peak Reverse Voltage                                           | $V_{RRM}$   | $T_J=25^{\circ}C$  | 650   | V     |
| Maximum RMS Voltage                                                               | $V_{RSM}$   | $T_J=25^{\circ}C$  | 650   | V     |
| Maximum DC Blocking Voltage                                                       | $V_R$       | $T_J=25^{\circ}C$  | 650   | V     |
| Continuous Forward Current                                                        | $I_{F(AV)}$ | $T_C=25^{\circ}C$  | 25    | A     |
|                                                                                   |             | $T_C=125^{\circ}C$ | 14    | A     |
|                                                                                   |             | $T_C=150^{\circ}C$ | 10    | A     |
| Repetitive Peak Forward Surge Current<br>( $T_P=10mS$ , Half Sine Wave, $D=0.1$ ) | $I_{FRM}$   | $T_C=25^{\circ}C$  | 59    | A     |
|                                                                                   |             | $T_C=125^{\circ}C$ | 50    | A     |



## SiC10A065ND

### Maximum Ratings

| PARAMETER                                                                          | SYMBOL          | TEST CONDITIONS         | VALUE      | UNITS              |
|------------------------------------------------------------------------------------|-----------------|-------------------------|------------|--------------------|
| Non-Repetitive Peak Forward Surge Current<br>( $T_P=10\text{mS}$ , Half Sine Wave) | $I_{FSM}$       | $T_C=25^\circ\text{C}$  | 69         | A                  |
|                                                                                    |                 | $T_C=125^\circ\text{C}$ | 63         | A                  |
| Non-Repetitive Peak Forward Surge Current<br>( $T_P=10\mu\text{S}$ , Pulse)        |                 | $T_C=25^\circ\text{C}$  | 400        | A                  |
| Power Dissipation                                                                  | $P_D$           | $T_C=25^\circ\text{C}$  | 93         | W                  |
|                                                                                    |                 | $T_C=125^\circ\text{C}$ | 31         | W                  |
| Operating Junction Temperature                                                     | $T_J$           |                         | 175        | $^\circ\text{C}$   |
| Storage Temperature                                                                | $T_{STG}$       |                         | -55 to 175 | $^\circ\text{C}$   |
| Thermal Resistance Junction to Case                                                | $R_{\theta JC}$ |                         | 1.6        | $^\circ\text{C/W}$ |

### Electrical Characteristics

| PARAMETER               | SYMBOL   | TEST CONDITION                                                                                     | MIN. | TYP. | MAX. | UNITS         |
|-------------------------|----------|----------------------------------------------------------------------------------------------------|------|------|------|---------------|
| DC Blocking Voltage     | $V_{DC}$ | $I_R=100\mu\text{A}$ , $T_J=25^\circ\text{C}$                                                      | 650  | 770  | -    | V             |
| Forward Voltage         | $V_F$    | $I_F=10\text{A}$ , $T_J=25^\circ\text{C}$                                                          | -    | 1.5  | 1.8  | V             |
|                         |          | $I_F=10\text{A}$ , $T_J=175^\circ\text{C}$                                                         | -    | 1.9  | 2.2  | V             |
| Reverse Current         | $I_R$    | $V_R=650\text{V}$ , $T_J=25^\circ\text{C}$                                                         | -    | 5    | 70   | $\mu\text{A}$ |
|                         |          | $V_R=650\text{V}$ , $T_J=175^\circ\text{C}$                                                        | -    | 20   | 190  | $\mu\text{A}$ |
| Total Capacitive Charge | $Q_C$    | $I_F=10\text{A}$ , $di/dt=300\text{A}/\mu\text{S}$ ,<br>$V_R=400\text{V}$ , $T_J=25^\circ\text{C}$ | -    | 18   | -    | nC            |
| Total Capacitance       | $C$      | $V_R=1\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$                                         | -    | 398  | -    | pF            |
|                         |          | $V_R=200\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$                                       | -    | 55   | -    | pF            |
|                         |          | $V_R=400\text{V}$ , $T_J=25^\circ\text{C}$ , $f=1\text{MHz}$                                       | -    | 54   | -    | pF            |

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## TYPICAL CHARACTERISTIC CURVES

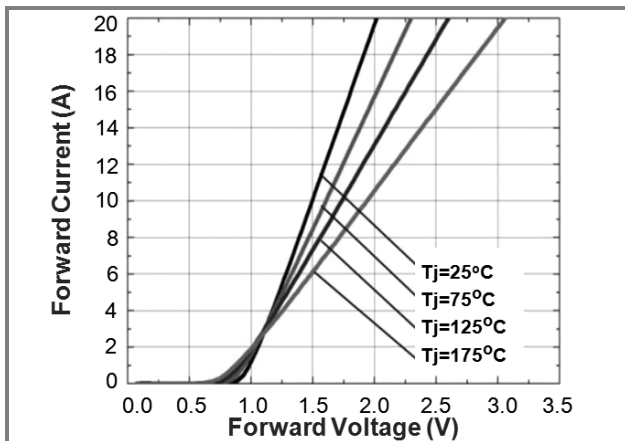


Fig.1 Forward Characteristics

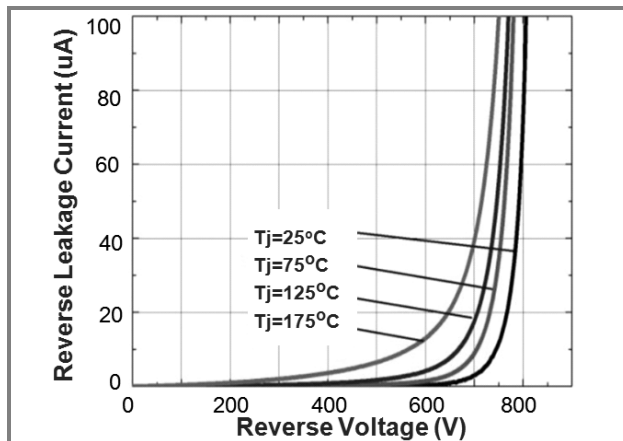


Fig.2 Reverse Characteristics

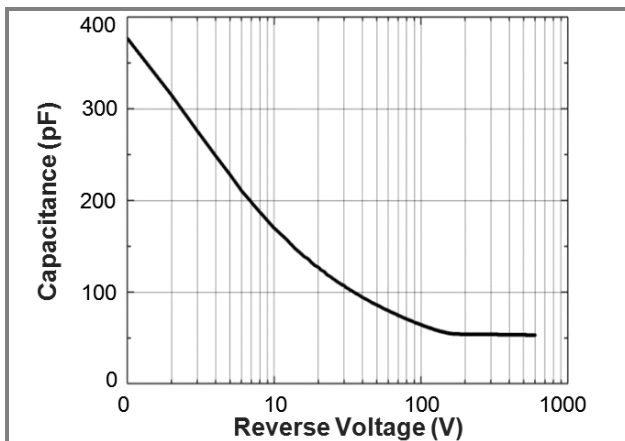


Fig.3 Capacitance vs. Reverse Voltage

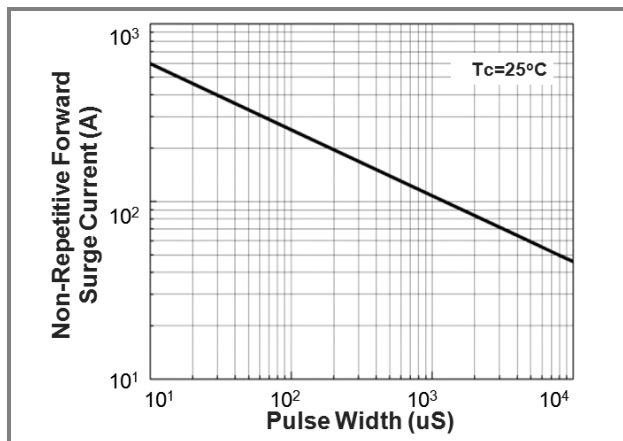


Fig.4 Non-Repetitive Peak Forward Surge Current (Pulse Mode)

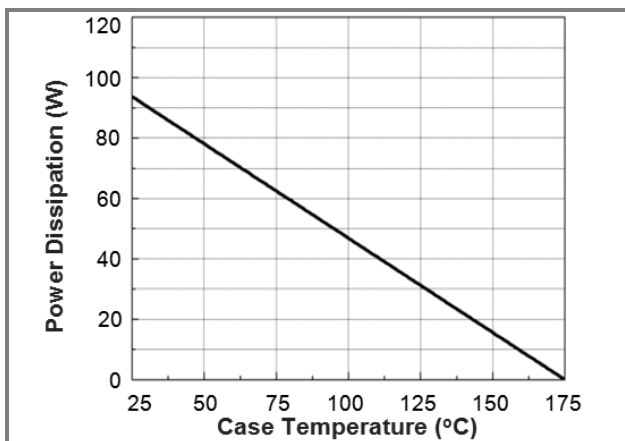


Fig.5 Power Derating

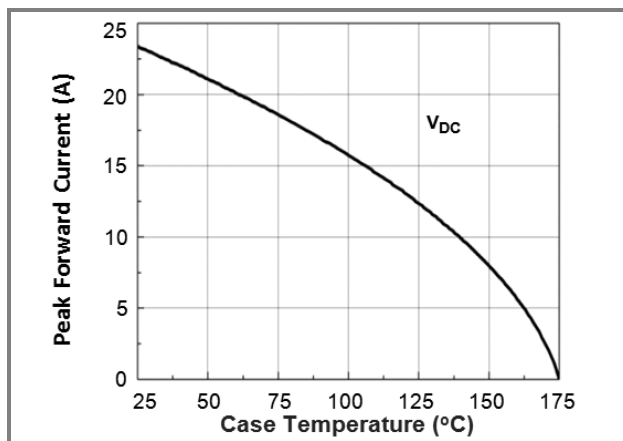


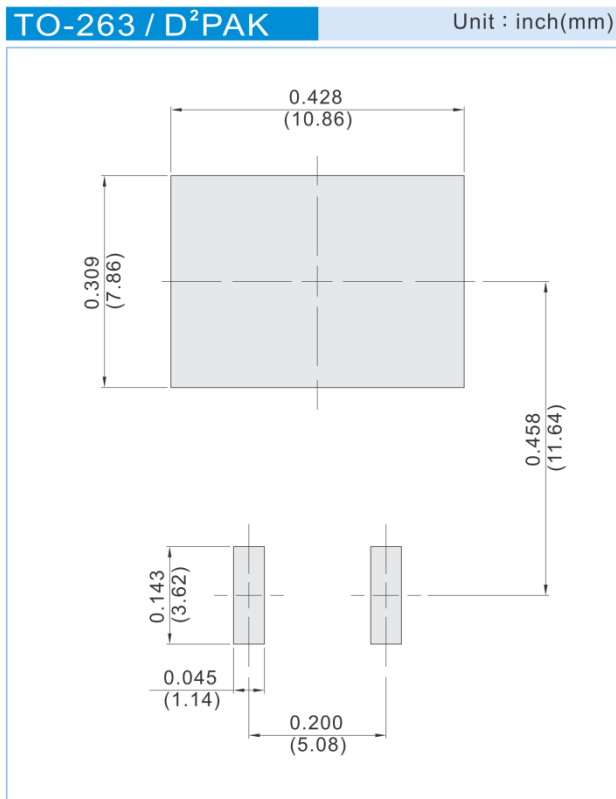
Fig.6 Current Derating

## SiC10A065ND

### Part No Packing Code Version

| Part No Packing Code | Package Type | Packing Type      | Marking  | Version      |
|----------------------|--------------|-------------------|----------|--------------|
| SiC10A065ND_R2_00001 | TO-263       | 800pcs / 13" reel | 10A065ND | Halogen free |

### Mounting Pad Layout





## SiC10A065ND

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