

650V/10A Silicon Carbide Schottky Barrier Diode

GENERAL DESCRIPTION

The NJDCD010A065A is an ultra-high performance silicon carbide schottky barrier diode (SiC-SBD). High-speed characteristics of SiC-SBD reduce the switching losses.

FEATURES

- Extremely Small size and Low profile
- Reverse voltage V_R : 650 V
- Forward current I_F : 10 A
- Switching time 10 ns typ. ($V_R = 400V, T_a = 25^\circ C$)

APPLICATIONS

- Switching Mode Power Supply
- Power Factor Correction
- Motor Drive
- Air Conditioner
- Solar Inverter

MECHANICAL PARAMETERS (Typical)

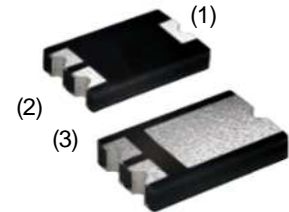
Case : Packed with copper substrate and epoxy underfilled

Terminals : Pure Sn Plated (Lead-Free)

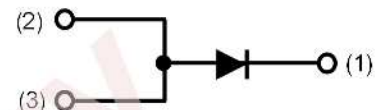
PACKING

5,000 pieces per 13"(330mm±2mm) reel

Outline



Inner circuit



(1) Cathode (BOTTOMSIDE HEATSINK)

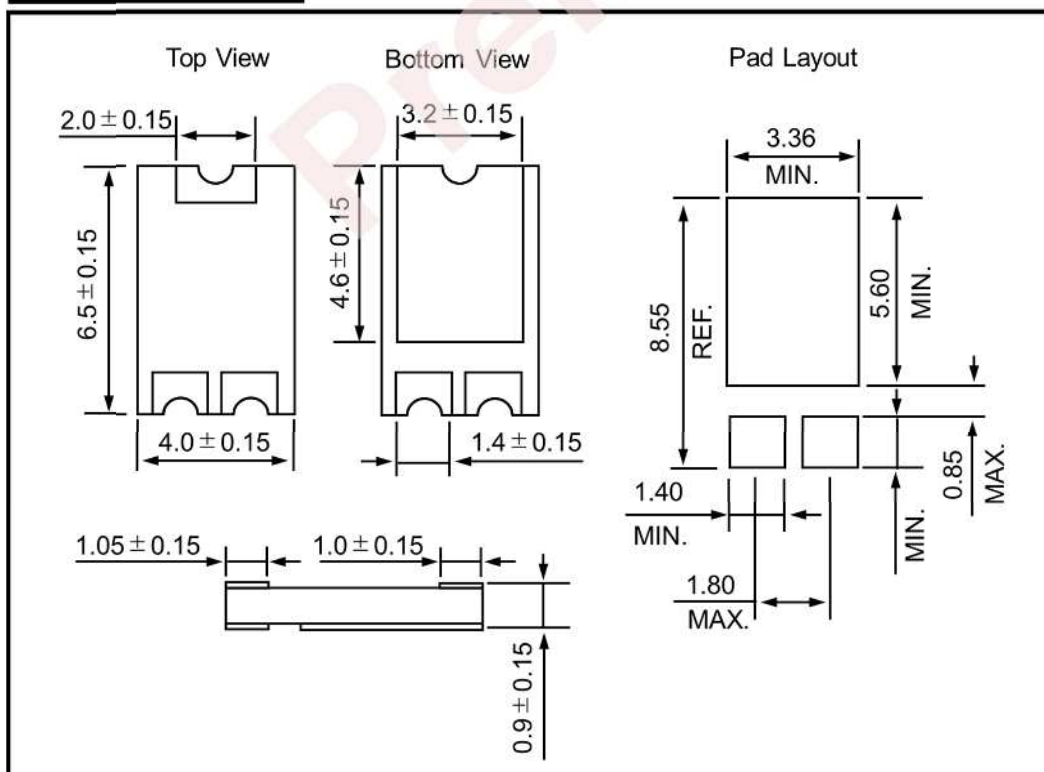
(2) Anode (LEFT PIN)

(3) Anode (RIGHT PIN)

OUTLINE DIMENSION

Case : A3PS

Unit : mm



NJDCD010A065AA3PS

ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATING | UNIT | CONDITION |
|-------------------------------------|-----------|------------|------------------|------------------------------|
| Reverse voltage (repetitive) | V_{RM} | 650 | V | |
| Reverse voltage (DC) | V_R | 650 | V | |
| Continuous forward current | I_F | 10 | A | $T_j \leq 175^\circ\text{C}$ |
| Surge no repetitive forward current | I_{FSM} | 60 (*2) | A | $T_c = 25^\circ\text{C}$ |
| Junction temperature | T_j | 175 | $^\circ\text{C}$ | |
| Storage temperature | T_{STG} | -55 to 175 | $^\circ\text{C}$ | |

*2. Non-repetitive forward surge current in one cycle of 50Hz half sin wave

Assumed thermal resistance $R_{th(j-c)}$ is less 1.8°C/W

ELECTRIC CHARACTERISTICS ($T_a=25^\circ\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITION | MIN. | TYP. | MAX. | UNIT |
|--------------------|--------------|---|------|------|------|---------------------------|
| Forward voltage | V_F | $I_F = 10\text{ A}, T_j = 25^\circ\text{C}$ | - | 1.5 | 1.7 | V |
| | | $I_F = 10\text{ A}, T_j = 175^\circ\text{C}$ | - | 1.9 | TBD | |
| Reverse current | I_R | $V_R = 650\text{ V}, T_j = 25^\circ\text{C}$ | - | 10 | 60 | μA |
| | | $V_R = 650\text{ V}, T_j = 175^\circ\text{C}$ | - | 100 | TBD | |
| Switching time | t_C | $I_F = 10\text{ A}, V_R = 400\text{ V}, di/dt = 320\text{ A}/\mu\text{s}$ | - | 10 | - | ns |
| Total capacitance | C_t | $V_R = 1\text{ V}, f = 1\text{ MHz}$ | - | 340 | - | pF |
| | | $V_R = 400\text{ V}, f = 1\text{ MHz}$ | - | 36 | - | |
| Thermal resistance | $R_{th(JC)}$ | Junction to case | | 2.2 | | $^\circ\text{C}/\text{W}$ |

NOTE

Be careful about inrush current at power-on.

Inrush current shall not exceed the absolute maximum rating of surge forward current.

The specifications are subject to change.

TYPICAL CHARACTERISTICS CURVES

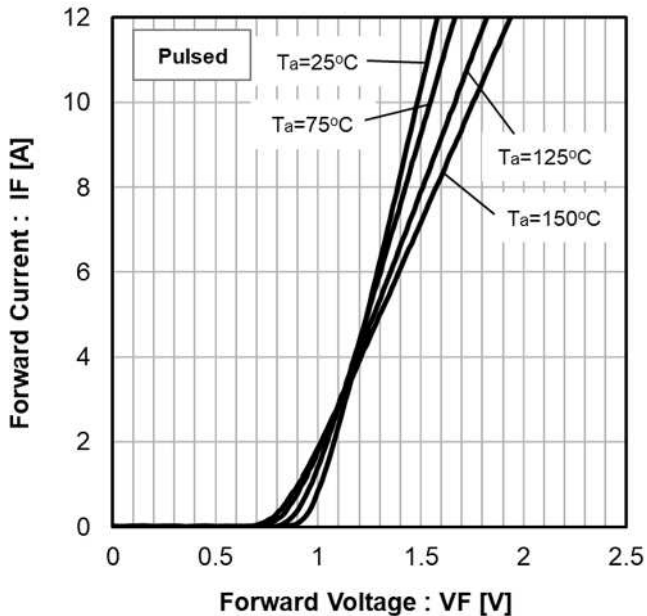


Fig.1 V_F - I_F Characteristics

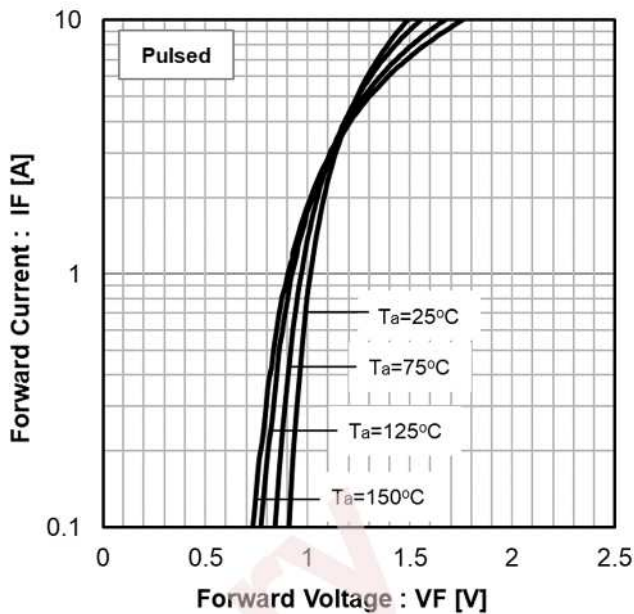


Fig.2 V_F - I_F Characteristics

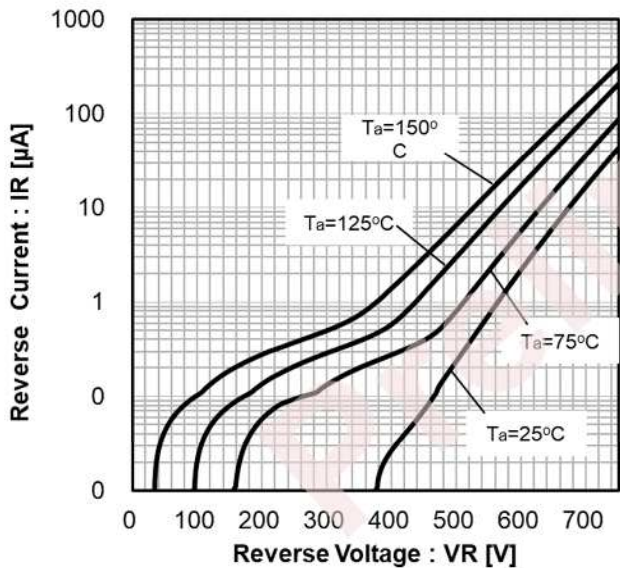


Fig.3 V_R - I_R Characteristics

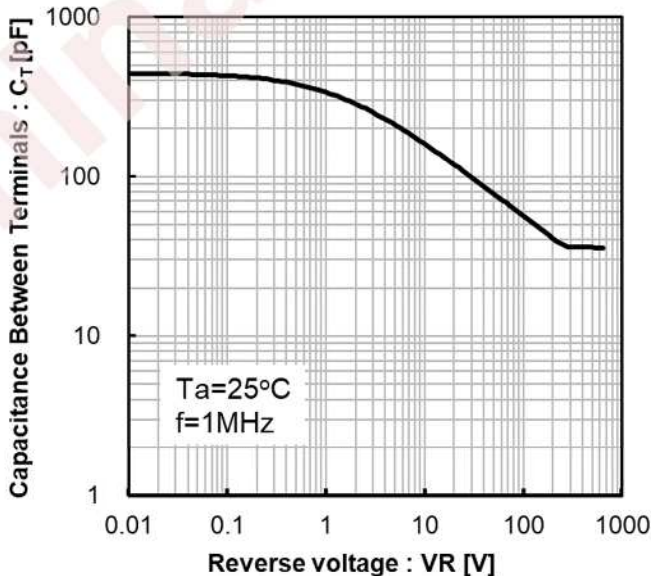


Fig.4 V_R - C_T Characteristics