SiC Schottky Barrier Diode

TRS12E65H

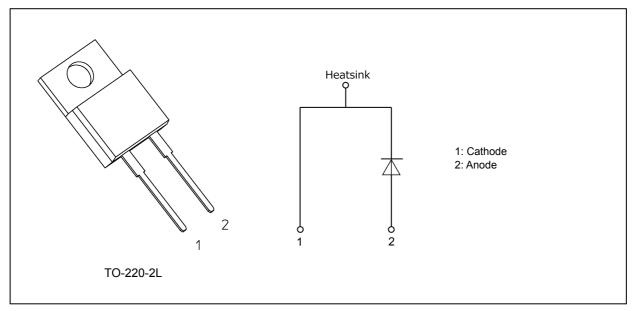
1. Applications

- Power Factor Correction
- Solar Inverters
- Uninterruptible Power Supplies
- DC-DC Converters

2. Features

- (1) Chip design of 3rd generation
- (2) Low forward voltage : $V_F = 1.2 V$ (typ.)
- (3) Low total capacitive charge: $Q_c = 33 \text{ nC}$ (typ.)
- (4) Low reverse current: $I_R = 2.4 \ \mu A (typ.)$

3. Packaging and Internal Circuit



4. Absolute Maximum Ratings (Note) (Unless otherwise specified, $T_a = 25$ °C)

| Characteristics | Symbol | Note | Rating | Unit |
|---|--------------------|----------|------------|------|
| Repetitive peak reverse voltage | V _{RRM} | | 650 | V |
| Forward DC current | I _{F(DC)} | (Note 1) | 12 | А |
| | | (Note 2) | 33 | |
| Non-repetitive peak forward surge current | I _{FSM} | (Note 3) | 74 | A |
| | | (Note 4) | 60 | |
| | | (Note 5) | 640 | |
| Power dissipation | PD | (Note 2) | 107 | W |
| Junction temperature | Tj | | 175 | °C |
| Storage temperature | T _{stg} | | -55 to 175 | |
| Mounting torque | TOR | | 0.6 | N·m |

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Note 1: T_c = 148 °C

Note 2: T_c = 25 °C

Note 3: f = 50 Hz (half-sine wave, t = 10 ms), T_c = 25 °C

Note 4: f = 50 Hz (half-sine wave, t = 10 ms), T_c = 150 °C

Note 5: Square wave, t = 10 μ s, T_c = 25 °C

5. Thermal Characteristics

| Characteristics | Symbol | Note | Max | Unit |
|--|----------------------|----------|------|------|
| Thermal resistance (junction-to-case) | R _{th(j-c)} | (Note 1) | 1.40 | °C/W |
| Thermal resistance (junction-to-ambient) | R _{th(j-a)} | (Note 2) | 50 | |

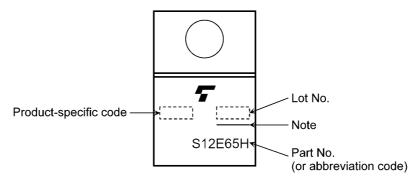
Note 1: T_c = 25°C

Note 2: $T_a = 25^{\circ}C$

6. Electrical Characteristics (Unless otherwise specified, T_a = 25 °C)

| Characteristics | Symbol | Test Condition | Min | Тур. | Max | Unit |
|-------------------------------------|----------------|--|-----|------|------|------|
| Forward voltage (pulse measurement) | V _F | I _F = 6 A | _ | 1.0 | _ | V |
| | | I _F = 12 A | _ | 1.2 | 1.35 | |
| | | I _F = 12 A, T _a = 150°C | | 1.36 | — | |
| Reverse current (pulse measurement) | I _R | V _R = 650 V | _ | 2.4 | 120 | μA |
| | | V _R = 650 V, T _a = 150°C | _ | 21 | — | |
| Total capacitance | Ct | V _R = 1 V, f = 1 MHz | _ | 778 | — | pF |
| | | V _R = 400 V, f = 1 MHz | _ | 46 | — | |
| | | V _R = 650 V, f = 1 MHz | _ | 43 | — | |
| Total capacitive charge | Q _c | V _R = 400 V, f = 1 MHz | _ | 33 | _ | nC |

7. Marking (Note)





Note: A line under a Lot No. identifies the indication of product Labels. [[G]]/RoHS COMPATIBLE or [[G]]/RoHS [[Pb]]

Please contact your TOSHIBA sales representative for details as to environmental matters such as the RoHS compatibility of Product.

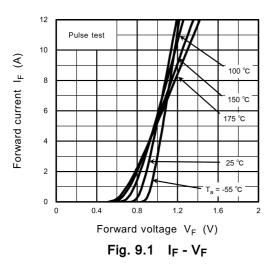
The RoHS is the Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

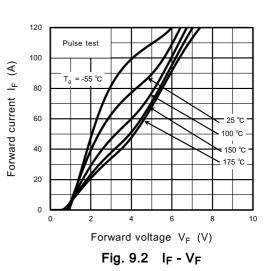
| Abbreviation Code | Part Number |
|-------------------|-------------|
| S12E65H | TRS12E65H |

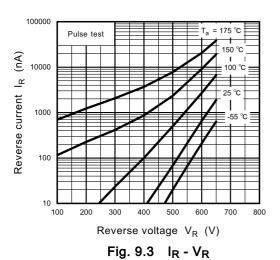
8. Usage Considerations

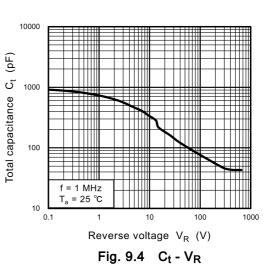
For other design considerations, see the Toshiba website.

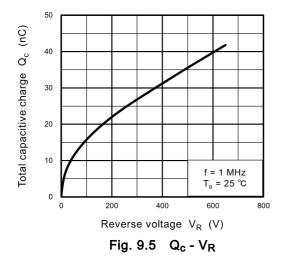
9. Characteristics Curves (Note)

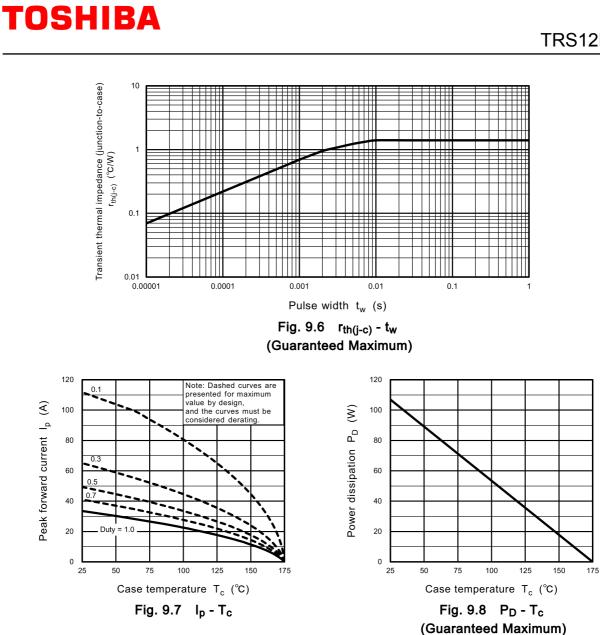










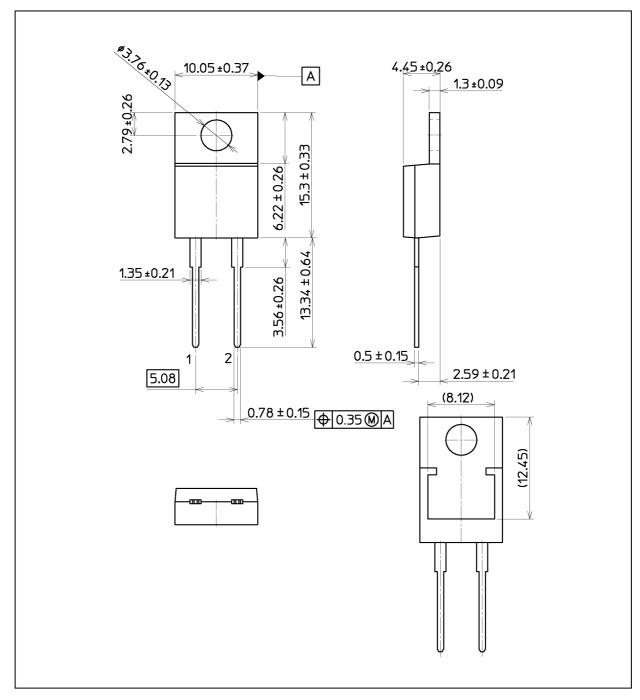


Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

TRS12E65H

Package Dimensions

Unit: mm



Weight: 1.9 g (typ.)

| Package Name(s) |
|---------------------|
| TOSHIBA: 2-10AE1A |
| Nickname: TO-220-2L |

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