

$V_{RM} = 150\text{ V}$, $I_{F(AV)} = 10\text{ A}$
Schottky Diode
SPET-21015

Description

The SPET-21015 is a 150 V, 10 A Schottky diode with a trench structure, allowing improvements in V_F and I_R characteristics. These characteristic features contribute to improving power supply efficiency and to enabling high-frequency systems.

Features

- V_{RM} ----- 150 V
- $I_{F(AV)}$ ----- 10 A
- V_F ($I_F = 5\text{ A}$) ----- 0.90 V typ.
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0

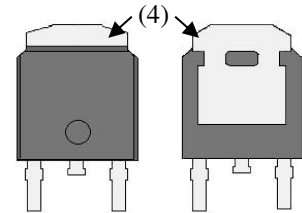
Applications

High speed switching applications as follows:

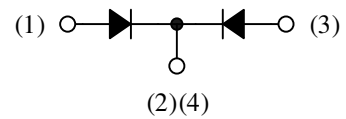
- DC-DC Converter
- Adapter

Package

TO252-2L



(1) (2) (3)



- (1) Anode
- (2) Cathode
- (3) Anode
- (4) Cathode

Not to scale

Absolute Maximum Ratings

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Rating | Unit |
|---|-------------|--|------------|----------------------|
| Nonrepetitive Peak Reverse Voltage ⁽¹⁾ | V_{RSM} | | 150 | V |
| Repetitive Peak Reverse Voltage ⁽¹⁾ | V_{RM} | | 150 | V |
| Average Forward Current | $I_{F(AV)}$ | See Figure 3 and Figure 4 | 10 | A |
| Surge Forward Current ⁽¹⁾ | I_{FSM} | Half cycle sine wave, positive side, 10 ms, 1 shot | 80 | A |
| I^2t Limiting Value ⁽¹⁾ | I^2t | $1\text{ ms} \leq t \leq 10\text{ ms}$ | 32 | A^2s |
| Junction Temperature | T_J | | -40 to 150 | $^\circ\text{C}$ |
| Storage Temperature | T_{STG} | | -40 to 150 | $^\circ\text{C}$ |

Electrical Characteristics

Unless otherwise specified, $T_A = 25\text{ }^\circ\text{C}$.

| Parameter | Symbol | Conditions | Min. | Typ. | Max. | Unit |
|---|---------------|---|------|------|------|--------------------|
| Forward Voltage Drop ⁽¹⁾ | V_F | $I_F = 5\text{ A}$ | — | 0.90 | 0.98 | V |
| Reverse Leakage Current ⁽¹⁾ | I_R | $V_R = V_{RM}$ | — | — | 50 | μA |
| Reverse Leakage Current under High Temperature ⁽¹⁾ | $H \cdot I_R$ | $V_R = V_{RM}, T_J = 150\text{ }^\circ\text{C}$ | — | — | 25 | mA |
| Thermal Resistance ⁽²⁾ | $R_{th(J-C)}$ | ⁽³⁾ | — | — | 4.0 | $^\circ\text{C/W}$ |

Mechanical Characteristics

| Parameter | Conditions | Min. | Typ. | Max. | Unit |
|----------------|------------|------|------|------|------|
| Package Weight | | — | 0.32 | — | g |

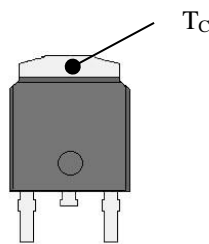


Figure 1. Case Temperature Measurement Point

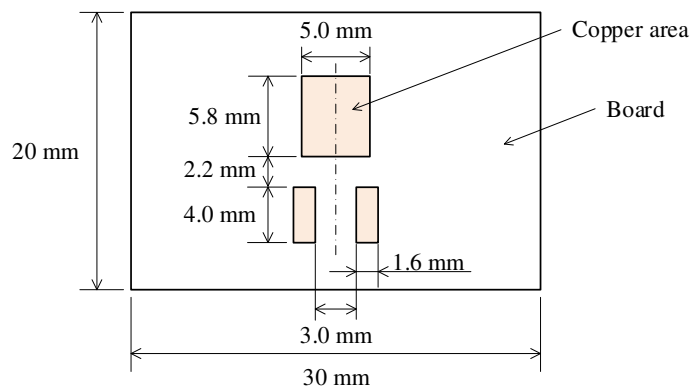


Figure 2. Glass-epoxy Board

⁽¹⁾ Specifies a value per chip; the SPET-21015 consists of two chips.

⁽²⁾ $R_{th(J-C)}$ is thermal resistance between junction and the case. Case Temperature, T_C , is measured at the point defined in Figure 1.

⁽³⁾ The device is mounted on the glass-epoxy board (PCB: 42 mm x 32 mm in size, 1 mm in thickness, copper area: see Figure 2).

Derating Curves

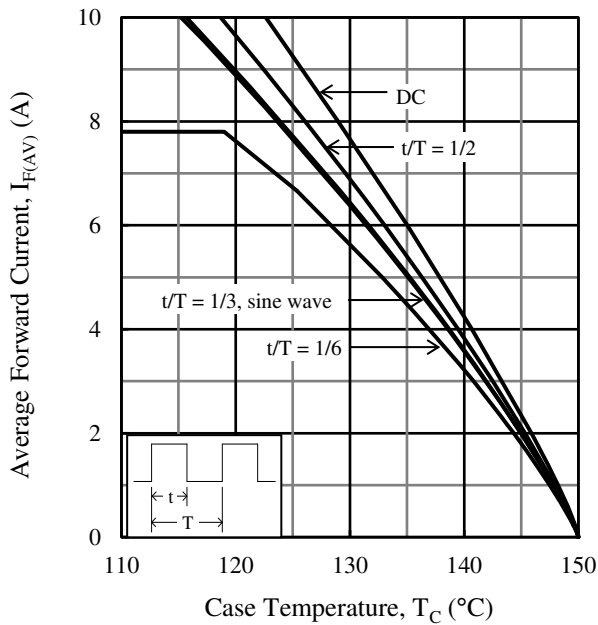


Figure 3. $I_{F(AV)}$ vs. T_C ($T_J = 150\text{ }^\circ\text{C}$, $V_R = 0\text{ V}$)

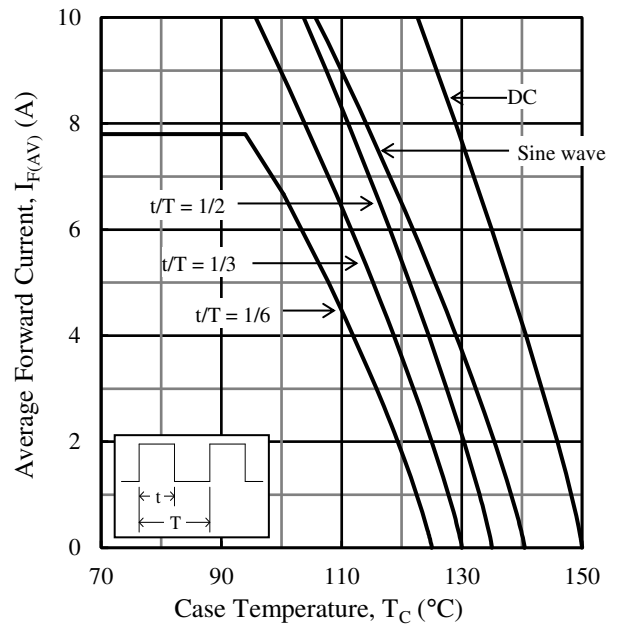


Figure 4. $I_{F(AV)}$ vs. T_C ($T_J = 150\text{ }^\circ\text{C}$, $V_R = 150\text{ V}$)

Characteristic Curves

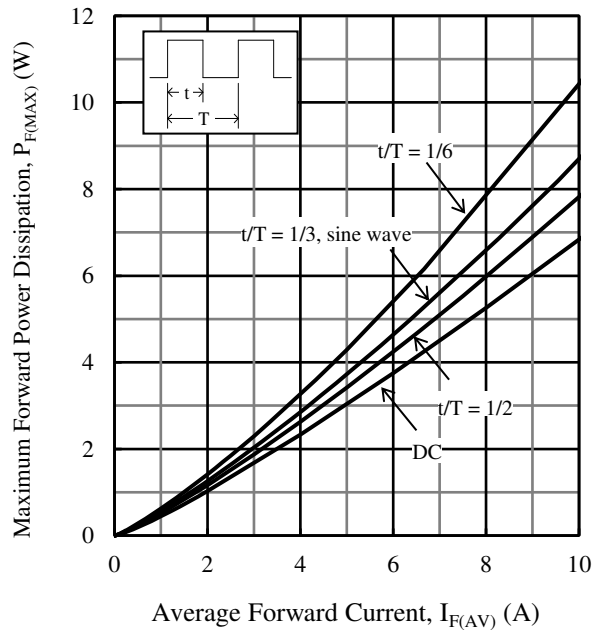


Figure 5. $P_{F(MAX)}$ vs. $I_{F(AV)}$ ($T_J = 150\text{ }^\circ\text{C}$)

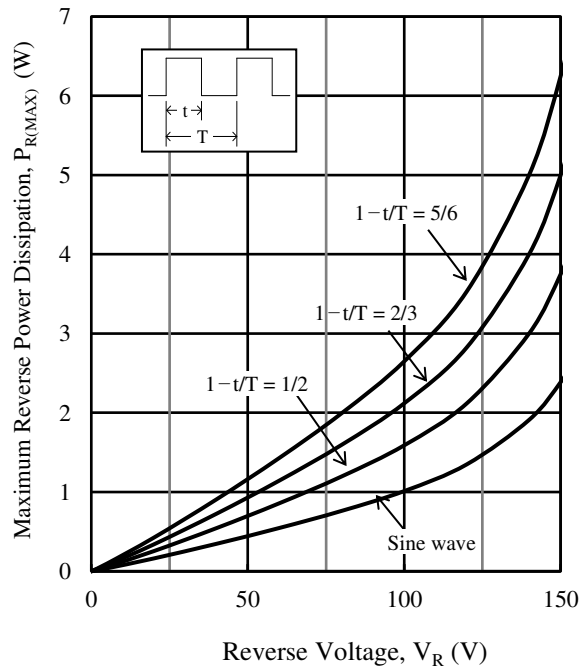


Figure 6. $P_{R(MAX)}$ vs. V_R ($T_J = 150\text{ }^\circ\text{C}$)

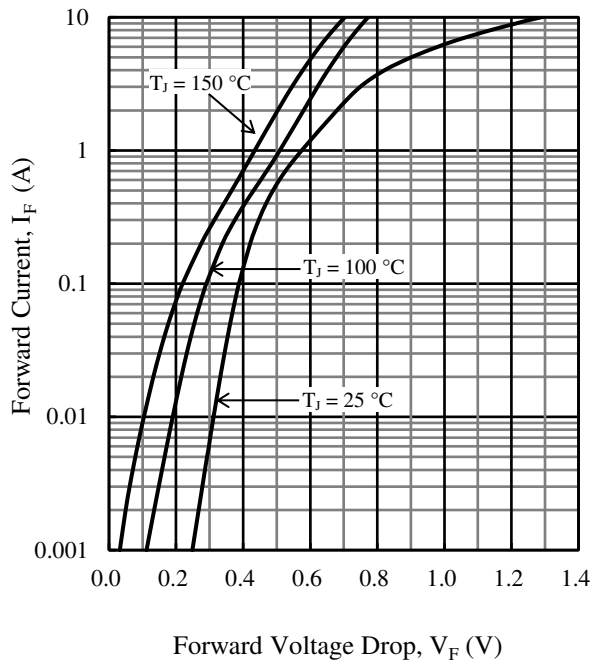


Figure 7. Typical Characteristics: I_F vs. V_F

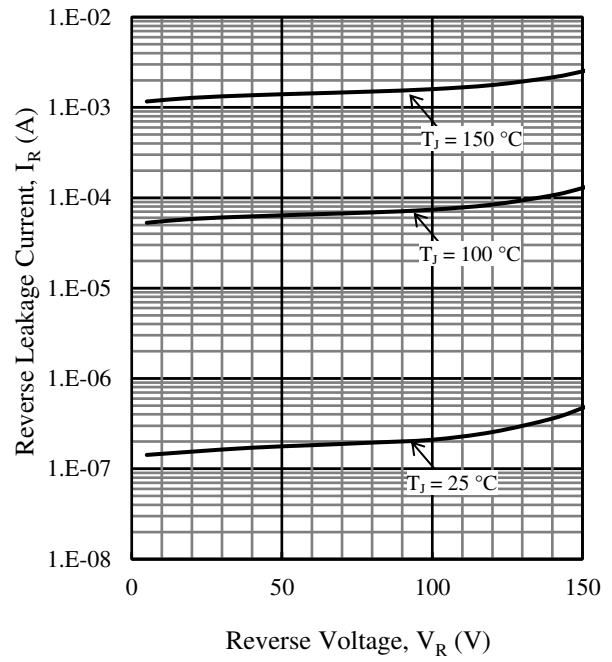


Figure 8. Typical Characteristics: I_R vs. V_R

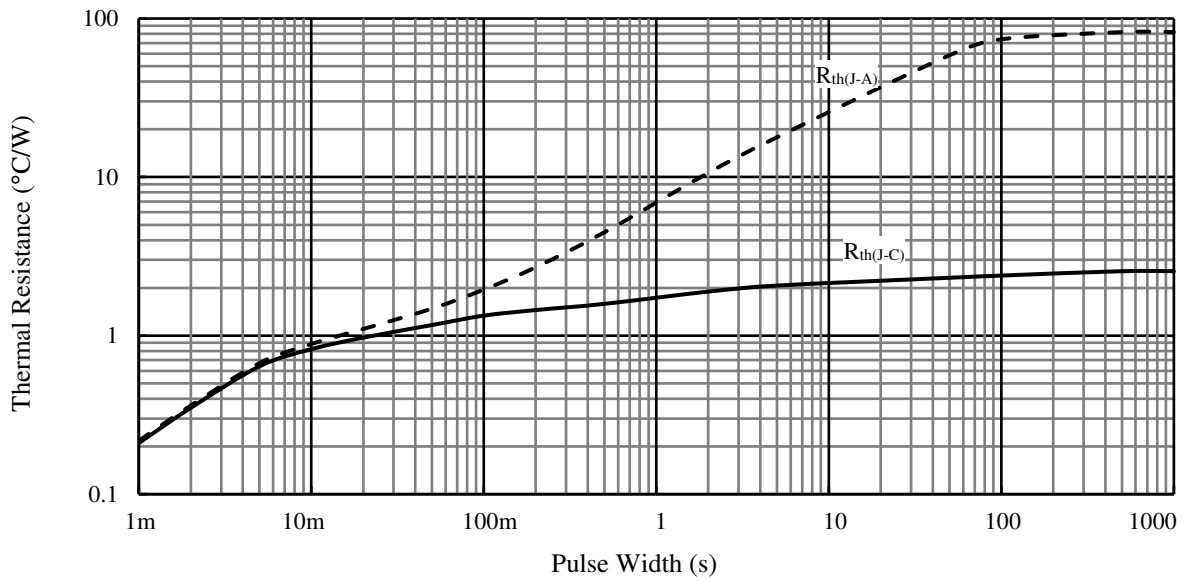
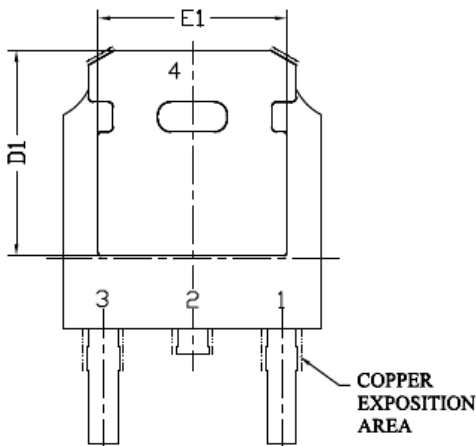
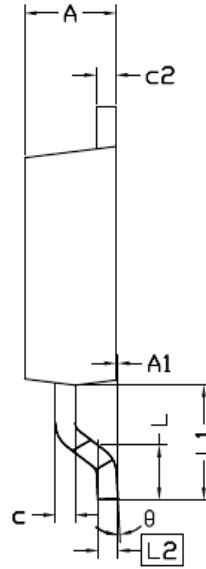
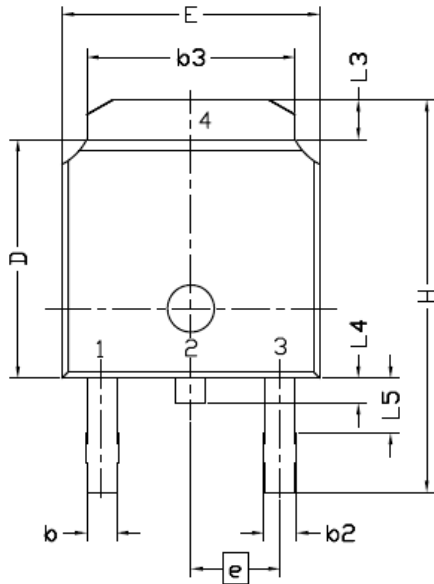


Figure 9. Typical Transient Thermal Resistance Characteristics

SPET-21015

Physical Dimensions

• TO252-2L Package



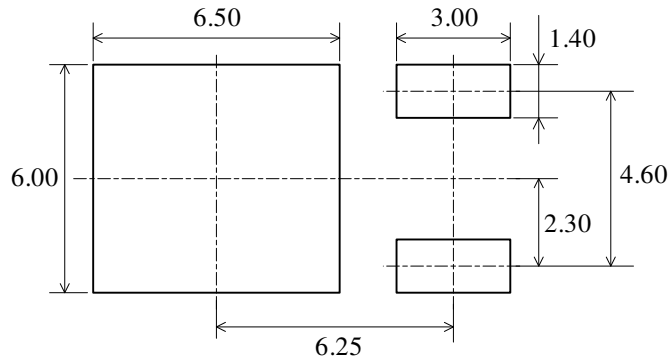
| Symbol | Dimensions | | |
|--------|-------------|-------|-------|
| | MIN | NOM | MAX |
| E | 6.40 | 6.60 | 6.731 |
| L | 1.40 | 1.52 | 1.77 |
| L1 | 2.743 (REF) | | |
| L2 | 0.508 (BSC) | | |
| L3 | 0.89 | — | 1.27 |
| L4 | 0.64 | — | 1.01 |
| L5 | — | — | — |
| D | 6.00 | 6.10 | 6.223 |
| H | 9.40 | 10.00 | 10.40 |
| b | 0.64 | 0.76 | 0.88 |
| b2 | 0.77 | 0.84 | 1.14 |
| b3 | 5.21 | 5.34 | 5.46 |
| e | 2.286 (BSC) | | |
| A | 2.20 | 2.30 | 2.38 |
| A1 | 0 | — | 0.127 |
| c | 0.46 | 0.50 | 0.60 |
| c2 | 0.46 | 0.50 | 0.58 |
| D1 | 5.21 | — | — |
| E1 | 4.40 | — | — |
| θ | 0° | — | 10° |

NOTES:

- Dimensions in millimeters
- All the dimensions exclude mold flashes.
- Bare lead frame: Pb-free (RoHS compliant)
- MSL 1 (Moisture Sensitivity Level 1)
- When soldering the products, it is required to minimize the working time within the following limits:
 Reflow:
 Preheat: 180 °C / 60 s to 120 s
 Solder heating: 250 °C / 10 s, 2 times (260 °C peak)
 Soldering Iron: 350 °C / 3.5 s, 1 time

SPET-21015

- T0252-2L Land Pattern Example



Unit: mm

Marking Diagram

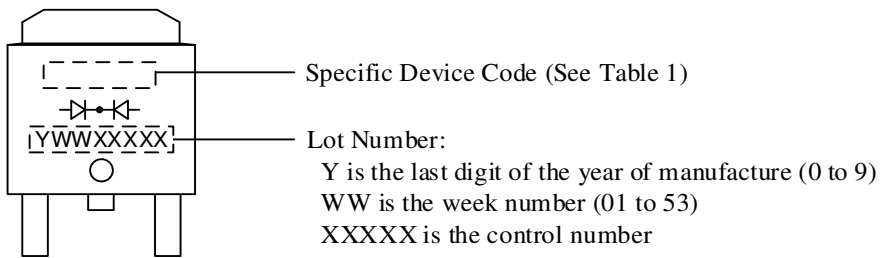


Table 1. Specific Device Code

| Specific Device Code | Part Number |
|----------------------|-------------|
| ET1015 | SPET-21015 |

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