

# **Data Sheet**

## **Description**

The SPET-21515 is a 150 V, 15 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 <sub>RM</sub> 150 V
•	$I_{F(AV)}$ 15 A
	$V_F (I_F = 6.5 \text{ A})$ 0.90 V typ
•	Bare Lead Frame: Pb-free (RoHS Compliant)

# Applications

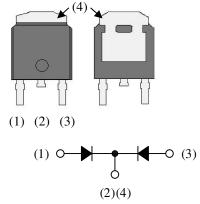
High speed switching applications as follows:

• Flammability: Equivalent to UL94V-0

- DC-DC Converter
- Adapter

## **Package**

TO252-2L



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

Not to scale

## **Absolute Maximum Ratings**

Unless otherwise specified,  $T_A = 25$  °C.

Parameter	Symbol	Conditions	Rating	Unit
Nonrepetitive Peak Reverse Voltage <sup>(1)</sup>	$V_{RSM}$		150	V
Repetitive Peak Reverse Voltage <sup>(1)</sup>	$V_{RM}$		150	V
Average Forward Current	$I_{F(AV)}$	See Figure 3 and Figure 4	15	A
Surge Forward Current <sup>(1)</sup>	I <sub>FSM</sub>	Half cycle sine wave, positive side, 10 ms, 1 shot	90	A
I <sup>2</sup> t Limiting Value <sup>(1)</sup>	$I^2t$	$1 \text{ ms} \le t \le 10 \text{ ms}$	40	$A^2s$
Junction Temperature	$T_{J}$		-40 to 150	°C
Storage Temperature	$T_{STG}$		-40 to 150	°C

### **Electrical Characteristics**

Unless otherwise specified,  $T_A = 25$  °C.

Parameter	Symbol	Conditions	Min.	Тур.	Max.	Unit
Forward Voltage Drop <sup>(1)</sup>	$V_{\mathrm{F}}$	$I_F = 6.5 \text{ A}$		0.90	0.98	V
Reverse Leakage Current <sup>(1)</sup>	$I_R$	$V_R = V_{RM}$	_	_	70	μΑ
Reverse Leakage Current under High Temperature <sup>(1)</sup>	$H \cdot I_R$	$V_R = V_{RM}, T_J = 150  ^{\circ}C$		_	35	mA
Thermal Resistance <sup>(2)</sup>	$R_{\text{th(J-C)}}$	(3)	_	_	3.5	°C/W

## **Mechanical Characteristics**

Parameter	Conditions	Min.	Тур.	Max.	Unit
Package Weight		_	0.32	_	g

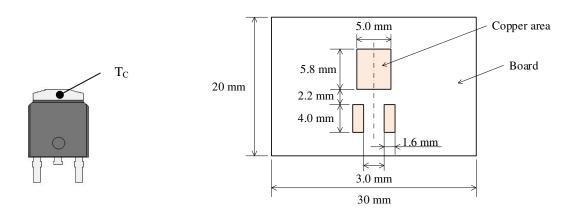


Figure 1. Case Temperature Measurement Point

Figure 2 Glass-epoxy Board

<sup>(1)</sup> Specifies a value per chip; the SPET-21515 consists of two chips.

 $<sup>^{(2)}</sup>$  R<sub>th (J-C)</sub> is thermal resistance between junction and the case. Case Temperature,  $T_C$ , is measured at the point defined in Figure 1.

 $<sup>^{(3)}</sup>$  The device is mounted on the glass-epoxy board (PCB: 42 mm  $\times$  32 mm in size, 1 mm in thickness, copper area: see Figure 2).

## **Derating Curves**

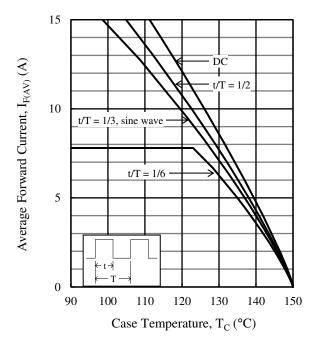


Figure 3.  $I_{F(AV)}$  vs.  $T_C$  ( $T_J = 150$  °C,  $V_R = 0$  V)

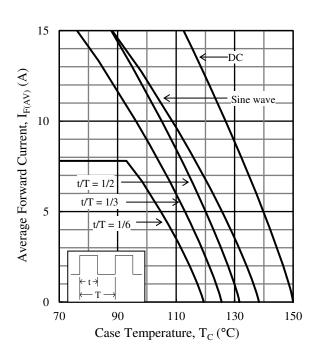


Figure 4.  $I_{F(AV)}$  vs.  $T_C$  ( $T_J = 150 \, ^{\circ}\text{C}$ ,  $V_R = 150 \, \text{V}$ )

## **Characteristic Curves**

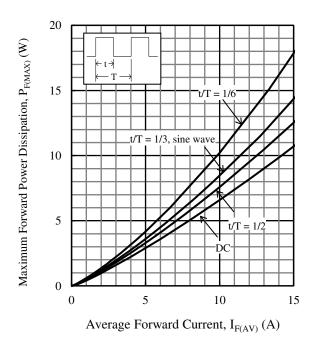


Figure 5.  $P_{F(MAX)}$  vs.  $I_{F(AV)}$  ( $T_J = 150$  °C)

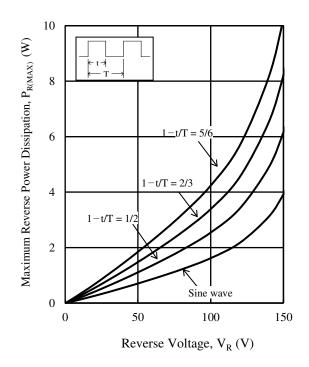
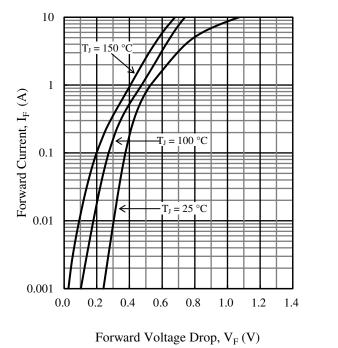


Figure 6.  $P_{R(MAX)}$  vs.  $V_R$  ( $T_J = 150$  °C)



1.E-02

1.E-03

1.E-04

1.E-05

1.E-05

1.E-06

1.E-07

1.E-08

0

50

1.E-08

0

1.E-08

Figure 7. Typical Characteristics: I<sub>F</sub> vs. V<sub>F</sub>

Figure 8. Typical Characteristics:  $I_R$  vs.  $V_R$ 

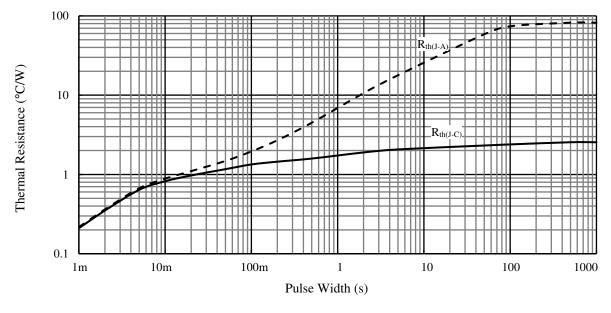
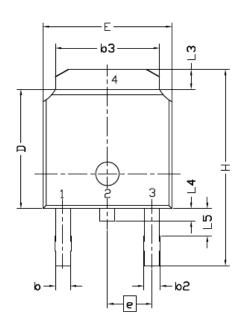
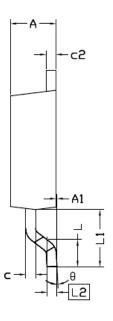


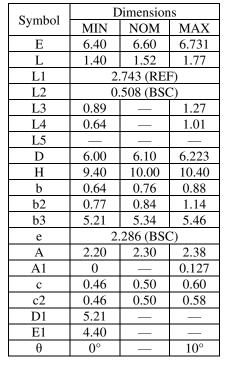
Figure 9. Typical Transient Thermal Resistance Characteristics

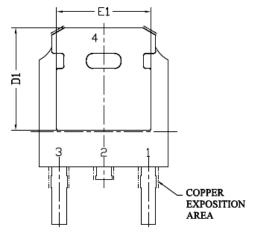
## **Physical Dimensions**

### • TO252-2L Package









### **NOTES:**

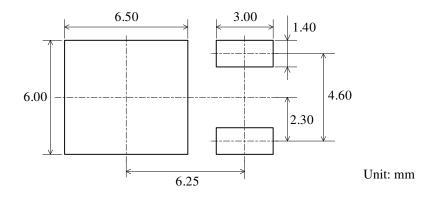
- Dimensions in millimeters
- All the dimensions exclude mold flashes.
- Bare lead frame: Pb-free (RoHS compliant)
- MSL 1 (Moisture Sensitivity Level 1)
- When soldering the products, it is required to minimize the working time within the following limits: Reflow:

Preheat: 180 °C / 60 s to 120 s

Solder heating:  $250 \,^{\circ}\text{C} / 10 \,\text{s}$ , 2 times ( $260 \,^{\circ}\text{C}$  peak)

Soldering Iron: 350 °C / 3.5 s, 1 time

## • TO252-2L Land Pattern Example



# **Marking Diagram**

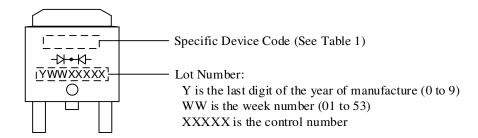


Table 1. Specific Device Code

Specific Device Code	Part Number
ET1515	SPET-21515

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