

$V_{RM} = 150\text{ V}$, $I_{F(AV)} = 10\text{ A}$
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

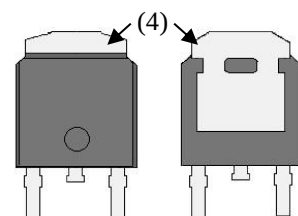
Applications

High speed switching applications as follows:

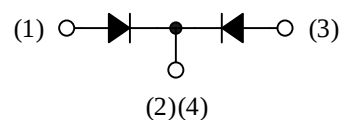
- DC-DC Converter
- Adapter

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

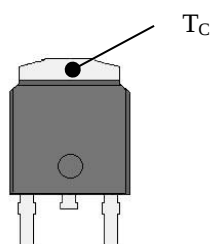


Figure 1. Case Temperature Measurement Point

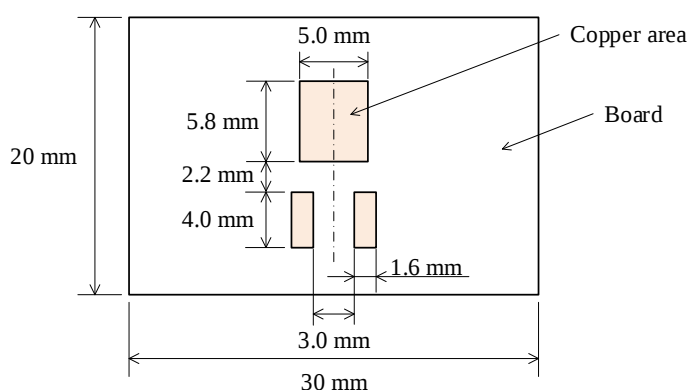


Figure 2. Glass-epoxy Board

⁽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 × 32 mm in size, 1 mm in thickness, copper area: see Figure 2).

Derating Curves

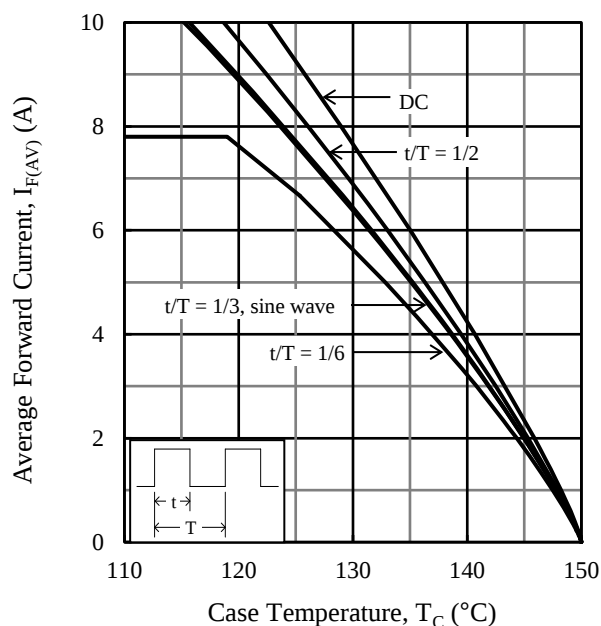


Figure 3. $I_{F(AV)}$ vs. T_C ($T_J = 150$ °C, $V_R = 0$ V)

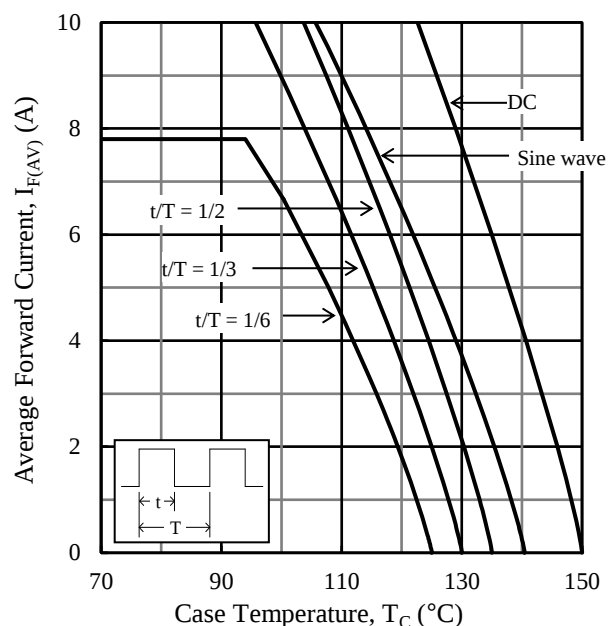


Figure 4. $I_{F(AV)}$ vs. T_C ($T_J = 150$ °C, $V_R = 150$ V)

Characteristic Curves

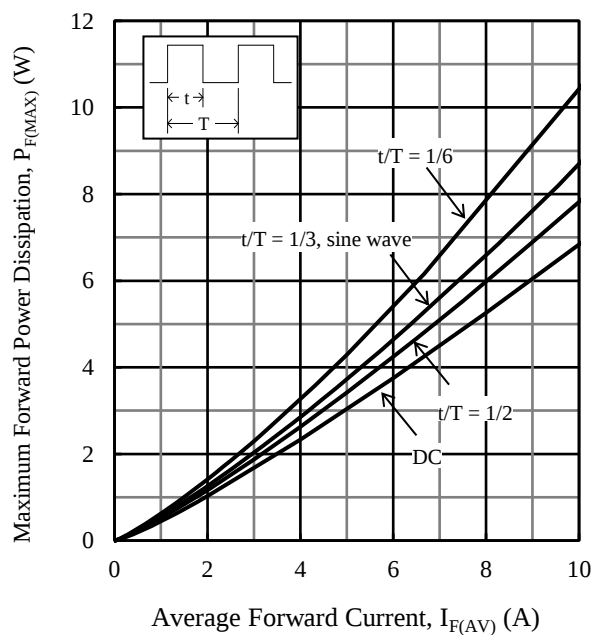


Figure 5. $P_{F(MAX)}$ vs. $I_{F(AV)}$ ($T_J = 150$ °C)

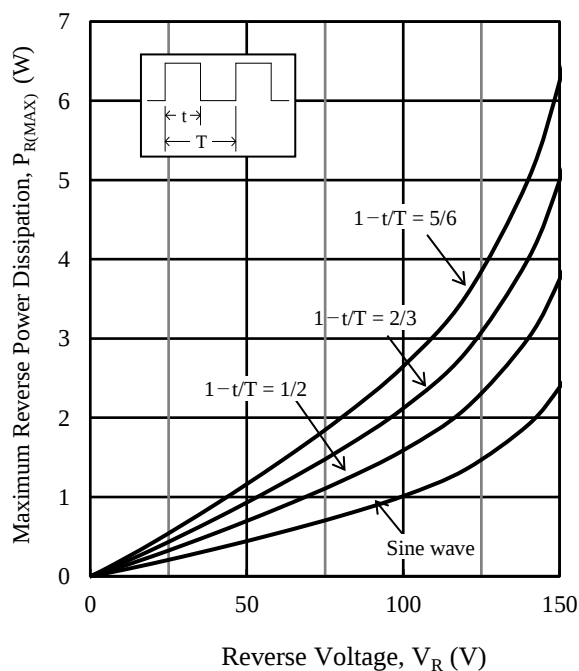


Figure 6. $P_{R(MAX)}$ vs. V_R ($T_J = 150$ °C)

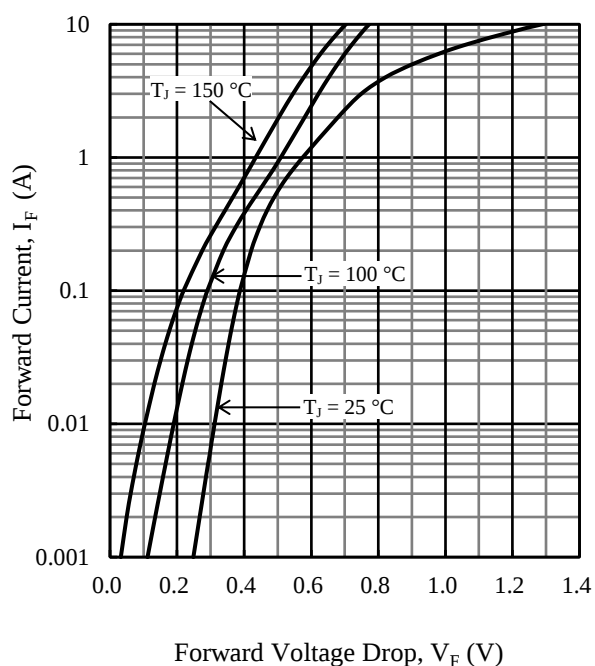


Figure 7. Typical Characteristics: I_F vs. V_F

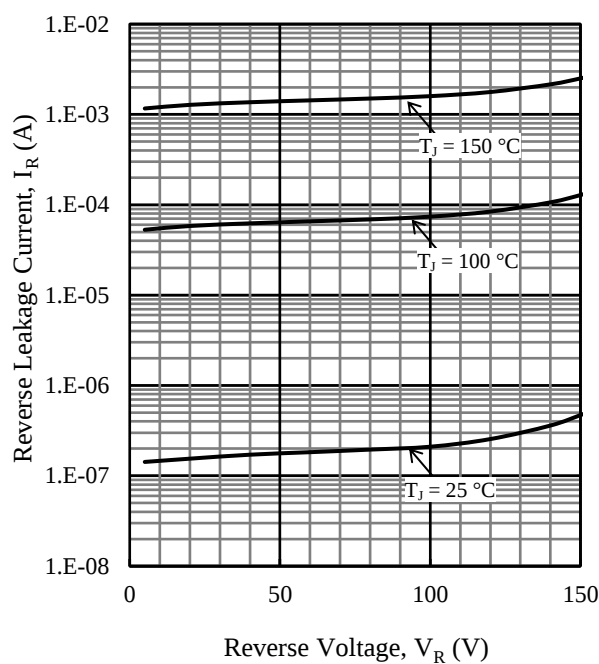


Figure 8. Typical Characteristics: I_R vs. V_R

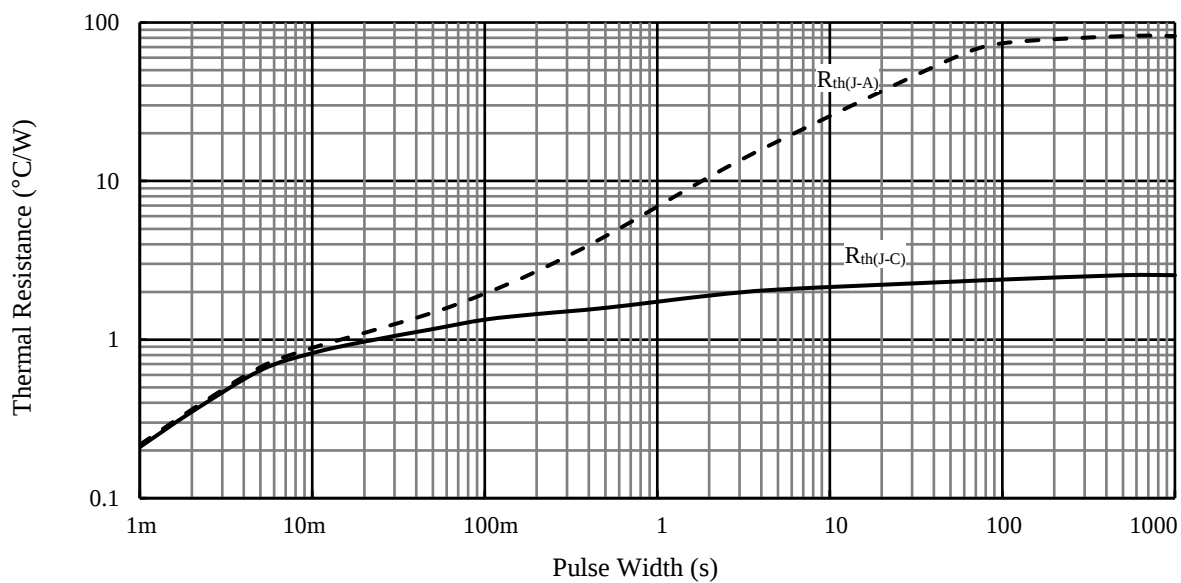
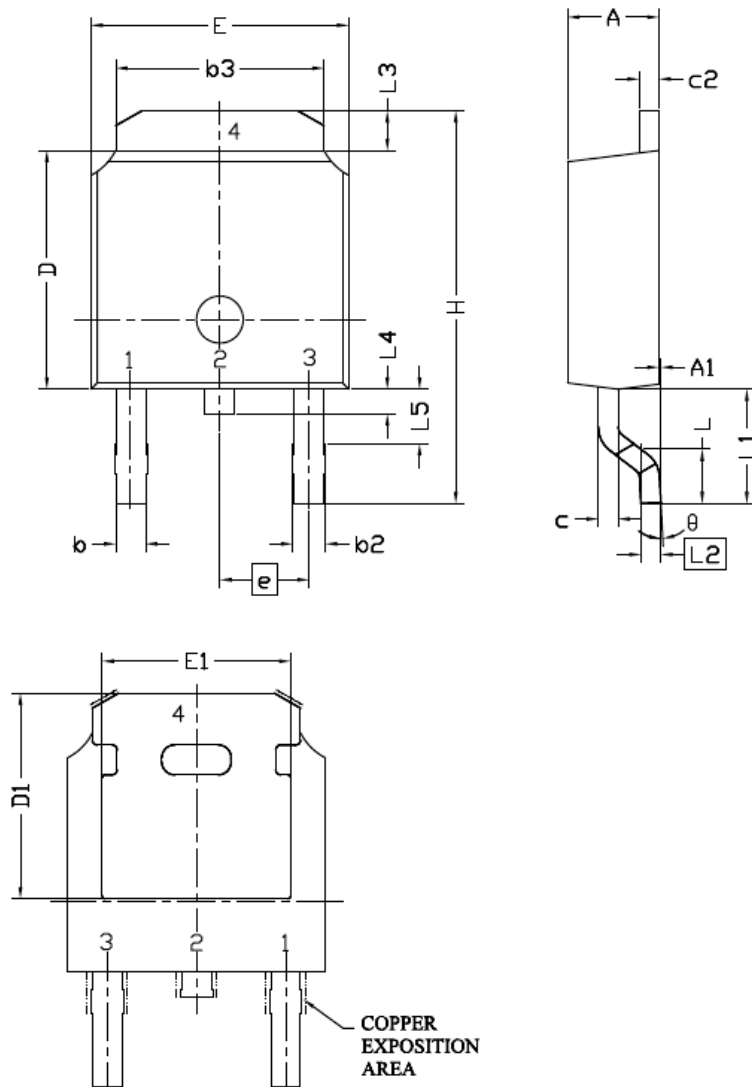


Figure 9. Typical Transient Thermal Resistance Characteristics

Physical Dimensions

• TO252-2L Package



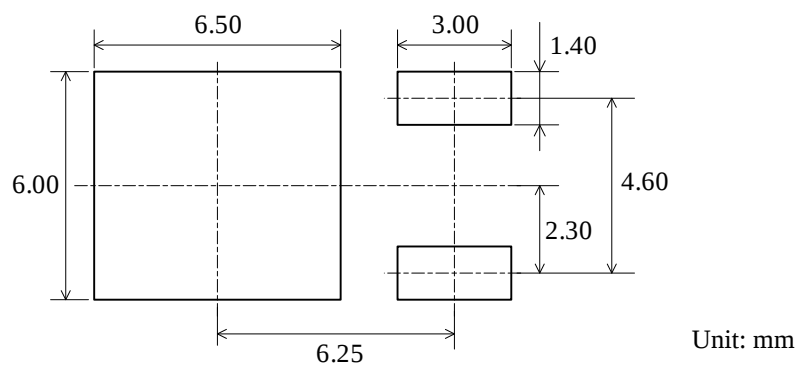
Symbol	Dimensions		
	MIN	NOM	MAX
E	6.40	6.60	6.731
L	1.40	1.52	1.77
L1	2.743 (REF)		
L2	0.508 (BSC)		
L3	0.89	—	1.27
L4	0.64	—	1.01
L5	—	—	—
D	6.00	6.10	6.223
H	9.40	10.00	10.40
b	0.64	0.76	0.88
b2	0.77	0.84	1.14
b3	5.21	5.34	5.46
e	2.286 (BSC)		
A	2.20	2.30	2.38
A1	0	—	0.127
c	0.46	0.50	0.60
c2	0.46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

• TO252-2L Land Pattern Example



Marking Diagram

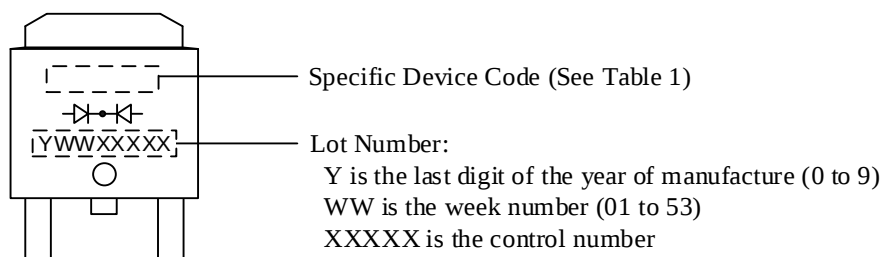


Table 1. Specific Device Code

Specific Device Code	Part Number
ET1015	SPET-21015

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