V_{RM} = 150 V, $I_{F(AV)}$ = 45 A
Schottky Diode

SZ-E10ET415

Data Sheet

Description

The SZ-E10ET415 is a 150 V, 45 A Schottky diode for automotive applications. The product achieves characteristics such as low leakage current and low forward voltage drop, thus providing a high-efficient rectification circuit. Its low thermal resistance package has excellent performance in heat dissipation.

Features

- V_{RM} ---------- 150 V
- $I_{F(AV)}$ ---------- 45 A
- V_F (I_F = 45 A) ---------- 0.98 V (typ.)
- H・I_R (T_J = 150 °C) ---------- 35 mA (max.)
- Avalanche Power ---------- 2.5 kW
- Bare Lead Frame: Pb-free (RoHS Compliant)
- Flammability: Equivalent to UL94V-0
- Suitable for High Reliability and Automotive Requirements
- Anode Heatsink Package

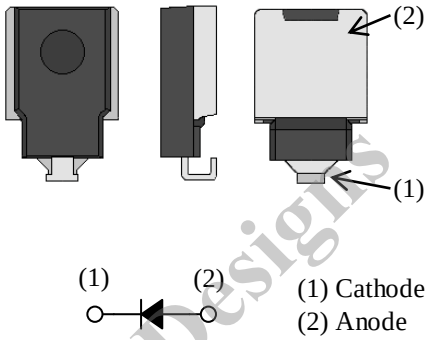
Applications

High speed switching applications such as:

- DC/DC Converter
- Adapter
- Secondary Rectifier Circuit

Package

SZ-E10



(1) Cathode
(2) Anode

Not to scale

Absolute Maximum Ratings

Unless specifically noted, T_A = 25 °C.

Parameter	Symbol	Conditions	Rating	Unit
Repetitive Peak Reverse Voltage	V_{RM}		150	V
Average Forward Current	$I_{F(AV)}$	t/T ≥ 1/4, see Figure 3 and Figure 4.	45	A
Surge Forward Current	I_{FSM}	Half cycle sine wave, positive side, 10 ms, 1 shot	300	A
Avalanche Power(1)	P_A	T_J = 150 °C; t_P = 0.5 µs (see Figure 1), 1 shot	2.5	kW
Junction Temperature	T_J		−55 to 150	°C
Storage Temperature	T_{STG}		−55 to 150	°C

Electrical Characteristics

Unless specifically noted, T_A = 25 °C.

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	I_F = 45 A	—	0.98	1.10	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	3	30	µA
Reverse Leakage Current under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$, T_J = 150 °C	—	20	35	mA
Thermal Resistance(2)	$R_{th(J-L)}$		—	0.35	0.55	°C/W

Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	2.6	—	g

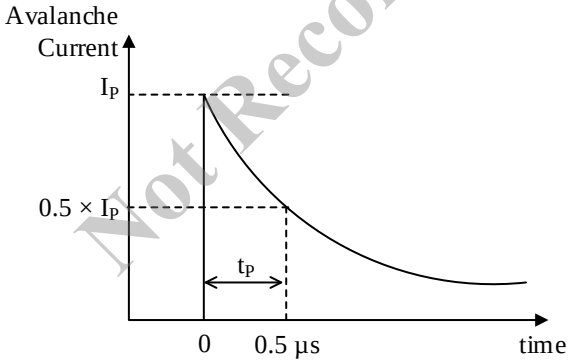


Figure 1. Definition of Pulse Width, t_P

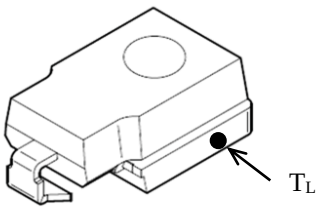


Figure 2. Lead Temperature Measurement Point

(1) Allowed to be applied to the device up to 2 million times.
(2) Refers to thermal resistance between junction and lead with infinite heatsink. Lead temperature is measured at anode lead (see Figure 2).

Derating Curves

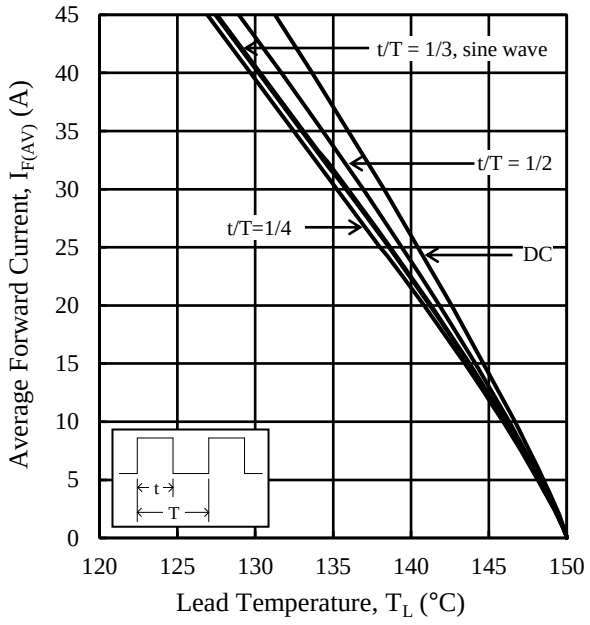


Figure 3. $I_{F(AV)}$ vs. T_L
(T_J = 150 °C, V_R = 0 V, $R_{th(J-L)}$ = 0.55 °C/W)

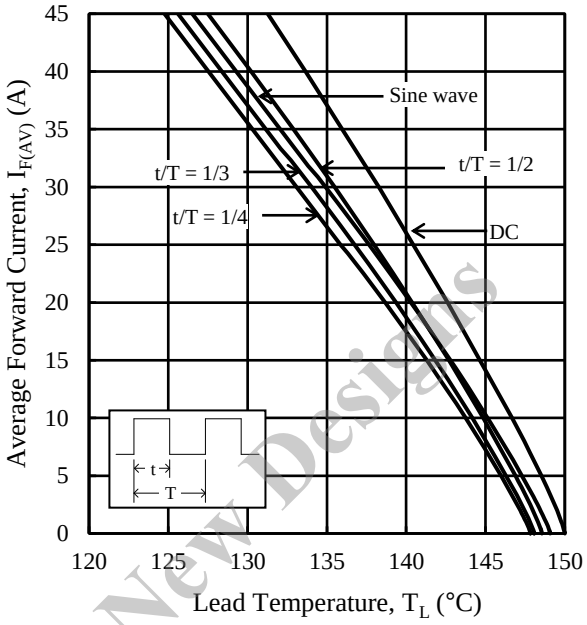


Figure 4. $I_{F(AV)}$ vs. T_L
(T_J = 150 °C, V_R = 150 V, $R_{th(J-L)}$ = 0.55 °C/W)

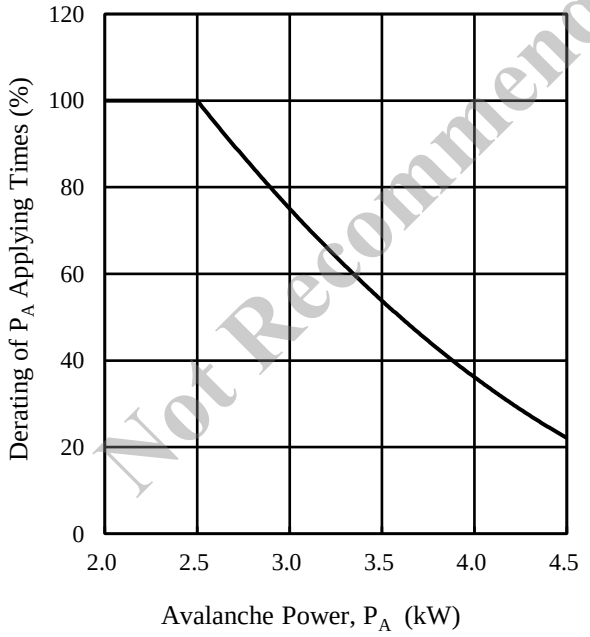


Figure 5. Derating of P_A Applying Times vs. P_A
(t_P = 0.5 µs)

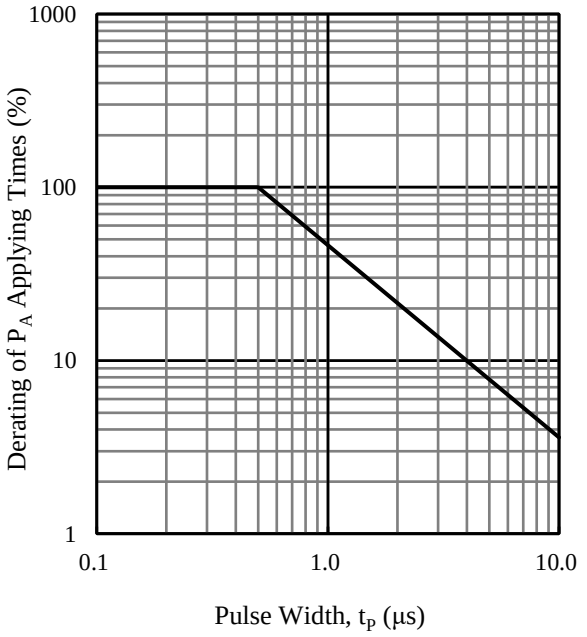


Figure 6. Derating of P_A Applying Times vs. t_P[3]
(T_J = 150 °C)

[3] See Figure 1.

Characteristic Curves

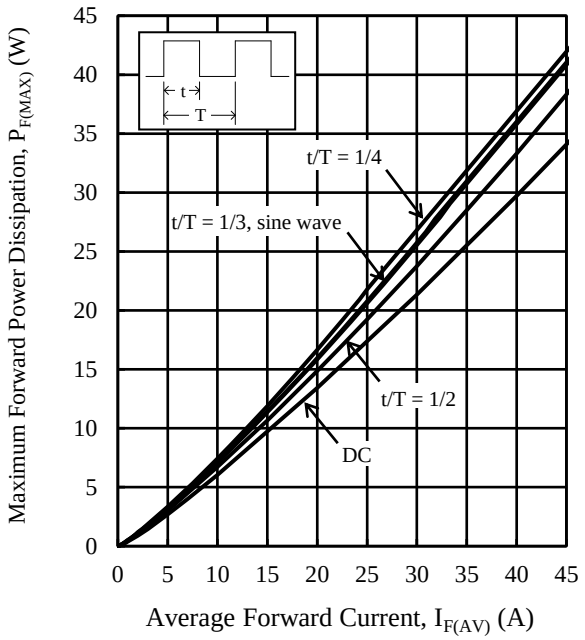


Figure 7. $P_{F(MAX)}$ vs. $I_{F(AV)}$ (T_J = 150 °C)

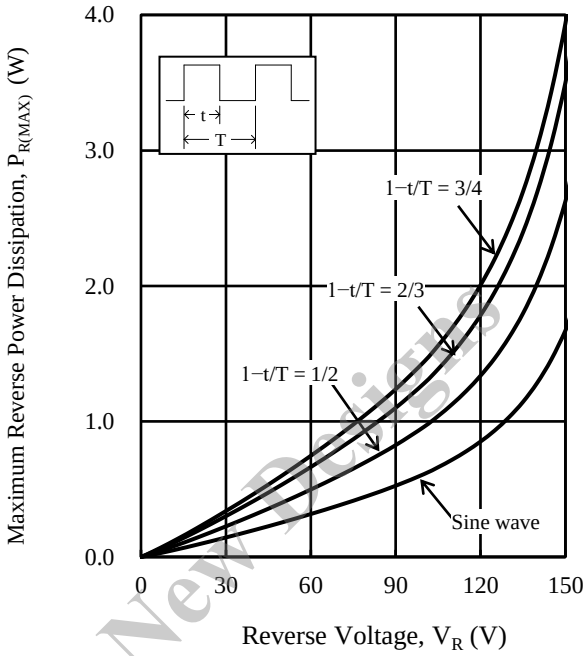


Figure 8. $P_{R(MAX)}$ vs. V_R (T_J = 150 °C)

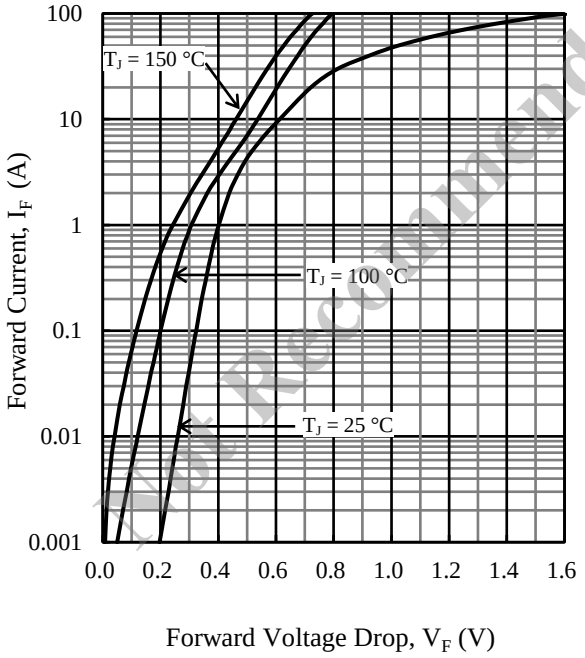


Figure 9. Typical Characteristics: I_F vs. V_F

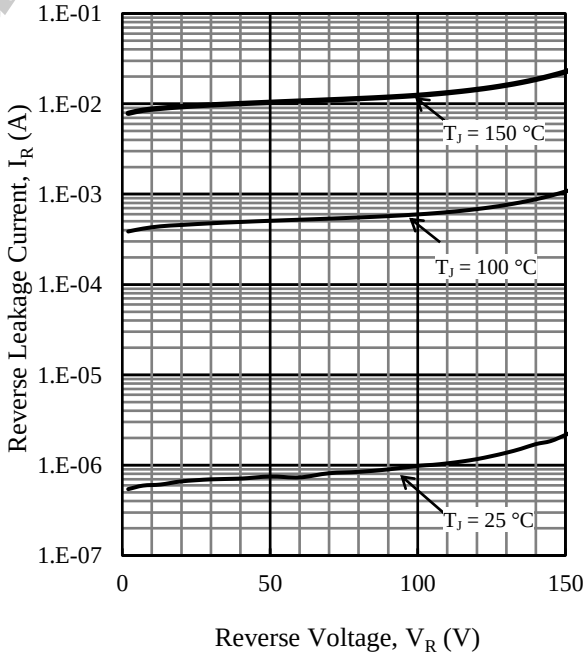


Figure 10. Typical Characteristics: I_R vs. V_R

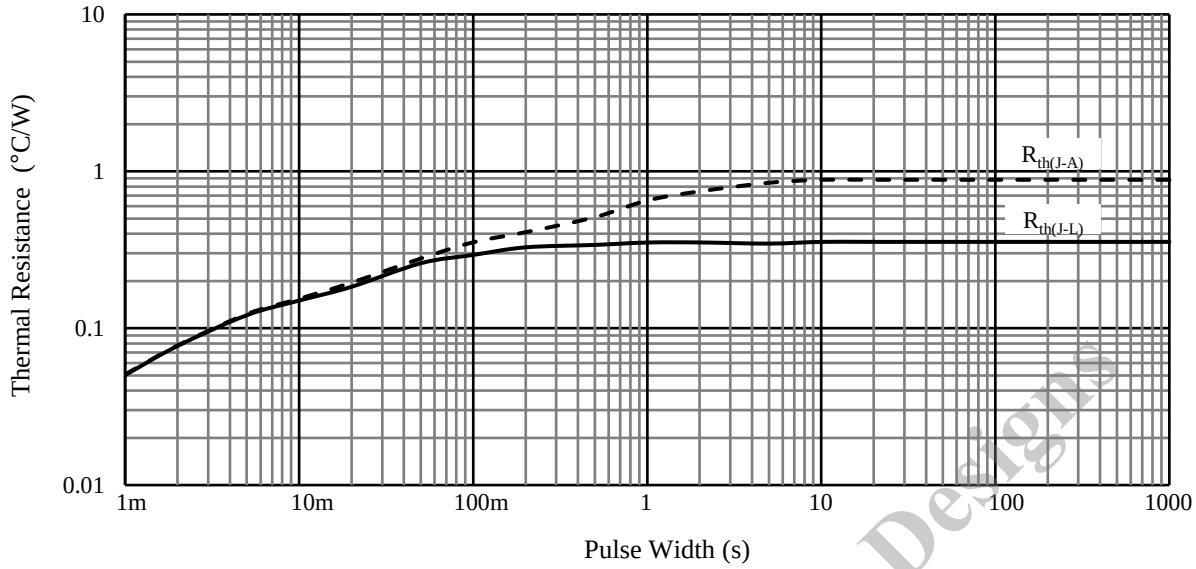
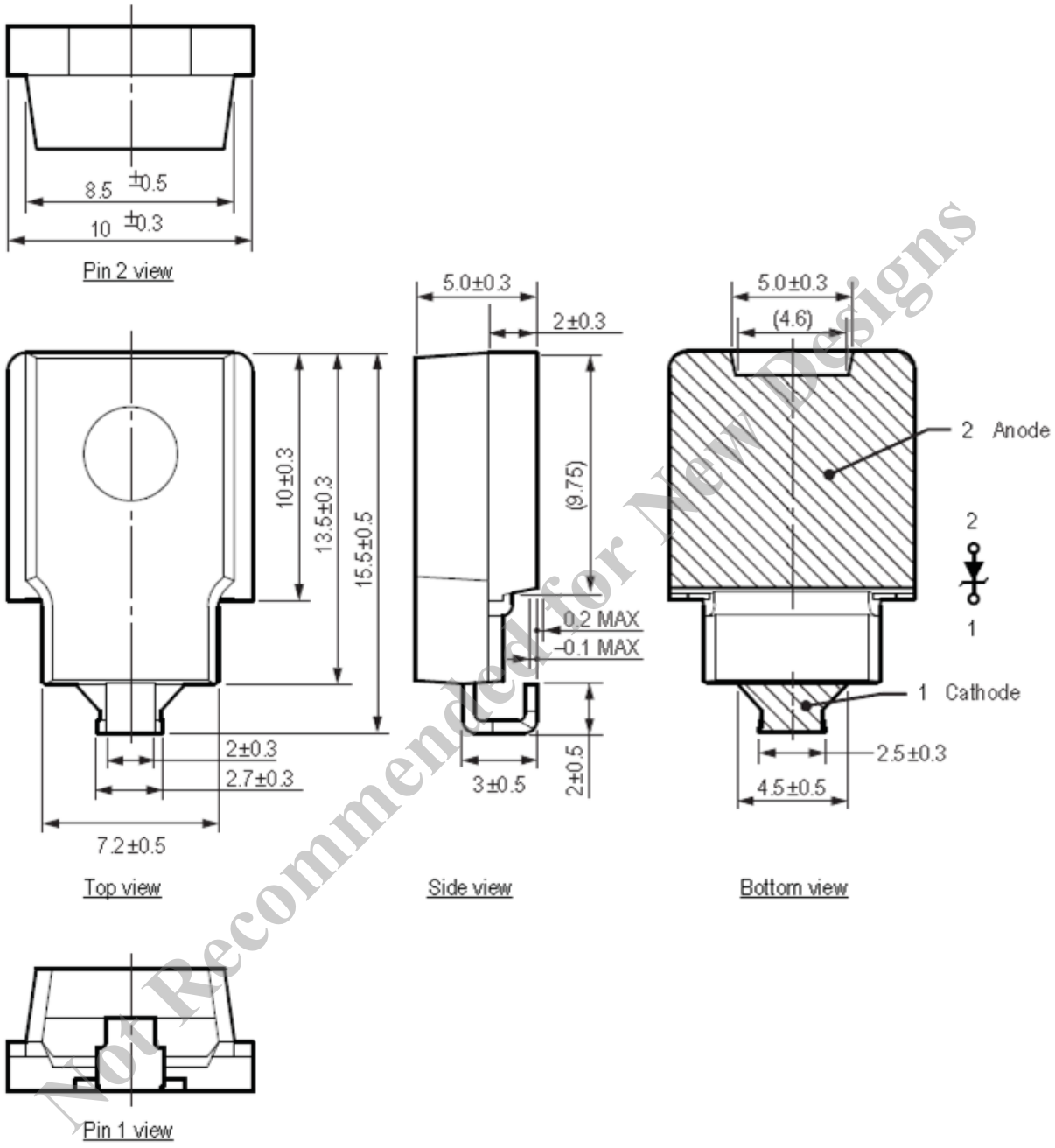


Figure 11. Typical Transient Thermal Resistance Characteristics

Physical Dimensions

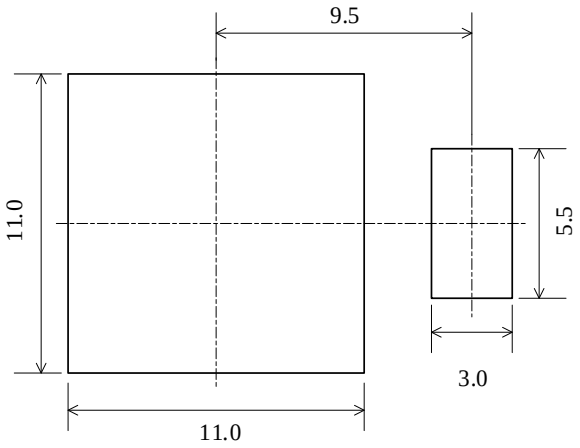
● **SZ-E10 Package**



NOTES:

- Dimensions in millimeters
- Bare lead frame: Pb-free (RoHS compliant)
- Moisture Sensitivity Level 3 (MSL 3)
- When soldering the products, it is required to minimize the working time within the following limits:
  Reflow:
  Preheat: 150 °C to 200 °C / 60 s to 120 s
  Solder heating: 240 °C / 30s, 3 times (245 °C peak)
- Soldering Iron: 350 °C / 3.5 s, 1 time

● **SZ-E10 Land Pattern Example**



NOTE:

- Dimensions in millimeters

Marking Diagram

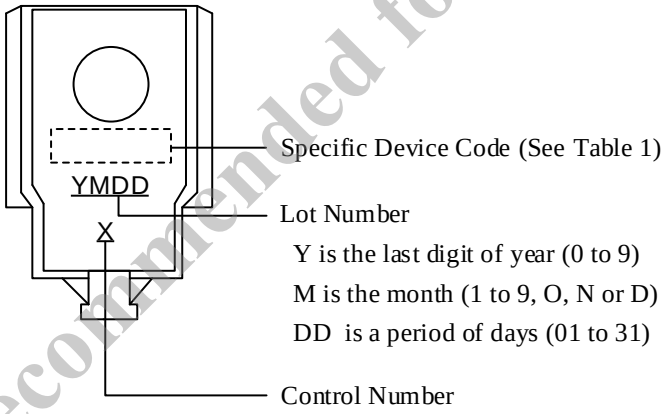


Table 1. Specific Device Code

Specific Device Code	Part Number
ET415	SZ-E10ET415

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