V_Z = 23.0 V (typ.)
Automotive Alternator Diode

SG-C17VLZ Series

Data Sheet

Description

The SG-C17VLZ series are the rectification diodes designed for alternator circuit of automotives, and have zener characteristics with high surge capability.

The package is a press-fit type, and has high heat release capability and high reliability for high temperature and humidity environment. In addition, the bridge circuit can be configured easily in small area by using suffix "S" type and suffix "R" type of reverse polarity type.

Features

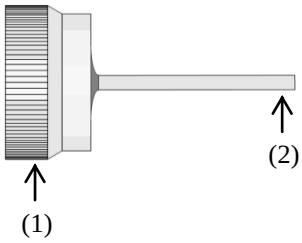
- T_J = 235 °C Capability Suitable for High Reliability and Automotive Requirement
- Thermal Fatigue Capability: 5,000 cyc.
- High Surge Capability
- RoHS Compliant

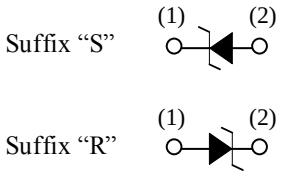
Applications

- Alternator Circuit for the 12 V Battery Automotive

Package

Press-fit

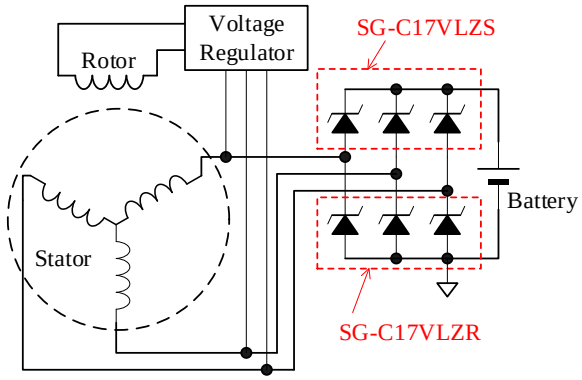




Not to scale

Pin No.	Suffix "S"	Suffix "R"
(1)	Cathode	Anode
(2)	Anode	Cathode

Typical Application



Selection Guide

Part Number	$I_{F(AV)}$	T_J (Max.)	V_Z	
			Min.	Max.
SG-C17VLZS	50 A	235 °C	20 V	26 V
SG-C17VLZR				

Absolute Maximum Ratings

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Conditions	Rating	Unit
Peak Reverse Voltage	V_{RM}		17	V
Average Forward Current	$I_{F(AV)}$	See Figure 1 and Figure 3.	50	A
Surge Forward Current	I_{FSM}	Half cycle sine-wave, positive side, 10ms, one shot.	500	A
Surge Reverse Voltage	V_{RSM}	One shot, see Figure 2.	70	V
Junction Temperature	T_J		−40 to 235	°C
Case Temperature	T_C		−40 to 215	°C
Storage Temperature	T_{STG}		−40 to 215	°C

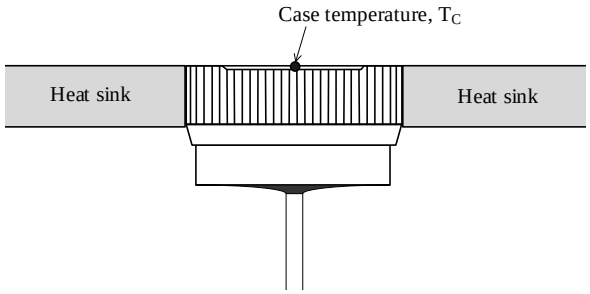


Figure 1. Case Temperature Measurement Conditions

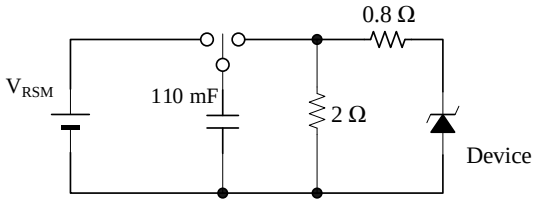


Figure 2. Surge Reverse Voltage Measurement Circuit (JASO A-1)

Electrical Characteristics

Unless otherwise specified, T_A = 25 °C

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	V_F	I_F = 100 A, t = 5 ms	—	—	1.2	V
Reverse Leakage Current	I_R	$V_R = V_{RM}$	—	—	1	μA
Breakdown Voltage	V_Z	I_Z = 10 mA	20.0	23.0	26.0	V
Thermal Resistance	$R_{th(j-C)}$	(1)	—	—	0.5	°C/W

(1) $R_{th(j-C)}$ is thermal resistance between junction and case. Case temperature is measured as shown in Figure 1.

Rating and Characteristic Curves

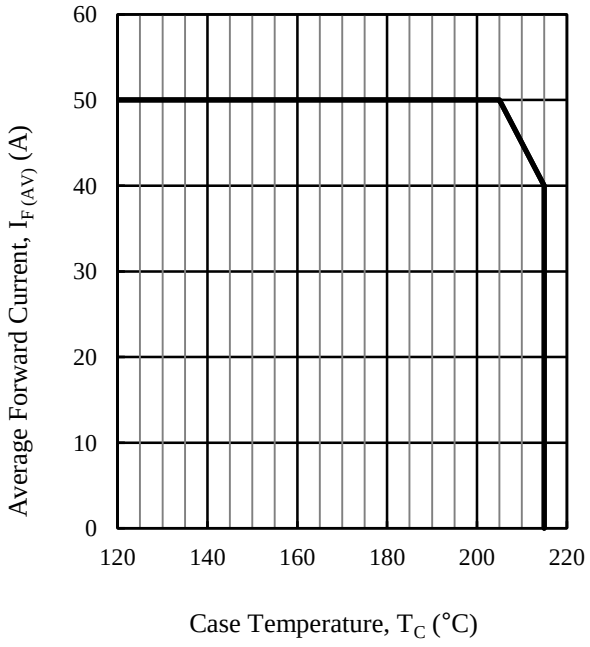


Figure 3. Power Dissipation Curves[2]

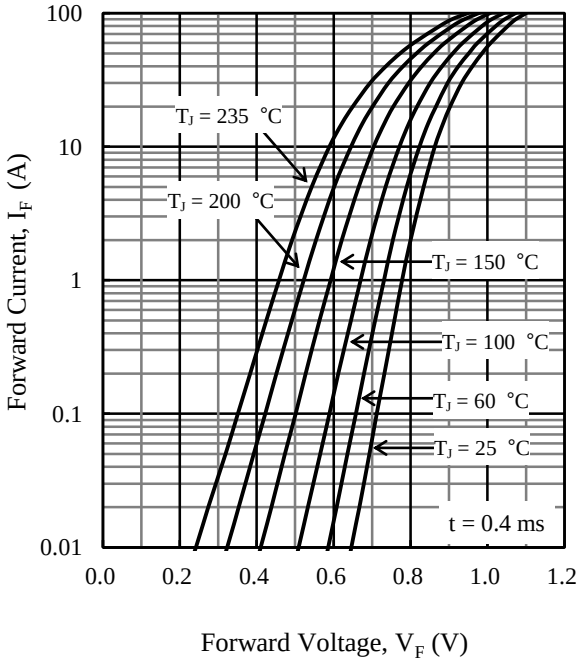


Figure 4. I_F vs. V_F Typical Characteristics

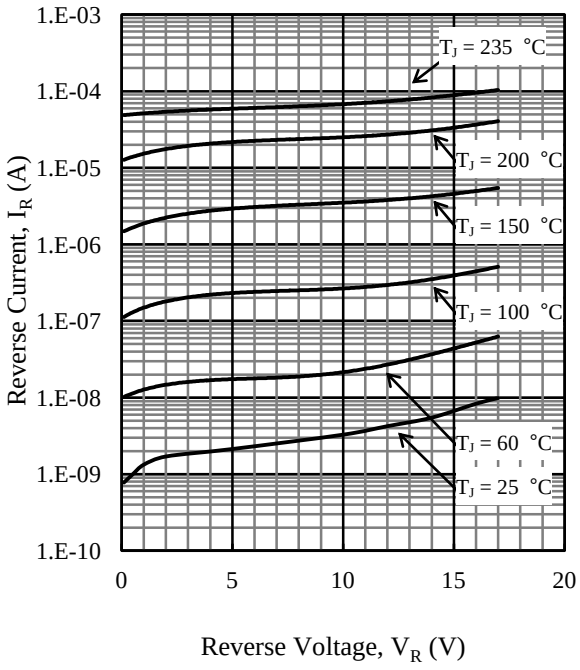


Figure 5. I_R vs. V_R Typical Characteristics

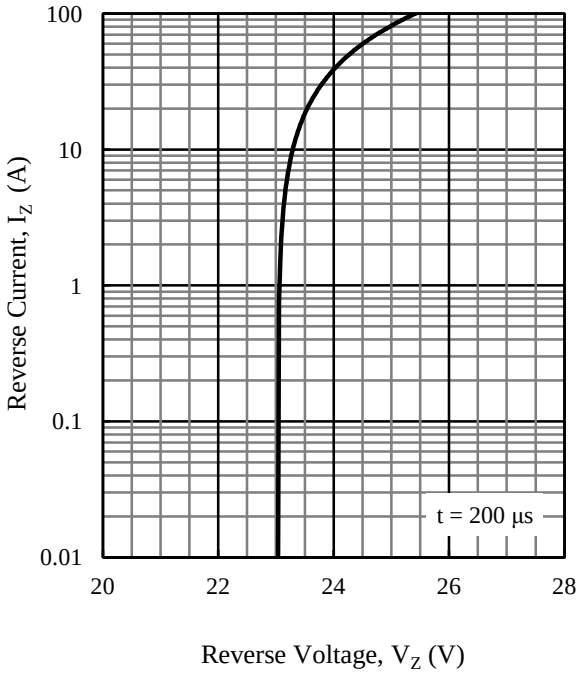


Figure 6. I_Z vs. V_Z Typical Characteristics

[2] See Figure 1 for the measurement conditions of case temperature.

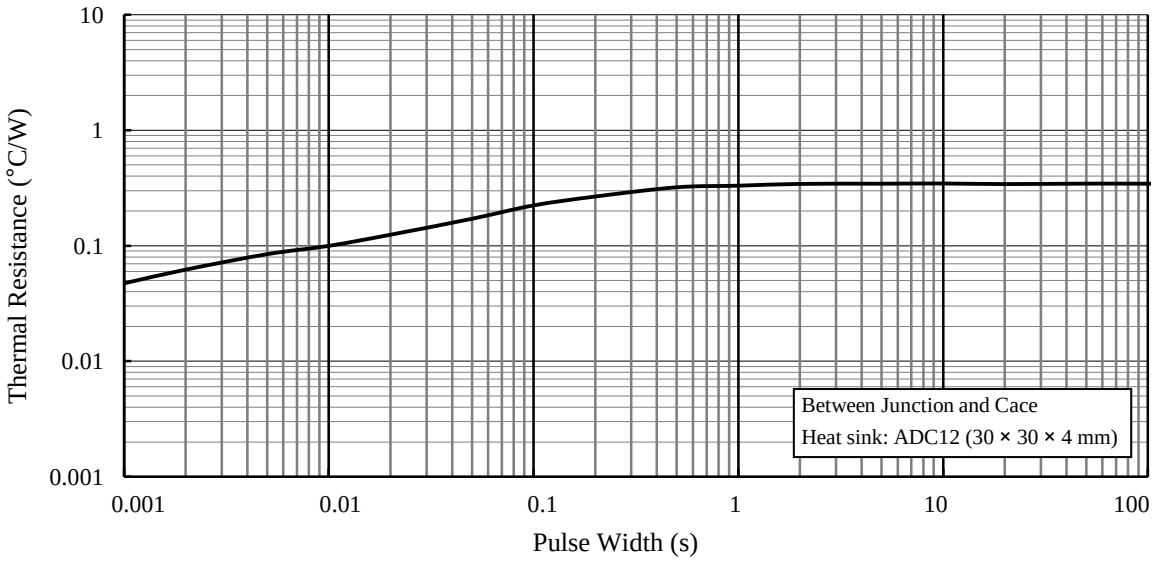
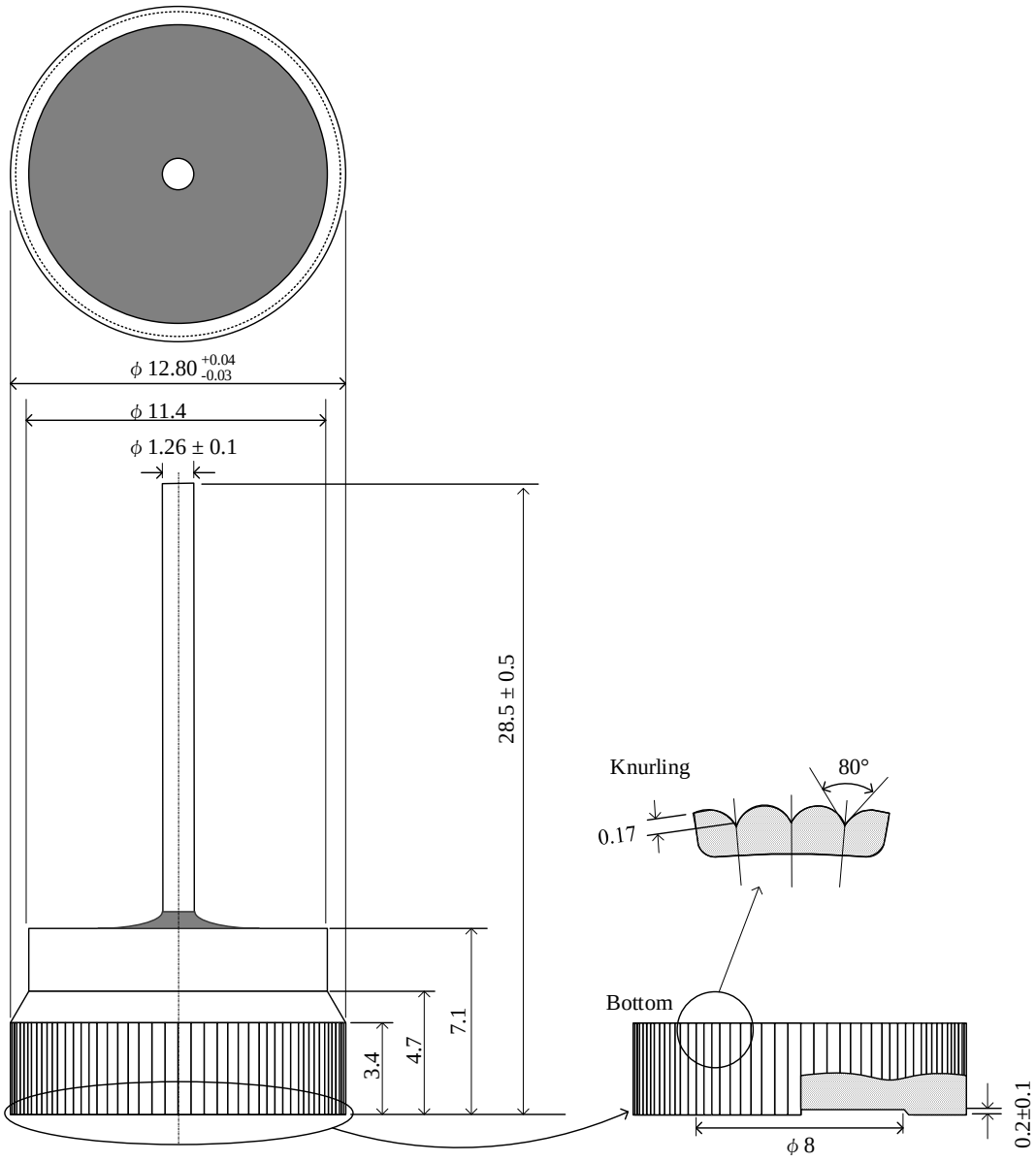


Figure 7. Typical Transient Thermal Resistance [3]

[3] See Figure 1 for measurement conditions of lead temperature.

Physical Dimensions

● **Press-fit**



NOTES:

- Dimensions in millimeters
- Knurling number: 78
- Lead treatment: Pb-free (RoHS compliant)
- Must be press-fit into the heatsink when used.
- Dimensions without tolerances have a tolerance of ±0.2.

- **Heatsink**
  - Recommended hole size and interference: See Figure 8
  - Recommended heatsink material: ADC12 or the aluminum die-casting that has same characteristics as ADC12
  - Recommended heatsink material strength: 140 to 160 Hv

- **How to Press-fit**
  Note followings when the product is pressed into the heatsink.
  - Press pin contact area: See Figure 9 (The press pin must not be pressed to "No press area")
  - Recommended press pin form: See Figure 10
  - Contact area between the press pin and the product: ≥30 mm^2 (If the contact area is too small, the product package is deformed and the product damage may be caused.)
  - Maximum press load: ≤10,000 N (See Figure 11)

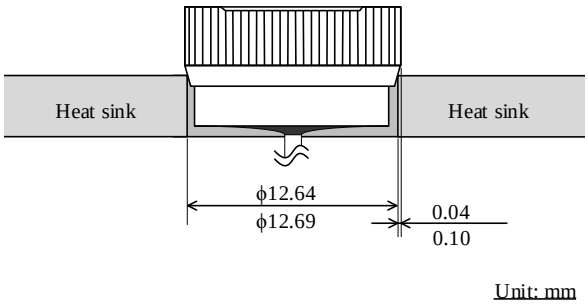


Figure 8 Recommended Hole Size and Interference

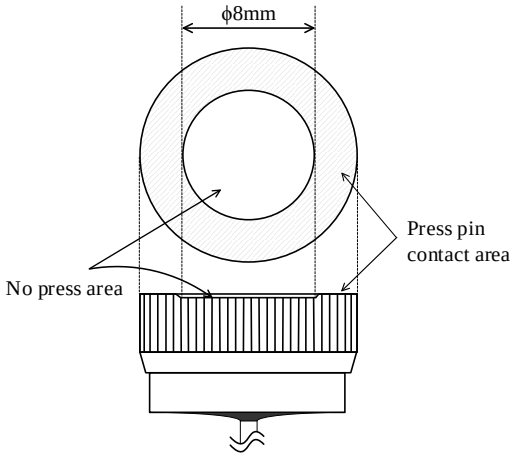


Figure 9 Press Pin Contact Area

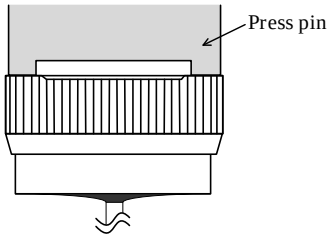


Figure 10 Recommended Press Pin Form

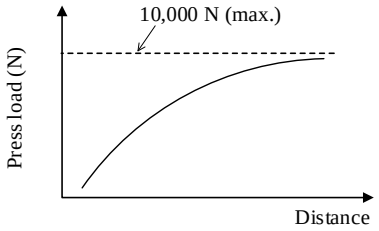
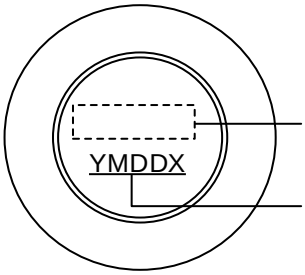


Figure 11 Maximum Press Load

Marking Diagram



Specific Device Code (See Table 1)

Lot Number:
Y is the last digit of the year of manufacture (0 to 9)
M is the month of the year (1 to 9, O, N, or D)
DD is the day of the month (01 to 31)
X is control number

Table 1. Specific Device Code

Specific Device Code	Part Number
BC23S	SG-C17VLZS
BC23R	SG-C17VLZR

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