

**V<sub>Z</sub> = 40 V (typ.)**  
**Automotive Alternator Diodes**  
**SG-10LZ40 Series**

**Description**

The SG-10LZ40 series are rectification diodes designed for automotive alternator circuits. The products have Zener characteristics with high surge capability.

Supplied in an SG-10 package with high heat dissipation, the products bring high reliability even under high temperature and humidity conditions. In addition, a bridge circuit can be configured easily in a small area by using two types in pairs, diodes with the suffix “S” and the suffix “R”, which have opposite polarities.

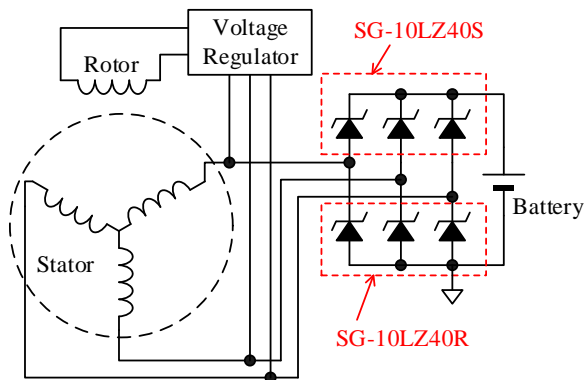
**Features**

- T<sub>J</sub> = 160 °C Capability Suitable for High Reliability and Automotive Requirements
- High Surge Capability (JASO-D-1 Standard Compliant)
- Bare Lead Frame: Pb-free (RoHS Compliant)

**Applications**

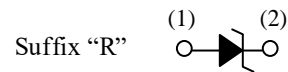
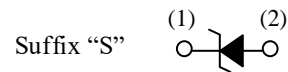
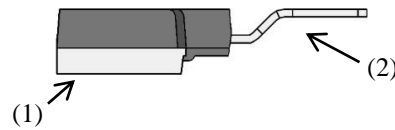
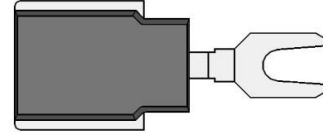
- Alternator Circuit for 24 V Automotive Battery

**Typical Application**



**Package**

SG-10



Not to scale

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

**Selection Guide**

Part Number	I <sub>F(AV)</sub>	T <sub>J</sub> (Max.)	V <sub>Z</sub>	
			Min.	Max.
SG-10LZ40S	30 A	160 °C	36 V	44 V
SG-10LZ40R				

## SG-10LZ40 Series

### Absolute Maximum Ratings

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

Parameter	Symbol	Conditions	Rating	Unit
Repetitive Peak Reverse Voltage	$V_{RM}$		32	V
Average Forward Current	$I_{F(AV)}$	$T_L \leq 120\text{ }^\circ\text{C}$ , see Figure 1.	30	A
Surge Forward Current	$I_{FSM}$	Half cycle sine-wave, positive side, 10ms, one shot.	300	A
Nonrepetitive Peak Reverse Voltage	$V_{RSM}$	One shot, See Figure 2.	80	V
Junction Temperature	$T_J$		-40 to 160	$^\circ\text{C}$
Storage Temperature	$T_{STG}$		-40 to 150	$^\circ\text{C}$

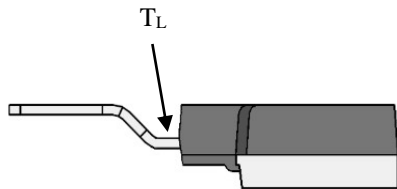


Figure 1. Lead Temperature Measurement Conditions

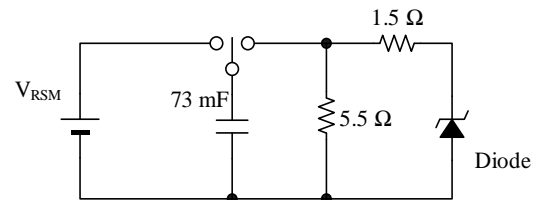


Figure 2. Nonrepetitive Peak Reverse Voltage Measurement Circuit (JASO-D-1)

### Electrical Characteristics

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

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
Forward Voltage Drop	$V_F$	$I_F = 100\text{ A}$	—	—	1.2	V
Reverse Leakage Current	$I_R$	$V_R = V_{RM}$	—	—	50	$\mu\text{A}$
Reverse Leakage Current Under High Temperature	$H \cdot I_R$	$V_R = V_{RM}$ , $T_J = 150\text{ }^\circ\text{C}$	—	—	2.5	mA
Breakdown Voltage	$V_Z$	$I_Z = 10\text{ mA}$	36	40	44	V
Breakdown Voltage Temperature Coefficient	$r_Z$	$I_Z = 10\text{ mA}$	—	—	48	$\text{mV}/^\circ\text{C}$
Thermal Resistance	$R_{th(J-L)}$	<sup>(1)</sup>	—	1.0	—	$^\circ\text{C}/\text{W}$

<sup>(1)</sup>  $R_{th(J-L)}$  is thermal resistance between junction and lead. Lead temperature is measured as shown in Figure 1.

# SG-10LZ40 Series

## Mechanical Characteristics

Parameter	Conditions	Min.	Typ.	Max.	Unit
Package Weight		—	2.7	—	g

## Rating and Characteristic Curves

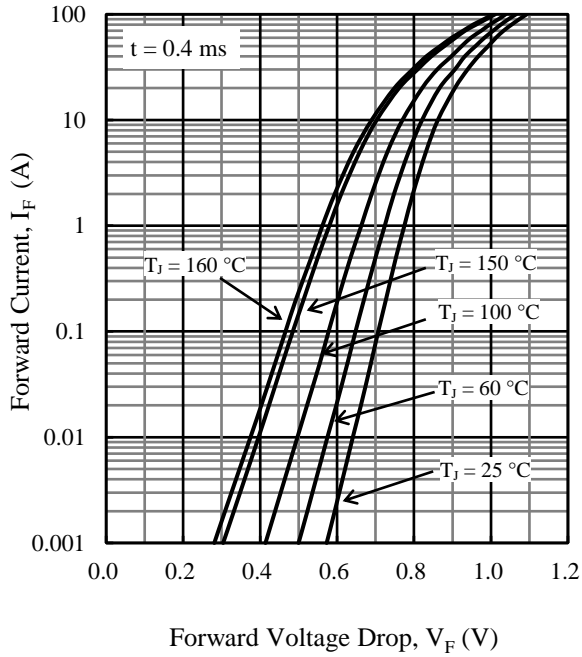


Figure 3.  $I_F$  vs.  $V_F$  Typical Characteristics

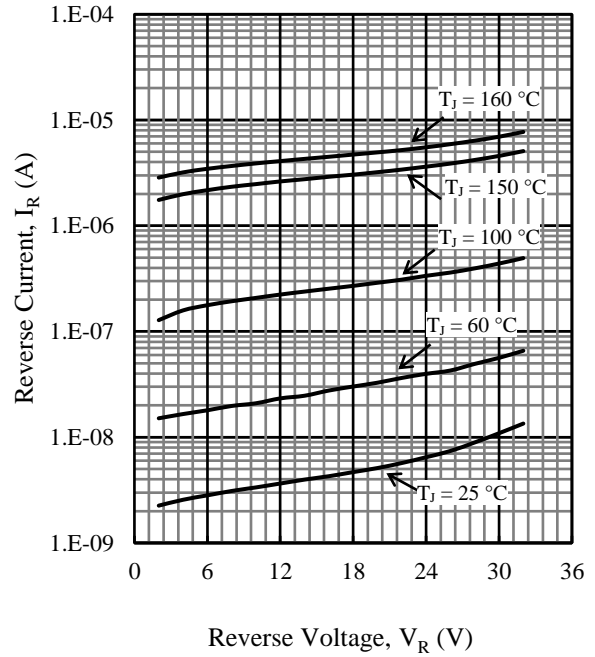


Figure 4.  $I_R$  vs.  $V_R$  Typical Characteristics

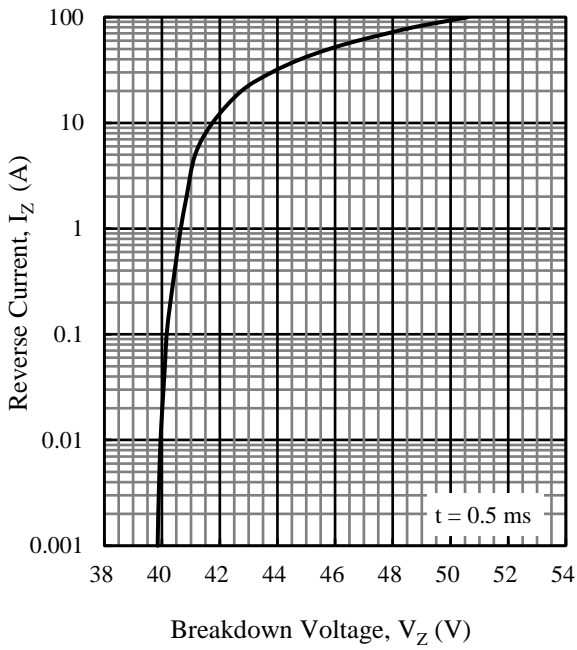


Figure 5.  $I_Z$  vs.  $V_Z$  Typical Characteristics

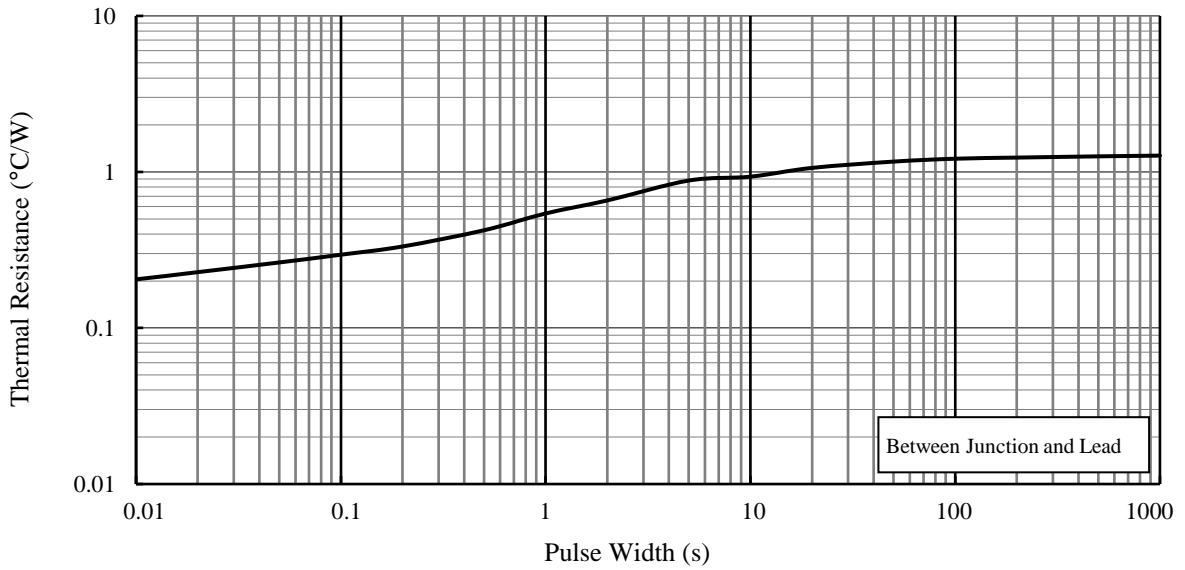


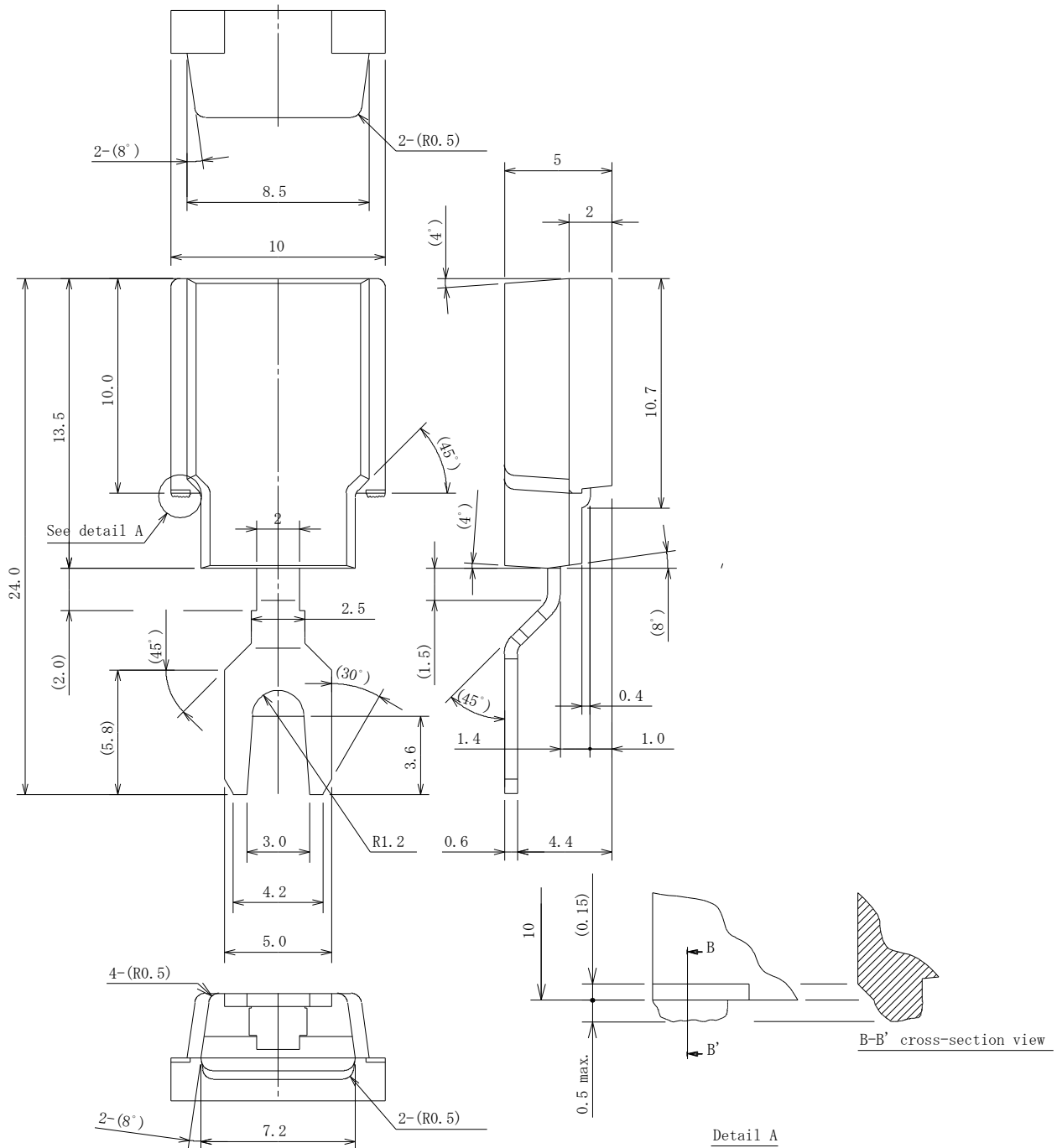
Figure 6. Typical Transient Thermal Resistance Characteristics <sup>(2)</sup>

<sup>(2)</sup> See Figure 1 for measurement conditions of lead temperature.

# SG-10LZ40 Series

## Physical Dimensions

### • SG-10



### NOTES:

- Dimensions in millimeters
- Unless otherwise specified, tolerance is  $\pm 0.3$  mm
- Bare Lead Frame: Pb-free (RoHS Compliant)

## SG-10LZ40 Series

### Marking Diagram

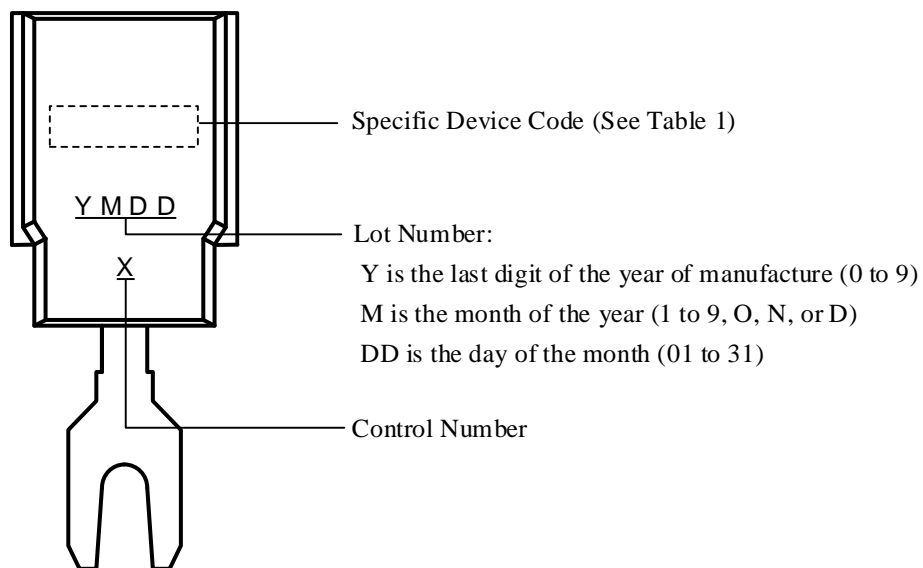


Table 1. Specific Device Code

Specific Device Code	Part Number
B44S	SG-10LZ40S
B44R	SG-10LZ40R

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DSGN-AEZ-16003