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# ON Semiconductor®

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## ES1A - ES1D

#### **Features**

- For surface mount applications.
- Glass passivated junction.
- Low profile package.
- Easy pick and place.
- Built-in strain relief.
- Superfast recovery times for high efficiency.



SMA/DO-214AC COLOR BAND DENOTES CATHODE

#### **Fast Rectifiers**

## Absolute Maximum Ratings\* T<sub>A</sub> = 25°C unless otherwise noted

| Symbol             | Parameter   | Value       |     |     |     | Units  |
|--------------------|---|-------------|-----|-----|-----|--------|
|                    |   | 1A          | 1B  | 1C  | 1D  | Office |
| $V_{RRM}$          | Maximum Repetitive Reverse Voltage  | 50          | 100 | 150 | 200 | V      |
| I <sub>F(AV)</sub> | Average Rectified Forward Current, @ T <sub>A</sub> =120°C                | 1.0         |     |     |     | А      |
| I <sub>FSM</sub>   | Non-repetitive Peak Forward Surge Current<br>8.3 ms Single Half-Sine-Wave | 30          |     |     |     | A      |
| T <sub>stg</sub>   | Storage Temperature Range   | -50 to +150 |     |     |     | °C     |
| T <sub>J</sub>     | Operating Junction Temperature  | -50 to +150 |     |     |     | °C     |

<sup>\*</sup>These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

#### **Thermal Characteristics**

| Symbol          | Parameter                                | Value | Units |  |  |
|-----------------|--|-------|-------|--|--|
| P <sub>D</sub>  | Power Dissipation                        | 1.47  | W     |  |  |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient* | 85    | °C/W  |  |  |
| $R_{\theta JL}$ | Thermal Resistance, Junction to Lead*    | 35    | °C/W  |  |  |

<sup>\*</sup>Device mounted on FR-4 PCB 0.013 mm.

## **Electrical Characteristics** T<sub>A</sub> = 25°C unless otherwise noted

| Symbol          | Parameter  |                                 | Device     |     |    |          | Units |
|-----------------|--|---------------------------------|------------|-----|----|----------|-------|
|                 |  |                                 | 1A         | 1B  | 1C | 1D       |       |
| $V_{F}$         | Forward Voltage @ 1.0 A  |                                 | 0.92       |     |    | V        |       |
| t <sub>rr</sub> | Reverse Recovery Time<br>$I_F = 0.5 \text{ A}, I_R = 1.0 \text{ A}, I_{RR} = 0.25 \text{ A}$ |                                 | 15         |     |    | ns       |       |
| I <sub>R</sub>  | Reverse Current @ rated V <sub>R</sub>   | $T_A = 25$ °C<br>$T_A = 100$ °C | 5.0<br>100 |     |    | μΑ<br>μΑ |       |
| C <sub>T</sub>  | Total Capacitance<br>V <sub>R</sub> = 4.0 V, f = 1.0 MHz                                     |                                 |            | 7.0 | )  |          | pF    |

### **Typical Characteristics**

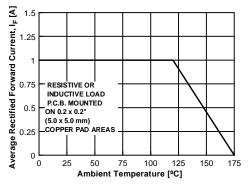
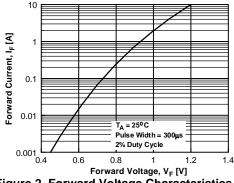


Figure 1. Forward Current Derating Curve



**Figure 2. Forward Voltage Characteristics** 

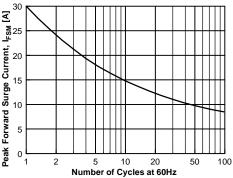


Figure 3. Non-Repetitive Surge Current

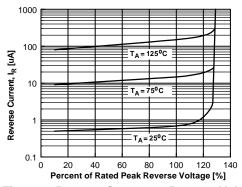


Figure 4. Reverse Current vs Reverse Voltage

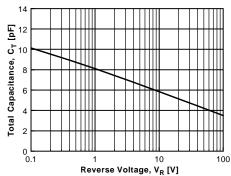
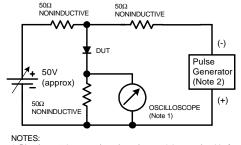
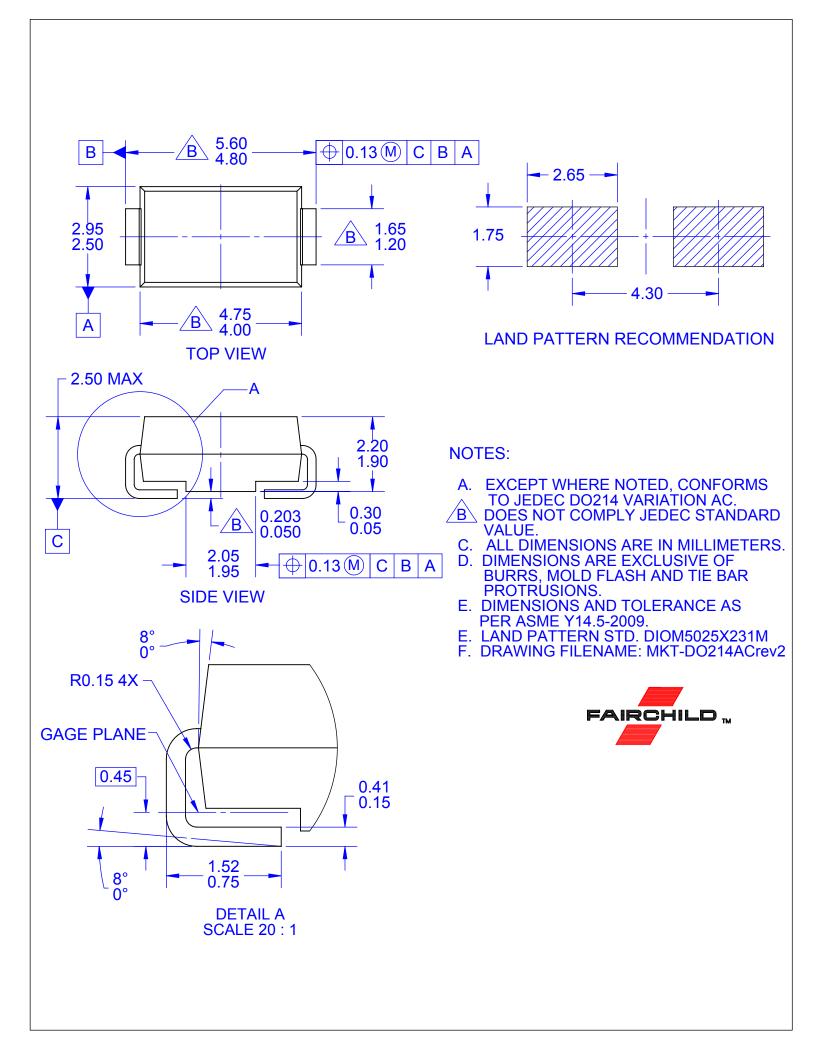


Figure 5. Total Capacitance



1. Rise time = 7.0 ns max; Input impedance = 1.0 megaohm 22 pf. 2. Rise time = 10 ns max; Source impedance = 50 ohms.

**Reverse Recovery Time Characterstic and Test Circuit Diagram** 



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