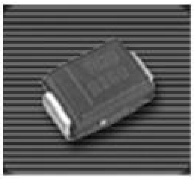
SYNSEMI SEMICONDUCTOR

# ES2A thru ES2M

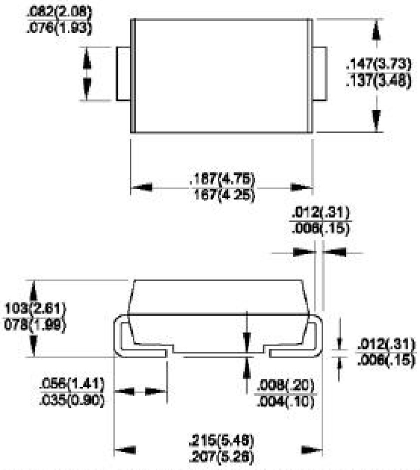
2.0 Amps. Super Fast Surface Mount Rectifiers
Voltage Range 50 to 1000 Volts    Forward Current 2.0 Amperes

## Features

- ◆ Glass passivated junction chip
- ◆ For surface mounted application
- ◆ Low profile package
- ◆ Built-in strain relief
- ◆ Ideal for automated placement
- ◆ Easy pick and place
- ◆ Superfast recovery time for high efficiency
- ◆ Glass passivated chip junction
- ◆ High temperature soldering: 250°C/10 seconds at terminals
- ◆ Plastic material used carries Underwriters Laboratory Classification 94V-O



DO-214AA (SMB)



Dimensions in inches and (millimeters)

## Mechanical Data

- ◆ Cases: Molded plastic
- ◆ Terminals: Solder plated
- ◆ Polarity: Indicated by cathode band
- ◆ Weight: 0.003 ounce, 0.093 gram

## Maximum Ratings and Electrical Characteristics

Ratings at 25°C ambient temperature unless otherwise specified.
Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%

| Parameter | Symbols | ES 2A | ES 2B | ES 2C | ES 2D | ES 2F | ES 2G | ES 2J | ES 2K | ES 2M | Units |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Maximum repetitive peak reverse voltage | $V_{RRM}$ | 50 | 100 | 150 | 200 | 300 | 400 | 600 | 800 | 1000 | Volts |
| Maximum RMS voltage | $V_{RMS}$ | 35 | 70 | 105 | 140 | 210 | 280 | 420 | 560 | 700 | Volts |
| Maximum DC blocking voltage | $V_{DC}$ | 50 | 100 | 150 | 200 | 300 | 400 | 600 | 800 | 1000 | Volts |
| Maximum average forward rectified current See Fig. 1 | $I_{(AV)}$ | 2.0 | | | | | | | | | Amps |
| Peak forward surge current, 8.3ms single half sine-wave superimposed on rated load (JEDEC Method) | $I_{FSM}$ | 50.0 | | | | | | | | | Amps |
| Maximum instantaneous forward voltage @ 2.0A | $V_F$ | 0.95 | | | | 1.3 | | 1.7 | | | Volts |
| Maximum DC reverse current @ $T_A$=25°C<br>at rated DC blocking voltage @ $T_A$=100°C | $I_R$ | 10.0<br>350 | | | | | | | | | uA<br>uA |
| Maximum reverse recovery time (Note 1) | $t_{rr}$ | 35 | | | | | | | | | nS |
| Typical junction capacitance (Note 2) | $C_J$ | 25 | | | | 20 | | | | | pF |
| Typical thermal resistance (Note 3) | $R_{\theta JA}$<br>$R_{\theta JL}$ | 75<br>20 | | | | | | | | | °C/W |
| Operating temperature range | $T_J$ | -55 to +150 | | | | | | | | | °C |
| Storage temperature range | $T_{STG}$ | -55 to +150 | | | | | | | | | °C |

**Notes:** 1. Reverse Recovery Test Conditions: $I_F$=0.5A, $I_R$=1.0A, $I_{RR}$=0.25A
2. Measured at 1 MHz and Applied $V_R$=4.0 Volts
3. Units Mounted on P.C.B. 5.0 x 5.0mm (0.013mm thick) Pad Areas

## RATINGS AND CHARACTERISTIC CURVES

($T_A$ = 25°C unless otherwise noted)

FIG.1- MAXIMUM FORWARD CURRENT DERATING CURVE

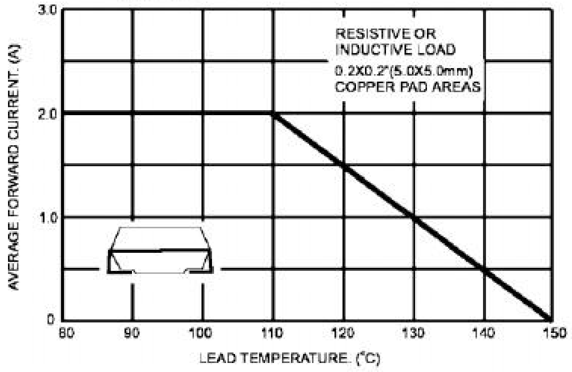


FIG.2- MAXIMUM NON-REPETITIVE PEAK FORWARD SURGE CURRENT

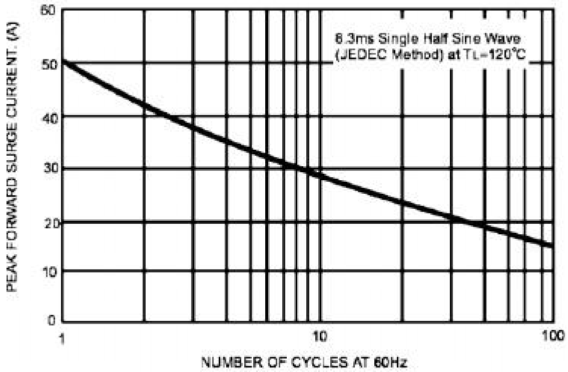


FIG.3- TYPICAL INSTANTANEOUS FORWARD CHARACTERISTICS

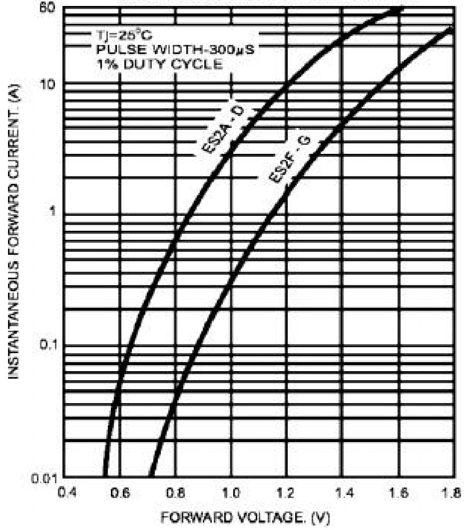


FIG.4- TYPICAL REVERSE CHARACTERISTICS

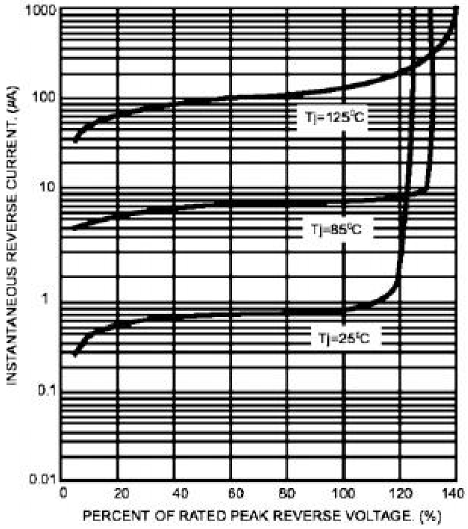


FIG.5- TYPICAL JUNCTION CAPACITANCE