

3A, 50V - 600V Surface Mount Super Fast Rectifier

FEATURES

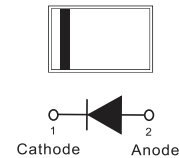
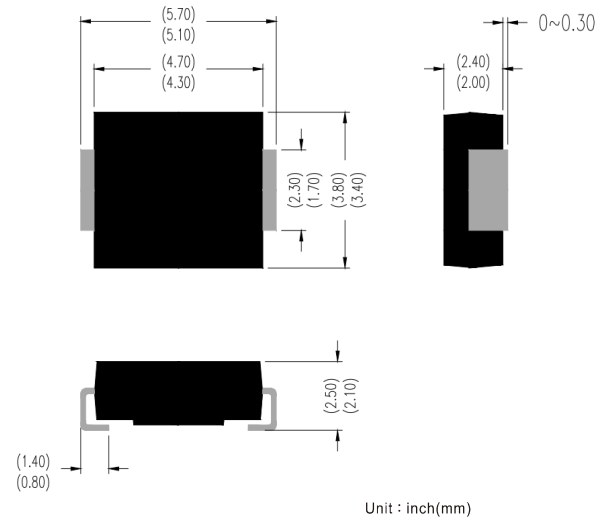
- Glass passivated junction chip
- Ideal for automated placement
- Low profile package
- Super fast recovery time for high efficiency
- Compliant to RoHS Directive 2011/65/EU and in accordance to WEEE 2002/96/EC
- Halogen-free according to IEC 61249-2-21

APPLICATIONS

- Switching mode power supply (SMPS)
- Adapters
- Lighting application
- Converter

MECHANICAL DATA

- Case: DO-214AA (SMB)
- Molding compound meets UL 94V-0 flammability rating
- Moisture sensitivity level: level 1, per J-STD-020
- Terminal: Matte tin plated leads, solderable per J-STD-002
- Meet JESD 201 class 2 whisker test
- Polarity: As marked
- Weight: 0.11 g (approximately)

DO-214AA (SMB)


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

| PARAMETER | SYMBOL | ES3A | ES3B | ES3C | ES3D | ES3F | ES3G | ES3H | ES3J | UNIT |
|---|--------------|--------------|------|------|------|------|------|------|------|------------------|
| Repetitive peak reverse voltage | V_{RRM} | 50 | 100 | 150 | 200 | 300 | 400 | 500 | 600 | V |
| Reverse voltage, total rms value | $V_{R(RMS)}$ | 30 | 70 | 105 | 140 | 210 | 280 | 350 | 420 | V |
| Forward current | $I_{F(AV)}$ | 3 | | | | | | | | A |
| Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode | I_{FSM} | 100 | | | | | | | | A |
| Junction temperature | T_J | - 55 to +150 | | | | | | | | $^\circ\text{C}$ |
| Storage temperature | T_{STG} | - 55 to +150 | | | | | | | | $^\circ\text{C}$ |



| THERMAL PERFORMANCE | | | |
|--|-----------------|-------|---------------|
| PARAMETER | SYMBOL | LIMIT | UNIT |
| Junction-to-lead thermal resistance | $R_{\theta JL}$ | 24 | $^{\circ}C/W$ |
| Junction-to-ambient thermal resistance | $R_{\theta JA}$ | 84 | $^{\circ}C/W$ |
| Junction-to-case thermal resistance | $R_{\theta JC}$ | 26 | $^{\circ}C/W$ |

Thermal Performance Note: Units mounted on recommended PCB (10mm x 10mm Cu pad test board)

ELECTRICAL SPECIFICATIONS ($T_A = 25^{\circ}C$ unless otherwise noted)

| PARAMETER | | CONDITIONS | SYMBOL | TYP | MAX | UNIT | | | |
|--|--|--|----------------------------------|-------|-------|--------------|---------|------|---|
| Forward voltage per diode ⁽¹⁾ | ES3A ES3B ES3C ES3D | $I_F = 1.5A, T_J = 25^{\circ}C$ | V_F | 0.80 | 0.92 | V | | | |
| | ES3F ES3G | | | 0.90 | 1.04 | V | | | |
| | ES3H ES3J | | | 1.11 | 1.30 | V | | | |
| | ES3A ES3B ES3C ES3D | $I_F = 3.0A, T_J = 25^{\circ}C$ | V_F | 0.86 | 1.00 | V | | | |
| | ES3F ES3G | | | 0.98 | 1.13 | V | | | |
| | ES3H ES3J | | | 1.24 | 1.45 | V | | | |
| | Reverse current @ rated V_R per diode ⁽²⁾ | ES3A ES3B ES3C ES3D | $T_J = 25^{\circ}C$ | I_R | - | 10 | μA | | |
| | | | $T_J = 125^{\circ}C$ | | - | 100 | μA | | |
| | | ES3A ES3B ES3C ES3D | $I_F = 1.5A, T_J = 125^{\circ}C$ | | V_F | 0.66 | 0.75 | V | |
| | | | | | | ES3F ES3G | 0.73 | 0.85 | V |
| | | | | | | ES3H ES3J | 0.85 | 0.98 | V |
| | | ES3A ES3B ES3C ES3D | $I_F = 3.0A, T_J = 125^{\circ}C$ | | V_F | 0.73 | 0.84 | V | |
| ES3F ES3G | 0.83 | | | 0.95 | | V | | | |
| ES3H ES3J | 0.99 | | | 1.13 | | V | | | |
| Junction capacitance | ES3A ES3B ES3C ES3D | 1 MHz, $V_R = 4.0V$ | C_J | 46 | - | pF | | | |
| | ES3F ES3G | | | 41 | - | pF | | | |
| | ES3H ES3J | | | 34 | - | pF | | | |
| Reverse recovery time | | $I_F = 0.5A, I_R = 1.0A$ $I_{RR} = 0.25A$ | t_{rr} | - | 35 | ns | | | |

Notes:

1. Pulse test with $PW = 0.3$ ms
2. Pulse test with $PW = 30$ ms

CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.1 Forward Current Derating Curve

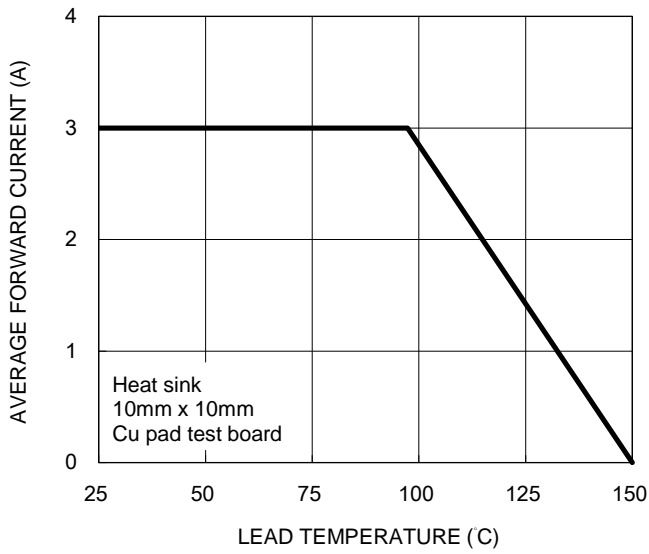


Fig.2 Typical Junction Capacitance

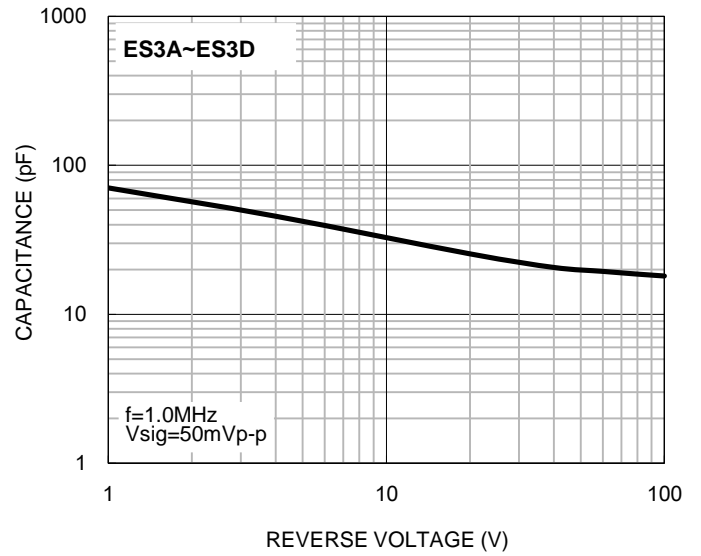


Fig.3 Typical Reverse Characteristics

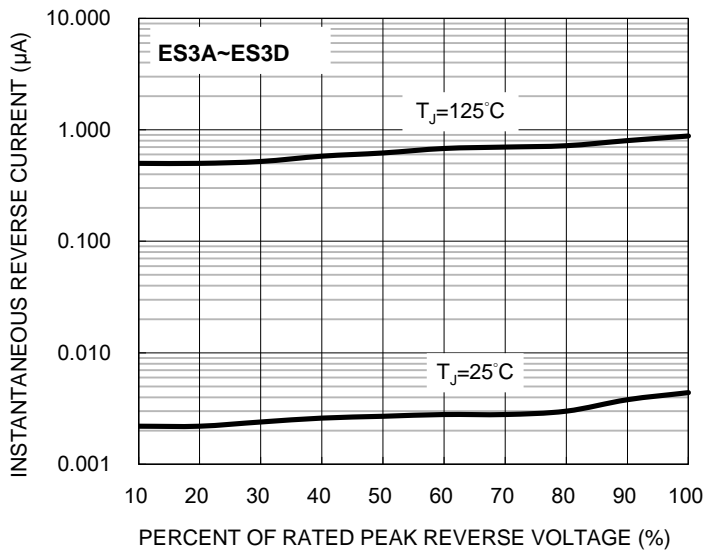


Fig.4 Typical Forward Characteristics

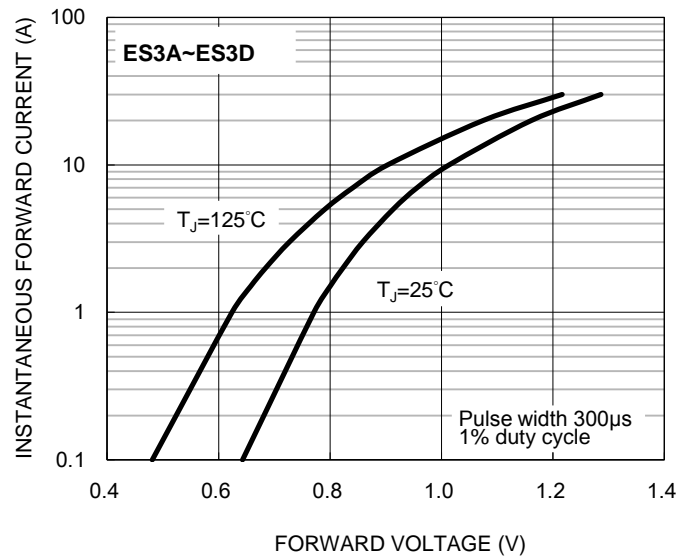


Fig.5 Typical Junction Capacitance

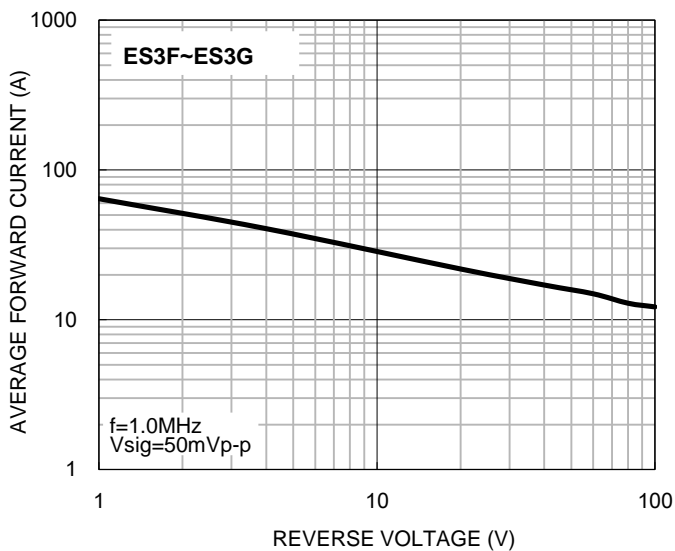
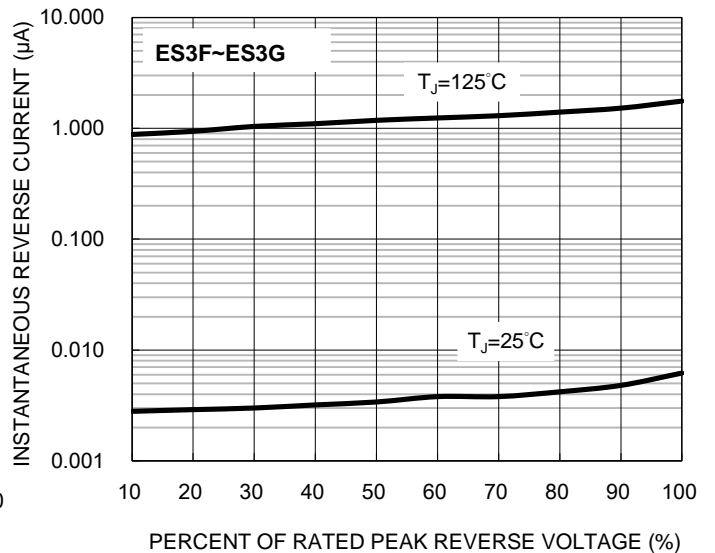


Fig.6 Typical Reverse Characteristics





CHARACTERISTICS CURVES

($T_A = 25^\circ\text{C}$ unless otherwise noted)

Fig.7 Typical Forward Characteristics

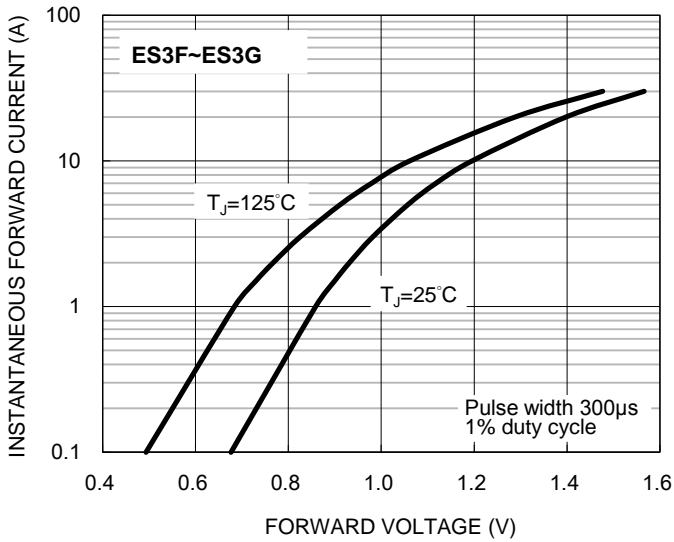


Fig.8 Typical Junction Capacitance

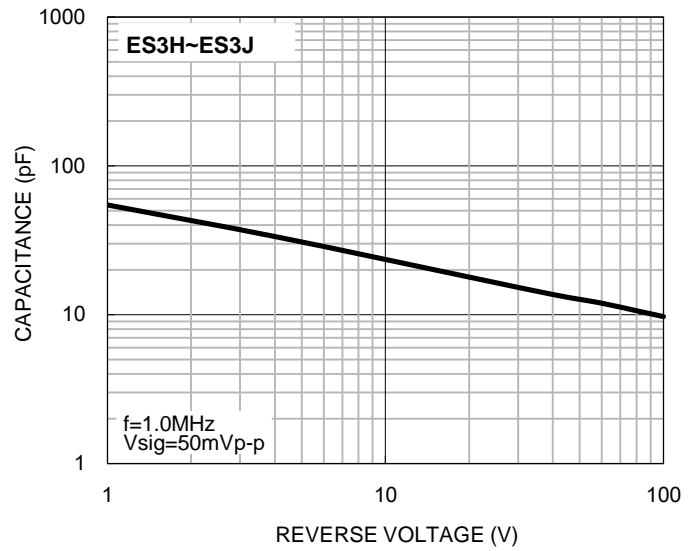


Fig.9 Typical Reverse Characteristics

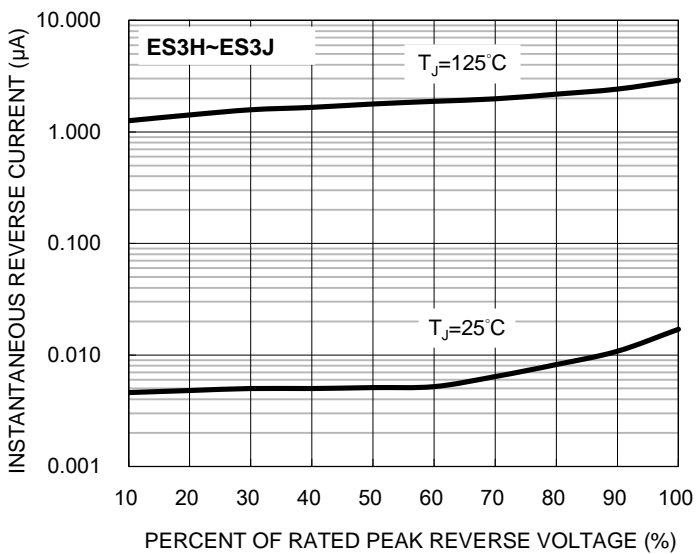


Fig.10 Typical Forward Characteristics

