3A, 20V - 200V Surface Mount Schottky Barrier Rectifier

FEATURES
- Low power loss, high efficiency
- Ideal for automated placement
- Guard ring for over-voltage protection
- High surge current capability
- 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
- On-board DC/DC converter

MECHANICAL DATA
- Case: DO-214AC (SMA)
- Molding compound meets UL 94V-0 flammability rating
- Packing code with suffix “G” means green compound (halogen-free)
- Part no. with suffix “H” means AEC-Q101 qualified
- 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: 0.07 g (approximately)

KEY PARAMETERS

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>VALUE</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>$I_{F(AV)}$</td>
<td>3</td>
<td>A</td>
</tr>
<tr>
<td>$V_{RRM}$</td>
<td>20 - 200</td>
<td>V</td>
</tr>
<tr>
<td>$I_{FSM}$</td>
<td>70</td>
<td>A</td>
</tr>
<tr>
<td>$T_{J MAX}$</td>
<td>150</td>
<td>°C</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>SK32A</th>
<th>SK33A</th>
<th>SK34A</th>
<th>SK35A</th>
<th>SK36A</th>
<th>SK39A</th>
<th>SK310A</th>
<th>SK315A</th>
<th>SK320A</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marking code on the device</td>
<td></td>
<td>SK32A</td>
<td>SK33A</td>
<td>SK34A</td>
<td>SK35A</td>
<td>SK36A</td>
<td>SK39A</td>
<td>SK310A</td>
<td>SK315A</td>
<td>SK320A</td>
<td></td>
</tr>
<tr>
<td>Repetitive peak reverse voltage</td>
<td>$V_{RRM}$</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>90</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>V</td>
</tr>
<tr>
<td>Reverse voltage, total rms value</td>
<td>$V_{RRMS}$</td>
<td>14</td>
<td>21</td>
<td>28</td>
<td>35</td>
<td>42</td>
<td>63</td>
<td>70</td>
<td>105</td>
<td>140</td>
<td>V</td>
</tr>
<tr>
<td>Maximum DC blocking voltage</td>
<td>$V_{DC}$</td>
<td>20</td>
<td>30</td>
<td>40</td>
<td>50</td>
<td>60</td>
<td>90</td>
<td>100</td>
<td>150</td>
<td>200</td>
<td>V</td>
</tr>
<tr>
<td>Forward current</td>
<td>$I_{F(AV)}$</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Surge peak forward current, 8.3 ms single half sine-wave superimposed on rated load per diode</td>
<td>$I_{FSM}$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>70</td>
<td>A</td>
</tr>
<tr>
<td>Critical rate of rise of off-state voltage</td>
<td>$dV/dt$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10,000</td>
<td>V/µs</td>
</tr>
<tr>
<td>Junction temperature</td>
<td>$T_J$</td>
<td>-55 to +150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>°C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{STG}$</td>
<td>-55 to +150</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>°C</td>
</tr>
</tbody>
</table>
# THERMAL PERFORMANCE

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>SYMBOL</th>
<th>LIMIT</th>
<th>UNIT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Junction-to-ambient thermal resistance</td>
<td>$R_{JA}$</td>
<td>66</td>
<td>°C/W</td>
</tr>
<tr>
<td>Junction-to-lead thermal resistance</td>
<td>$R_{JL}$</td>
<td>25</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

# ELECTRICAL SPECIFICATIONS ($T_A = 25°C$ unless otherwise noted)

<table>
<thead>
<tr>
<th>PARAMETER</th>
<th>CONDITIONS</th>
<th>SYMBOL</th>
<th>UNIT</th>
</tr>
</thead>
</table>

### Forward voltage per diode

- **SK32A, SK33A, SK34A**: $I_F = 3A, T_J = 25°C$
  - $V_F$: 0.55 V
- **SK35A, SK36A**: $T_J = 25°C$
  - $V_F$: 0.72 V
- **SK39A, SK310A, SK315A**: $T_J = 25°C$
  - $V_F$: 0.85 V
- **SK320A**: $T_J = 25°C$
  - $V_F$: 0.95 V

### Reverse current @ rated $V_R$ per diode

- **SK32A, SK33A, SK34A, SK35A, SK36A**: $T_J = 25°C$
  - $I_R$: 0.5 mA
- **SK39A, SK310A, SK315A, SK320A**: $T_J = 25°C$
  - $I_R$: 0.2 mA
- **SK32A, SK33A, SK34A, SK35A, SK36A**: $T_J = 100°C$
  - $I_R$: 0.1 mA

### Reverse current @ rated $V_R$ per diode

- **SK32A, SK33A, SK34A, SK35A, SK36A**: $T_J = 100°C$
  - $I_R$: 10 mA
- **SK39A, SK310A, SK315A, SK320A**: $T_J = 125°C$
  - $I_R$: 0.5 mA

**Notes:**
1. Pulse test with $PW=0.3$ ms
2. Pulse test with $PW=30$ ms
## ORDERING INFORMATION

<table>
<thead>
<tr>
<th>PART NO. SUFFIX</th>
<th>PACKING CODE</th>
<th>PACKING CODE SUFFIX(*)</th>
<th>PACKAGE</th>
<th>PACKING</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK3xxA (Note 1)</td>
<td>H</td>
<td>R3</td>
<td>SMA</td>
<td>1,800 / 7” Plastic reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>R2</td>
<td>SMA</td>
<td>7,500 / 13” Paper reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>M2</td>
<td>SMA</td>
<td>7,500 / 13” Plastic reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F3</td>
<td>Folded SMA</td>
<td>1,800 / 7” Plastic reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F2</td>
<td>Folded SMA</td>
<td>7,500 / 13” Paper reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>F4</td>
<td>Folded SMA</td>
<td>7,500 / 13” Plastic reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E3</td>
<td>Clip SMA</td>
<td>1,800 / 7” Plastic reel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>E2</td>
<td>Clip SMA</td>
<td>7,500 / 13” Paper reel</td>
</tr>
</tbody>
</table>

**Note:**
1. "xx" defines voltage from 20V (SK32A) to 200V (SK320A)
2. *: Optional available

## EXAMPLE P/N

<table>
<thead>
<tr>
<th>EXAMPLE P/N</th>
<th>PART NO. SUFFIX</th>
<th>PACKING CODE</th>
<th>PACKING CODE SUFFIX</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>SK36AHR3G</td>
<td>SK36A</td>
<td>H</td>
<td>R3</td>
<td>AEC-Q101 qualified Green compound</td>
</tr>
</tbody>
</table>
CHARACTERISTICS CURVES
(T_A = 25°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
CHARACTERISTICS CURVES

(T_A = 25°C unless otherwise noted)

Fig. 5 Maximum Non-repetitive Forward Surge Current

![Graph showing peak forward surge current vs. number of cycles at 60 Hz.]

8.3ms Single Half Sine Wave

Fig. 6 Typical Transient Thermal Characteristics

![Graph showing transient thermal impedance vs. pulse duration.]

PEAK FORWARD SURGE CURRENT (A) vs. NUMBER OF CYCLES AT 60 Hz

TRANSIENT THERMAL IMPEDANCE (°C/W) vs. T-PULSE DURATION (s)
PACKAGE OUTLINE DIMENSIONS

DO-214AC (SMA)

SUGGESTED PAD LAYOUT

MARKING DIAGRAM

<table>
<thead>
<tr>
<th>DIM.</th>
<th>Unit (mm)</th>
<th>Unit (inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>A</td>
<td>1.27</td>
<td>1.58</td>
</tr>
<tr>
<td>B</td>
<td>4.06</td>
<td>4.60</td>
</tr>
<tr>
<td>C</td>
<td>2.29</td>
<td>2.83</td>
</tr>
<tr>
<td>D</td>
<td>1.99</td>
<td>2.50</td>
</tr>
<tr>
<td>E</td>
<td>0.90</td>
<td>1.41</td>
</tr>
<tr>
<td>F</td>
<td>4.95</td>
<td>5.33</td>
</tr>
<tr>
<td>G</td>
<td>0.10</td>
<td>0.20</td>
</tr>
<tr>
<td>H</td>
<td>0.15</td>
<td>0.31</td>
</tr>
</tbody>
</table>

P/N = Marking Code
G = Green Compound
YW = Date Code
F = Factory Code
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