Ultra Fast Diode

Features:
- High efficiency, low VF
- High current capability
- High reliability
- High surge current capability
- Low power loss
- For use in low voltage, high frequency inventor, free wheeling, and polarity protection application

Specifications:

Mechanical Data:
- Cases: Moulded plastic
- Lead: Pure tin plated, lead free, solderable per MIL-STD-202, Method 208 guaranteed
- Polarity: Colour band denotes cathode end
- High temperature soldering guaranteed: 260°C/10 seconds/0.375 inch, (9.5mm) lead lengths at 5lbs., (2.3kg) tension
- Weight: 1.2g

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

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Symbol</th>
<th>SF32</th>
<th>SF34</th>
<th>SF36</th>
<th>SF37</th>
<th>SF38</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum Recurrent Peak Reverse Voltage</td>
<td>(V_{RRM})</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Maximum RMS Voltage</td>
<td>(V_{RMS})</td>
<td>70</td>
<td>140</td>
<td>280</td>
<td>350</td>
<td>420</td>
<td>V</td>
</tr>
<tr>
<td>Maximum DC Blocking Voltage</td>
<td>(V_{DC})</td>
<td>100</td>
<td>200</td>
<td>400</td>
<td>500</td>
<td>600</td>
<td>V</td>
</tr>
<tr>
<td>Maximum Average Forward Rectified Current 0.375 inch (9.5mm) Lead Length at (T_a = 55°C)</td>
<td>(I_{(AV)})</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>A</td>
</tr>
<tr>
<td>Peak Forward Surge Current, 8,3ms Single Half Sine-wave Superimposed on Rated Load (JEDEC method)</td>
<td>(I_{FSM})</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>125</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Maximum Instantaneous Forward Voltage at 3A</td>
<td>(V_{F})</td>
<td>0.95</td>
<td>1.3</td>
<td>1.7</td>
<td>-</td>
<td>-</td>
<td>V</td>
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</tbody>
</table>
# Ultra Fast Diode

## Parameters

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<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum DC Reverse Current at $T_A = 25°C$ at Rated DC Blocking Voltage at $T_A = 100°C$</td>
<td>$I_{R}$</td>
<td>5</td>
<td>100</td>
<td></td>
<td></td>
<td></td>
<td>μA</td>
</tr>
<tr>
<td>Maximum Reverse Recovery Time (Note 1)</td>
<td>$T_{rr}$</td>
<td></td>
<td></td>
<td>35</td>
<td></td>
<td></td>
<td>nS</td>
</tr>
<tr>
<td>Typical Junction Capacitance (Note 2)</td>
<td>$C_j$</td>
<td>80</td>
<td></td>
<td>70</td>
<td></td>
<td></td>
<td>pF</td>
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<tr>
<td>Typical Thermal Resistance</td>
<td>$R_{θJA}$</td>
<td></td>
<td></td>
<td>35</td>
<td></td>
<td></td>
<td>°C/W</td>
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<tr>
<td>Operating Temperature Range</td>
<td>$T_J$</td>
<td></td>
<td></td>
<td></td>
<td>-65 to +125</td>
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<td>°C</td>
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<tr>
<td>Storage Temperature Range</td>
<td>$T_{STG}$</td>
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<td></td>
<td></td>
<td>-65 to +150</td>
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</tr>
</tbody>
</table>

### Notes

1. Reverse Recovery Test Conditions: $I_F = 0.5A$, $I_R = 1A$, $I_{RR} = 0.25A$.
2. Measured at 1MHz and Applied Reverse Voltage of 4V DC.
3. Mount on Cu-Pad Size 16mm × 16mm on PCB.

## Ratings and Characteristic Curves

### Maximum Forward Current Derating Curve

- Single Phase
- Half Wave 60Hz
- Resistor or Inductive Load
- 0.375" (9.5mm) Lead Length

### Typical Reverse Characteristics

- $T_J = 100°C$
- $T_J = 25°C$

Percent of Rated Peak Reverse Voltage (%)
Ultra Fast Diode

Maximum Non-Repetitive Forward Surge Current

- 8.3ms Single Half Sine Wave
- JEDEC Method

Number of Cycles at 60Hz

Typical Forward Characteristics

Instantaneous Forward Current (A)

T = 25°C
Pulse Width = 300μs
1% Duty Cycle

Typical Junction Capacitance

Junction Capacitance (pF)

Reverse Voltage (V)

www.element14.com
www.farnell.com
www.newark.com
Ultra Fast Diode

Reverse Recovery Time Characteristic and Test Circuit Diagram

Notes:
1. Rise Time = 7ns Maximum. Input Impedance = 1MΩ 22pf
2. Rise Time = 10ns Maximum Source Impedance = 50Ω

Part Number Table

<table>
<thead>
<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Diode, Ultra-Fast, 3A, 100V</td>
<td>SF32</td>
</tr>
<tr>
<td>Diode, Ultra-Fast, 3A, 200V</td>
<td>SF34</td>
</tr>
<tr>
<td>Diode, Ultra-Fast, 3A, 400V</td>
<td>SF36</td>
</tr>
<tr>
<td>Diode, Ultra-Fast, 3A, 500V</td>
<td>SF37</td>
</tr>
<tr>
<td>Diode, Ultra-Fast, 3A, 600V</td>
<td>SF38</td>
</tr>
</tbody>
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