

OM SENI

Schottky barrier diodes are optimized for very low forward voltage drop and low leakage current and are used in a wide range of dc-dc converter, clamping and protection applications in portable devices. NSR0240P2 in a SOD-923 miniature package enables designers to meet the challenging task of achieving higher efficiency and meeting reduced space requirements.

Features

- Very Low Forward Voltage Drop – 460 mV @ 100 mA
- Low Reverse Current – 0.2 μ A @ 25 V VR
- 200 mA of Continuous Forward Current
- Power Dissipation of 240 mW with Minimum Trace
- Very High Switching Speed
- Low Capacitance – CT = 7 pF
- This is a Pb-Free Device

Typical Applications

- LCD and Keypad Backlighting
- Camera Photo Flash
- Buck and Boost dc-dc Converters
- Reverse Voltage and Current Protection
- Clamping & Protection

Markets

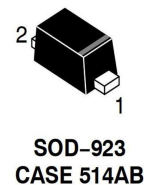
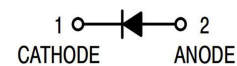
- Mobile Handsets
- MP3 Players
- Digital Camera and Camcorders
- Notebook PCs & PDAs
- GPS

MAXIMUM RATINGS

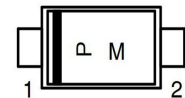
| Rating | Symbol | Value | Unit |
|---|-----------|---------------------|------|
| Reverse Voltage | V_R | 40 | V |
| Forward Current (DC) | I_F | 200 | mA |
| Non-Repetitive Peak Forward Surge Current | I_{FSM} | 2.0 | A |
| ESD Rating: Human Body Model Machine Model | ESD | Class 1C Class A | |

NSR0240P2T5G

40 V SCHOTTKY BARRIER DIODE



MARKING DIAGRAM



P = Specific Device Code
M = Month Code

ORDERING INFORMATION

| Device | Package | Shipping† |
|--------------|----------------------|--------------------|
| NSR0240P2T5G | SOD-923 (Pb-Free) | 8000 / Tape & Reel |

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

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THERMAL CHARACTERISTICS

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|--------------------------------|-----|-----|-------------|-----------------------------------|
| Thermal Resistance Junction-to-Ambient (Note 1) Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta\text{JA}}$ P_D | | | 520 240 | $^\circ\text{C/W}$ mW |
| Thermal Resistance Junction-to-Ambient (Note 2) Total Power Dissipation @ $T_A = 25^\circ\text{C}$ | $R_{\theta\text{JA}}$ P_D | | | 175 710 | $^\circ\text{C/W}$ mW |
| Junction and Storage Temperature Range | T_J, T_{stg} | | | -55 to +150 | $^\circ\text{C}$ |

1. Mounted onto a 4 in square FR-4 board 10 mm sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.
2. Mounted onto a 4 in square FR-4 board 1 in sq. 1 oz. Cu 0.06" thick single sided. Operating to steady state.

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

| Characteristic | Symbol | Min | Typ | Max | Unit |
|--|--------|-----|----------------------|-----------------------|---------------|
| Reverse Leakage ($V_R = 25\text{ V}$) ($V_R = 40\text{ V}$) | I_R | | 0.2 0.8 | 0.55 5.0 | μA |
| Forward Voltage ($I_F = 10\text{ mA}$) ($I_F = 100\text{ mA}$) ($I_F = 200\text{ mA}$) | V_F | | 0.34 0.46 0.54 | 0.365 0.50 0.60 | V |
| Total Capacitance ($V_R = 1.0\text{ V}, f = 1\text{ MHz}$) | C_T | | 7.0 | | pF |

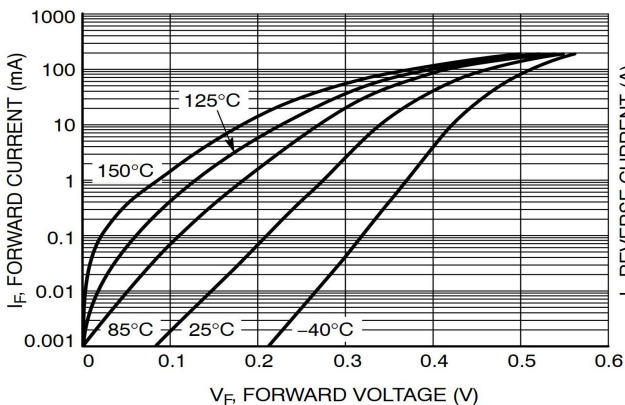


Figure 1. Forward Voltage

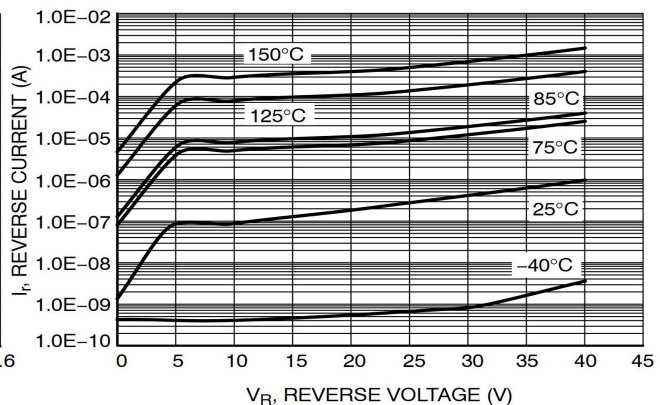


Figure 2. Leakage Current

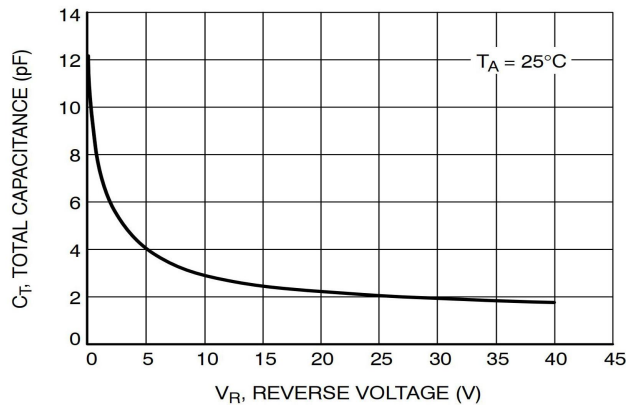


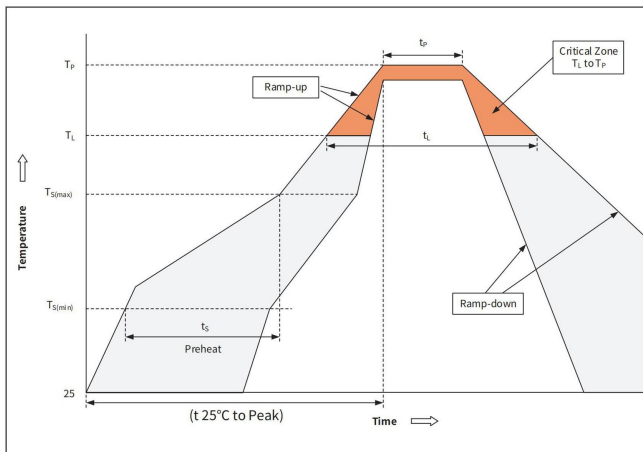
Figure 3. Total Capacitance

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Ordering Information

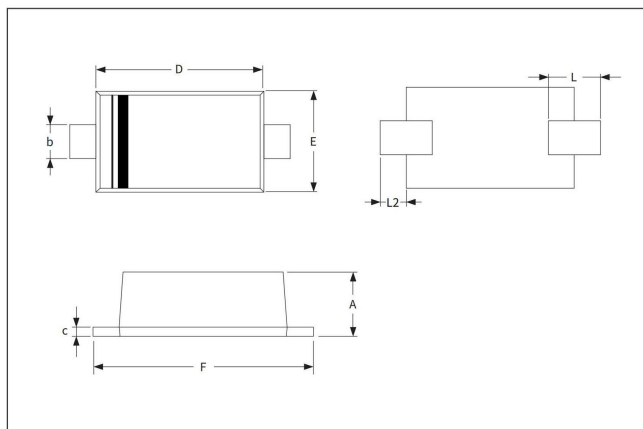
| PREFERRED P/N | PACKAGE | SIZE(mm) | DELIVERY MODE | MPQ(PCS) |
|---------------|---------|----------------|---------------|----------|
| | SOD-923 | 1.00×0.60×0.37 | 7" | 8000 |

Recommended Soldering Conditions



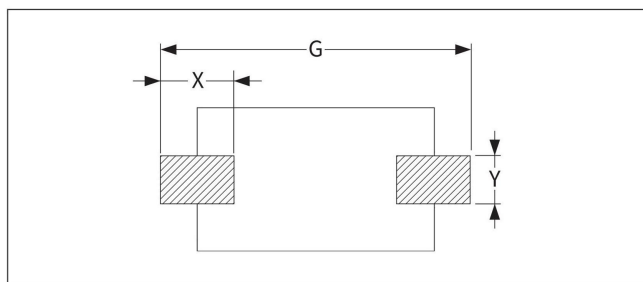
| Profile Feature | | Pb-Free Assembly |
|---|-----------------------------------|------------------|
| Pre-heat | Temperature Min ($T_{S(min)}$) | +150°C |
| | Temperature Max ($T_{S(max)}$) | +200°C |
| | Time (Min to Max) (t_s) | 60-180 secs. |
| Average ramp up rate (Liquid us Temp (T_L) to peak) | | 3°C /sec. Max |
| $T_{S(max)}$ to T_L - Ramp-up Rate | | 3°C /sec. Max |
| Reflow | Temperature (T_L) (Liquid us) | +217°C |
| | Temperature (t_L) | 60-150 secs. |
| Peak Temp (T_P) | | +260(+0/-5)°C |
| Time within 5°C of actual Peak Temp (t_p) | | 20-40secs |
| Ramp-down Rate | | 6°C /sec. Max |
| Time 25°C to Peak Temp (T_P) | | 8 min. Max |
| Do not exceed | | +260°C |

Package Outline Dimensions (SOD-923)



| Symbol | Dimensions | | | |
|--------|-------------|------|----------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| A | 0.34 | 0.40 | 0.013 | 0.016 |
| b | 0.15 | 0.25 | 0.006 | 0.010 |
| c | 0.07 | 0.17 | 0.003 | 0.007 |
| D | 0.75 | 0.85 | 0.030 | 0.033 |
| E | 0.55 | 0.65 | 0.022 | 0.026 |
| F | 0.95 | 1.05 | 0.037 | 0.041 |
| L | 0.19REF | | 0.007REF | |
| L2 | 0.05 | 0.15 | 0.002 | 0.006 |

Suggested Pad Layout



| Symbol | Dimensions | | | |
|--------|-------------|------|--------|-------|
| | Millimeters | | Inches | |
| | Min. | Max. | Min. | Max. |
| G | - | 1.20 | | 0.047 |
| X | 0.36 | - | 0.014 | - |
| Y | 0.25 | - | 0.010 | - |