



**THE DATASHEET OF
BZT52C6V2S**



Features

- Ultra-small surface mount package
- Epoxy meets UL 94 V-0 flammability
- Moisture Sensitivity Level 1
- Low zener impedance
- Ideal for automated assembly



Package: SOD-323

Maximum Ratings (T_A=25°C unless otherwise specified)

| Parameter | Symbol | Value | Unit |
|--|------------------|-------------|------|
| Forward Voltage ¹ @ I _F =10mA | V _F | 0.9 | V |
| Power Dissipation ² | P _D | 500 | mW |
| Power Dissipation ³ | P _D | 200 | mW |
| Thermal Resistance, Junction to Ambient ³ | R _{θJA} | 625 | °C/W |
| Operating Temperature Range | T _J | -65 to +150 | °C |
| Storage Temperature Range | T _{STG} | -65 to +150 | °C |

Note:

1. Short duration test pulse used to minimize self-heating effect.
2. Device mounted on ceramic PCB: 7.6mm x 9.4mm x 0.87mm with pad areas 25mm².
3. Device mounted on FR4 PCB, recommended footprint.

Electrical Characteristics (T_A=25°C unless otherwise specified)

| Type Number | Marking Code | Zener Voltage Range | | | | Maximum Zener Impedance @f=1KHz | | | Maximum Reverse Current | | Temperature Coefficient of Zener Voltage @I _{ZTC} =5mA ³ mV/°C | |
|-------------|--------------|-------------------------------------|-----|------|-----------------|----------------------------------|----------------------------------|-----------------|-------------------------|----------------|--|-----|
| | | V _Z @I _{ZT} (V) | | | I _{ZT} | Z _{ZT} @I _{ZT} | Z _{ZK} @I _{ZK} | I _{ZK} | I _R | V _R | Min | Max |
| | | Nom | Min | Max | mA | Ω | | mA | uA | V | | |
| BZT52C2V0S | WY | 2.0 | 1.8 | 2.15 | 5 | 150 | 600 | 1 | 100 | 1 | -3.5 | 0 |
| BZT52C2V4S | WX | 2.4 | 2.2 | 2.6 | 5 | 100 | 600 | 1 | 50 | 1 | -3.5 | 0 |
| BZT52C2V7S | W1 | 2.7 | 2.5 | 2.9 | 5 | 100 | 600 | 1 | 20 | 1 | -3.5 | 0 |
| BZT52C3V0S | W2 | 3 | 2.8 | 3.2 | 5 | 95 | 600 | 1 | 10 | 1 | -3.5 | 0 |
| BZT52C3V3S | W3 | 3.3 | 3.1 | 3.5 | 5 | 95 | 600 | 1 | 5 | 1 | -3.5 | 0 |
| BZT52C3V6S | W4 | 3.6 | 3.4 | 3.8 | 5 | 90 | 600 | 1 | 5 | 1 | -3.5 | 0 |
| BZT52C3V9S | W5 | 3.9 | 3.7 | 4.1 | 5 | 90 | 600 | 1 | 3 | 1 | -3.5 | 0 |
| BZT52C4V3S | W6 | 4.3 | 4 | 4.6 | 5 | 90 | 600 | 1 | 3 | 1 | -3.5 | 0 |
| BZT52C4V7S | W7 | 4.7 | 4.4 | 5 | 5 | 80 | 500 | 1 | 3 | 2 | -3.5 | 0.2 |
| BZT52C5V1S | W8 | 5.1 | 4.8 | 5.4 | 5 | 60 | 480 | 1 | 2 | 2 | -2.7 | 1.2 |
| BZT52C5V6S | W9 | 5.6 | 5.2 | 6 | 5 | 40 | 400 | 1 | 1 | 2 | -2 | 2.5 |
| BZT52C6V2S | WA | 6.2 | 5.8 | 6.6 | 5 | 10 | 150 | 1 | 3 | 4 | 0.4 | 3.7 |
| BZT52C6V8S | WB | 6.8 | 6.4 | 7.2 | 5 | 15 | 80 | 1 | 2 | 4 | 1.2 | 4.5 |
| BZT52C7V5S | WC | 7.5 | 7 | 7.9 | 5 | 15 | 80 | 1 | 1 | 5 | 2.5 | 5.3 |
| BZT52C8V2S | WD | 8.2 | 7.7 | 8.7 | 5 | 15 | 80 | 1 | 0.7 | 5 | 3.2 | 6.2 |

Electrical Characteristics (T_A=25°C unless otherwise specified)

| Type Number | Marking Code | Zener Voltage Range | | | | Maximum Zener Impedance @f=1KHz | | | Reverse Current | | Temperature Coefficient of Zener Voltage @I _{ZTC} =5mA ³ mV/°c | |
|-------------|--------------|-------------------------------------|------|------|-----------------|----------------------------------|----------------------------------|-----------------|-----------------|----------------|--|------|
| | | V _Z @I _{ZT} (V) | | | I _{ZT} | Z _{ZT} @I _{ZT} | Z _{ZK} @I _{ZK} | I _{ZK} | I _R | V _R | Min | Max |
| | | Nom | Min | Max | mA | Ω | | mA | uA | V | | |
| BZT52C9V1S | WE | 9.1 | 8.5 | 9.6 | 5 | 15 | 100 | 1 | 0.5 | 6 | 3.8 | 7 |
| BZT52C10S | WF | 10 | 9.4 | 10.6 | 5 | 20 | 150 | 1 | 0.2 | 7 | 4.5 | 8 |
| BZT52C11S | WG | 11 | 10.4 | 11.6 | 5 | 20 | 150 | 1 | 0.1 | 8 | 5.4 | 9 |
| BZT52C12S | WH | 12 | 11.4 | 12.7 | 5 | 25 | 150 | 1 | 0.1 | 8 | 6 | 10 |
| BZT52C13S | WI | 13 | 12.4 | 14.1 | 5 | 30 | 170 | 1 | 0.1 | 8 | 7 | 11 |
| BZT52C15S | WJ | 15 | 13.8 | 15.6 | 5 | 30 | 200 | 1 | 0.1 | 10.5 | 9.2 | 13 |
| BZT52C16S | WK | 16 | 15.3 | 17.1 | 5 | 40 | 200 | 1 | 0.1 | 11.2 | 10.4 | 14 |
| BZT52C18S | WL | 18 | 16.8 | 19.1 | 5 | 45 | 225 | 1 | 0.1 | 12.6 | 12.4 | 16 |
| BZT52C20S | WM | 20 | 18.8 | 21.2 | 5 | 55 | 225 | 1 | 0.1 | 14 | 14.4 | 18 |
| BZT52C22S | WN | 22 | 20.8 | 23.3 | 5 | 55 | 250 | 1 | 0.1 | 15.4 | 16.4 | 20 |
| BZT52C24S | WO | 24 | 22.8 | 25.6 | 5 | 70 | 250 | 1 | 0.1 | 16.8 | 18.4 | 22 |
| BZT52C27S | WP | 27 | 25.1 | 28.9 | 2 | 80 | 300 | 0.5 | 0.1 | 18.9 | 21.4 | 25.3 |
| BZT52C30S | WQ | 30 | 28 | 32 | 2 | 80 | 300 | 0.5 | 0.1 | 21 | 24.4 | 29.4 |
| BZT52C33S | WR | 33 | 31 | 35 | 2 | 80 | 325 | 0.5 | 0.1 | 23.1 | 27.4 | 33.4 |
| BZT52C36S | WS | 36 | 34 | 38 | 2 | 90 | 350 | 0.5 | 0.1 | 25.2 | 30.4 | 37.4 |
| BZT52C39S | WT | 39 | 37 | 41 | 2 | 130 | 350 | 0.5 | 0.1 | 27.3 | 33.4 | 41.2 |
| BZT52C43S | WU | 43 | 40.0 | 46.0 | 2 | 100 | 700 | 1.0 | 0.1 | 32.0 | 10.0 | 12.0 |
| BZT52C47S | WV | 47 | 44.0 | 50.0 | 2 | 100 | 750 | 1.0 | 0.1 | 35.0 | 10.0 | 12.0 |
| BZT52C51S | WW | 51 | 48.0 | 54.0 | 2 | 100 | 750 | 1.0 | 0.1 | 38.0 | 10.0 | 12.0 |
| BZT52C56S | XW | 56 | 52.0 | 60.0 | 2 | 135 | 700 | 1.0 | 0.1 | 39.0 | 10.0 | 12.0 |
| BZT52C62S | 6E | 62 | 58.0 | 66.0 | 2 | 200 | 1000 | 1.0 | 0.2 | 47.0 | 10.0 | 12.0 |
| BZT52C68S | 6F | 68 | 64.0 | 72.0 | 2 | 250 | 1000 | 1.0 | 0.2 | 52.0 | 10.0 | 12.0 |
| BZT52C75S | 6H | 75 | 70.0 | 79.0 | 2 | 300 | 1000 | 1.0 | 0.2 | 57.0 | 10.0 | 12.0 |

Note:

3. I_{ZTC} of BZT52C27S to BZT52C39S is 2mA

Ratings and Characteristic Curves

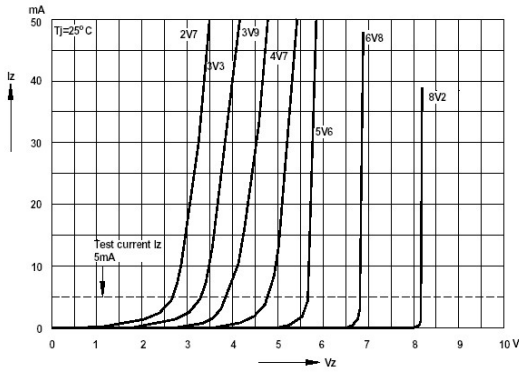


Figure 1. Breakdown Characteristics @ T_J =Constant (pulsed)

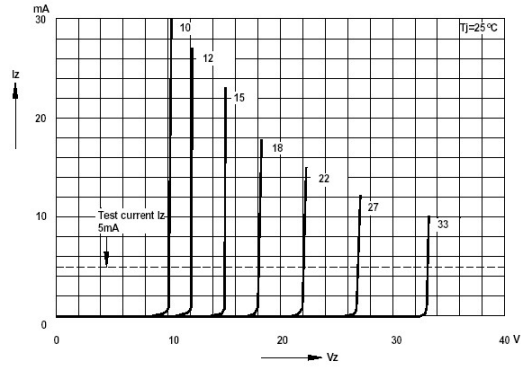


Figure 2. Breakdown Characteristics @ T_J =Constant (pulsed)

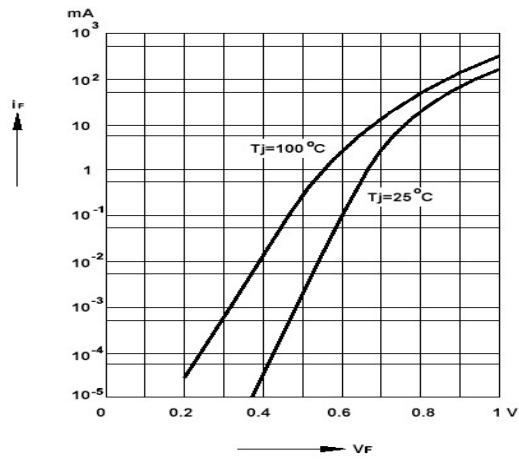


Figure 3. Forward Characteristics

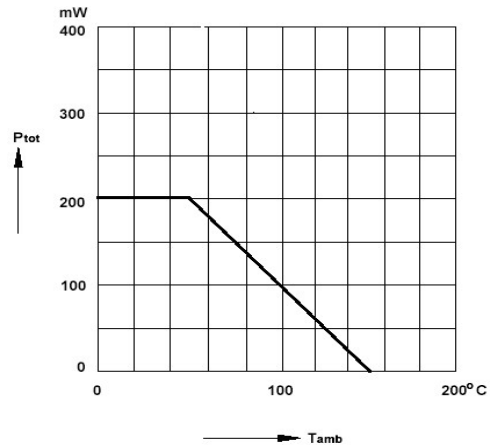


Figure 4. Admissible Power Dissipation vs. T_A

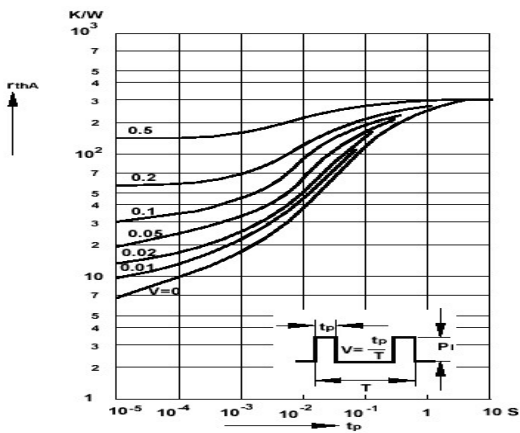


Figure 5. Pulse Thermal Resistance vs. Pulse Duration

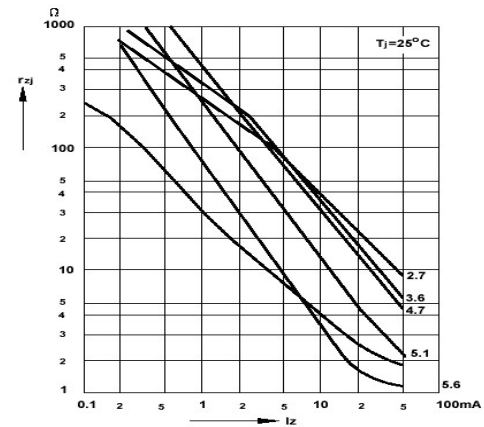


Figure 6. Dynamic Resistance vs. Zener Current

Ratings and Characteristic Curves

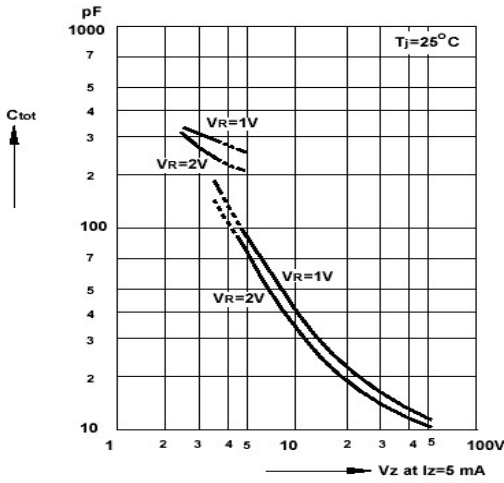


Figure 7. Capacitance vs. Zener Voltage

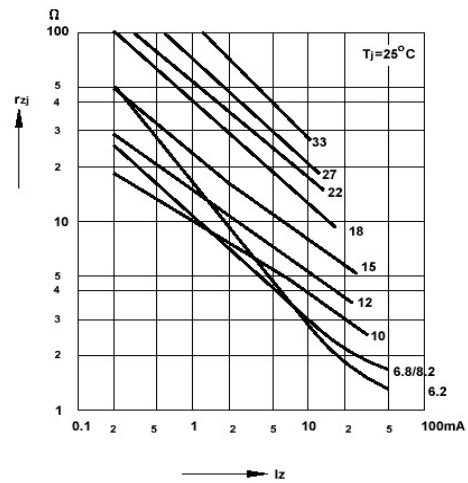


Figure 8. Dynamic Resistance vs. Zener Current

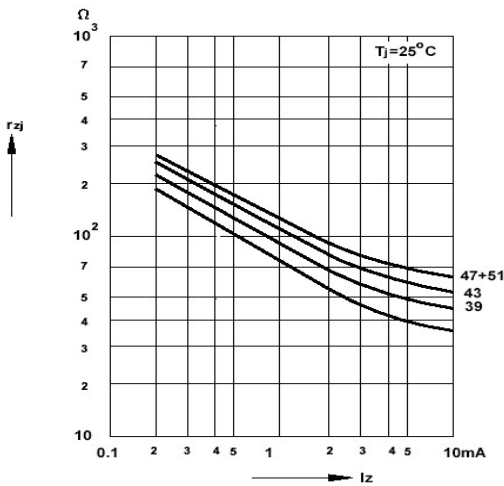


Figure 9. Dynamic Resistance vs. Zener Current

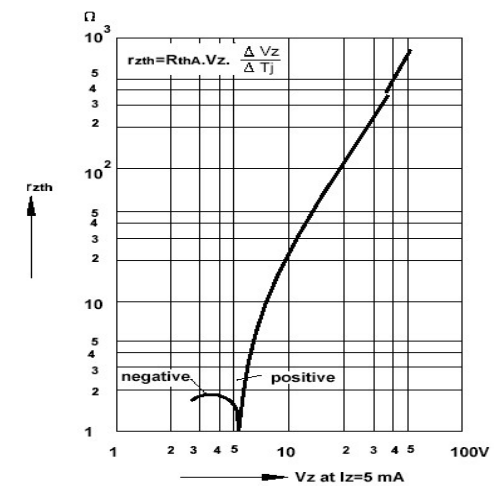


Figure 10. Thermal Differential Resistance vs. Zener Voltage

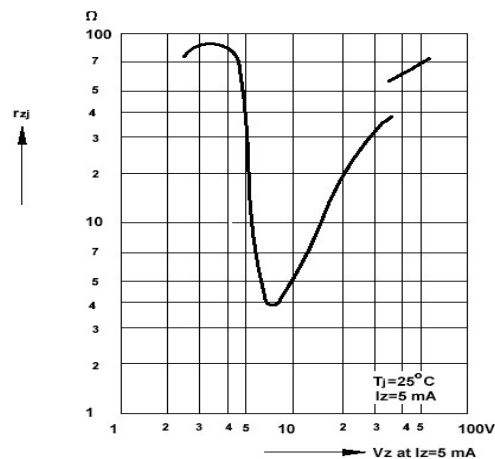


Figure 11. Dynamic Resistance vs. Zener Voltage

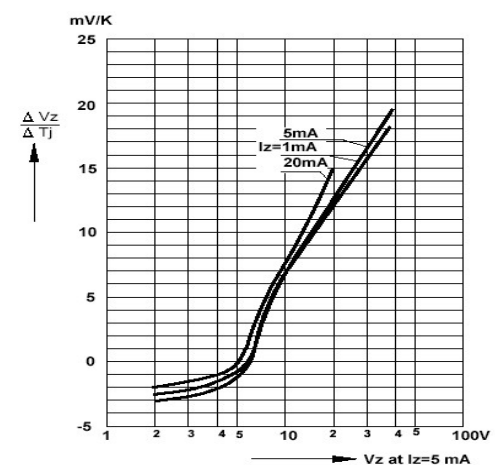


Figure 12. Temperature Dependence of Zener Voltage vs. Zener Voltage

Ratings and Characteristic Curves

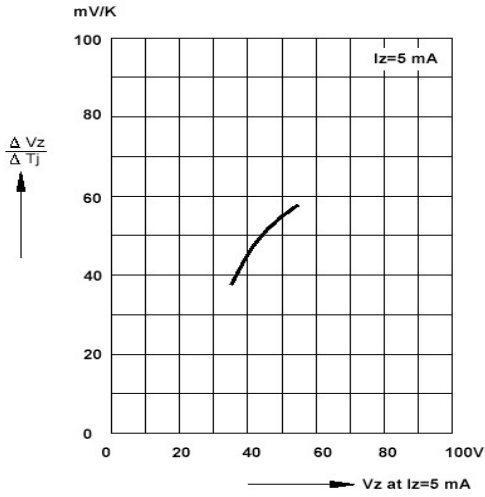


Figure 13. Temperature Dependence of Zener Voltage vs. Zener Voltage

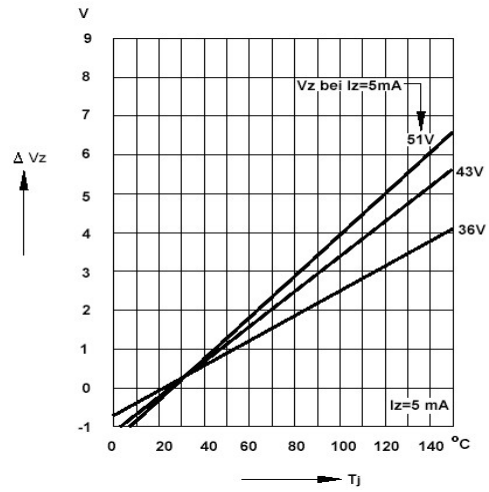


Figure 14. Change of Zener Voltage vs. T_j

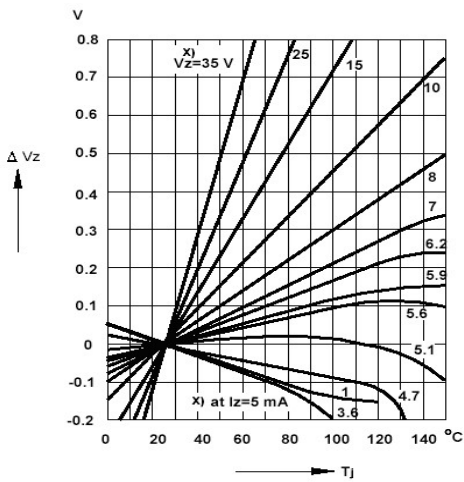


Figure 15. Change of Zener Voltage vs. T_j

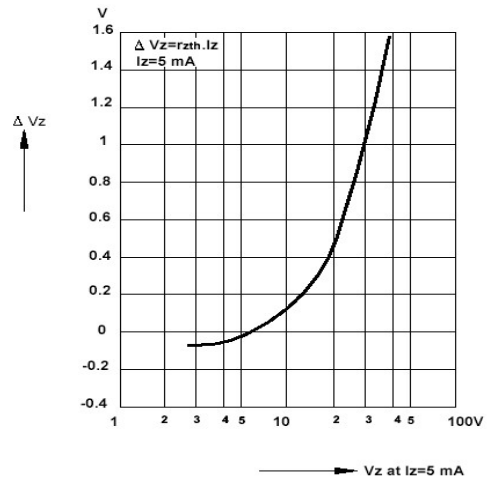
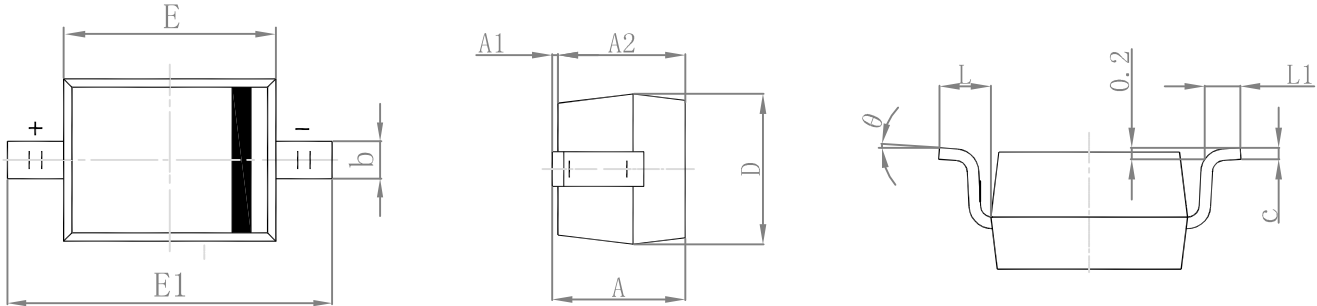


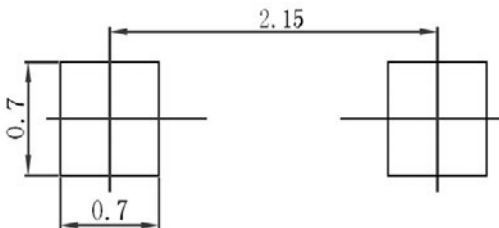
Figure 16. Change of Zener Voltage From Turn-on Up To The Point of Thermal Equilibrium vs. Zener Voltage

Package Outline Dimensions (SOD-323)



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|--------|---------------------------|-------|----------------------|-------|
| | Min | Max | Min | Max |
| A | - | 1.000 | - | 0.039 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.800 | 0.900 | 0.031 | 0.035 |
| b | 0.250 | 0.350 | 0.010 | 0.014 |
| c | 0.080 | 0.150 | 0.003 | 0.006 |
| D | 1.200 | 1.400 | 0.047 | 0.055 |
| E | 1.600 | 1.800 | 0.063 | 0.071 |
| E1 | 2.500 | 2.700 | 0.098 | 0.106 |
| L | 0.475 REF | | 0.019 REF | |
| L1 | 0.250 | 0.400 | 0.010 | 0.016 |
| θ | 0° | 8° | 0° | 8° |

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: $\pm 0.05\text{mm}$.
3. The pad layout is for reference purposes only.

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