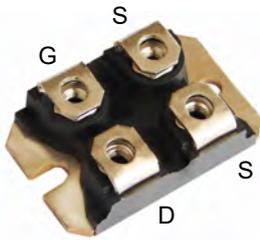


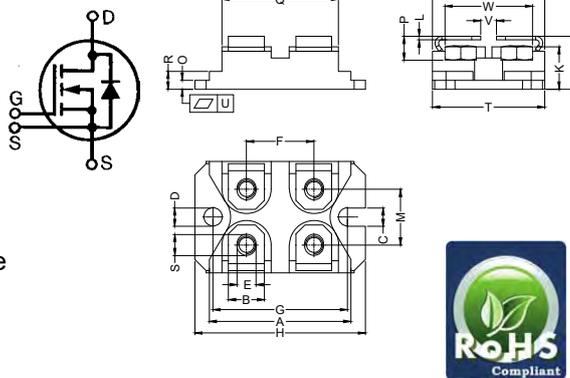
# SMOS44N50, SMOS48N50

## Power MOSFETs



G=Gate, D=Drain, S=Source

Dimensions SOT-227(ISOTOP)



| Dim. | Millimeter |       | Dim. | Millimeter |       |
|------|------------|-------|------|------------|-------|
|      | Min.       | Max.  |      | Min.       | Max.  |
| A    | 31.30      | 31.65 | M    | 12.00      | 13.00 |
| B    | 7.80       | 8.40  | N    | 25.15      | 25.65 |
| C    | 4.00       | 4.30  | O    | 1.95       | 2.15  |
| D    | Ø4.00      | Ø4.30 | P    | 5.60       | 6.60  |
| E    | 4.00       | 4.30  | Q    | 25.30      | 26.30 |
| F    | 14.90      | 15.20 | R    | 3.90       | 4.30  |
| G    | 30.10      | 30.30 | S    | 4.45       | 4.85  |
| H    | 38.00      | 38.50 | T    | 24.50      | 25.10 |
| J    | 12.10      | 12.90 | U    | 0.05       | 0.10  |
| K    | 9.00       | 9.60  | V    | 3.00       | 4.80  |
| L    | 0.75       | 0.85  | W    | 19.30      | 20.50 |



| Symbol            | Test Conditions  | Maximum Ratings  | Unit       |   |
|-------------------|--|------------------|------------|---|
| V <sub>DSS</sub>  | T <sub>J</sub> =25°C to 150°C  | 500              | V          |   |
| V <sub>DGR</sub>  | T <sub>J</sub> =25°C to 150°C; R <sub>GS</sub> =1MΩ  | 500              | V          |   |
| V <sub>GS</sub>   | Continuous   | ±20              | V          |   |
| V <sub>GSM</sub>  | Transient  | ±30              | V          |   |
| I <sub>D25</sub>  | T <sub>C</sub> =25°C   | 44N50<br>48N50   | 44<br>48   | A |
| I <sub>DM</sub>   | T <sub>C</sub> =25°C; pulse width limited by T <sub>JM</sub>   | 44N50<br>48N50   | 176<br>192 | A |
| I <sub>AR</sub>   | T <sub>C</sub> =25°C   | 24               | A          |   |
| E <sub>AR</sub>   | T <sub>C</sub> =25°C   | 30               | mJ         |   |
| dv/dt             | I <sub>S</sub> ≤I <sub>DM</sub> ; di/dt≤100A/us;<br>V <sub>DD</sub> ≤V <sub>DSS</sub> ; T <sub>JS</sub> ≤150°C; R <sub>G</sub> =2Ω | 5                | V/ns       |   |
| P <sub>D</sub>    | T <sub>C</sub> =25°C   | 520              | W          |   |
| T <sub>J</sub>    |  | -55...+150       | °C         |   |
| T <sub>JM</sub>   |  | 150              |            |   |
| T <sub>stg</sub>  |  | -55...+150       |            |   |
| T <sub>L</sub>    | 1.6mm(0.063 in.) from case for 10s   | -                | °C         |   |
| V <sub>ISOL</sub> | 50/60Hz,RMS t=1 min<br>I <sub>ISOL</sub> ≤1mA t=1 s  | 2500<br>3000     | V~         |   |
| M <sub>d</sub>    | Mounting torque<br>Terminal connection torque  | 1.5/13<br>1.5/13 | Nm/lb.in.  |   |
| Weight            | typical  | 30               | g          |   |

# SMOS44N50, SMOS48N50

## Power MOSFETs

(T<sub>J</sub>=25°C, unless otherwise specified)

| Symbol              | Test Conditions   | Characteristic Values |      |              | Unit |
|---------------------|---|-----------------------|------|--------------|------|
|                     |   | min.                  | typ. | max.         |      |
| V <sub>DSS</sub>    | V <sub>GS</sub> =0V; I <sub>D</sub> =1 mA   | 500                   |      |              | V    |
| V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> ; I <sub>D</sub> =8 mA   | 2                     |      | 4            | V    |
| I <sub>GSS</sub>    | V <sub>GS</sub> =±20V <sub>DC</sub> ; V <sub>DS</sub> =0  |                       |      | ±200         | nA   |
| I <sub>DSS</sub>    | V <sub>DS</sub> =0.8V <sub>DSS</sub> ; T <sub>J</sub> =25°C<br>V <sub>GS</sub> =0V; T <sub>J</sub> =125°C         |                       |      | 400          | uA   |
|                     |   |                       |      | 2            | mA   |
| R <sub>DS(on)</sub> | V <sub>GS</sub> =10V; I <sub>D</sub> =0.5I <sub>D25</sub> 44N50<br>48N50<br>Pulse test, t ≤300us, duty cycle d≤2% |                       |      | 0.12<br>0.10 | Ω    |

(T<sub>J</sub>=25°C, unless otherwise specified)

| Symbol              | Test Conditions   | Characteristic Values |      |      | Unit |
|---------------------|---|-----------------------|------|------|------|
|                     |   | min.                  | typ. | max. |      |
| g <sub>ts</sub>     | V <sub>DS</sub> =10V; I <sub>D</sub> =0.5I <sub>D25</sub> ; pulse test  | 22                    | 42   |      | S    |
| C <sub>ies</sub>    | V <sub>GS</sub> =0V; V <sub>DS</sub> =25V; f=1MHz   |                       | 8400 |      | pF   |
| C <sub>oes</sub>    |   |                       | 900  |      |      |
| C <sub>res</sub>    |   |                       | 280  |      |      |
| Q <sub>g(on)</sub>  | V <sub>GS</sub> =10V; V <sub>DS</sub> =0.5V <sub>DSS</sub> ; I <sub>D</sub> =0.5I <sub>D25</sub>                                  |                       | 270  |      | nC   |
| Q <sub>gs</sub>     |   |                       | 60   |      |      |
| Q <sub>gd</sub>     |   |                       | 135  |      |      |
| t <sub>d(on)</sub>  | V <sub>GS</sub> =10V; V <sub>DS</sub> =0.5V <sub>DSS</sub> ; I <sub>D</sub> =0.5I <sub>D25</sub><br>R <sub>G</sub> =1Ω (External) |                       | 30   |      | ns   |
| t <sub>r</sub>      |   |                       | 60   |      | ns   |
| t <sub>d(off)</sub> |   |                       | 100  |      | ns   |
| t <sub>f</sub>      |   |                       | 30   |      | ns   |
| R <sub>thJC</sub>   |   |                       |      | 0.24 | K/W  |
| R <sub>thCK</sub>   |   |                       | 0.05 |      | K/W  |

### Source-Drain Diode

(T<sub>J</sub>=25°C, unless otherwise specified)

| Symbol          | Test Conditions  | Characteristic Values |      |      | Unit |
|-----------------|--|-----------------------|------|------|------|
|                 |  | min.                  | typ. | max. |      |
| I <sub>S</sub>  | V <sub>GS</sub> =0V  |                       |      | 48   | A    |
| I <sub>SM</sub> | Repetitive; pulse width limited by T <sub>JM</sub>   |                       |      | 192  | A    |
| V <sub>SD</sub> | I <sub>F</sub> =100A; V <sub>GS</sub> =0V;<br>Pulse test, t <sub>300us</sub> , duty cycle d = 2% |                       |      | 1.5  | V    |
| t <sub>rr</sub> | I <sub>F</sub> =I <sub>S</sub> ; -di/dt=100A/us; V <sub>R</sub> =100V;                           |                       |      | 250  | ns   |
| Q <sub>RM</sub> |  |                       | TBD  |      | uC   |
| I <sub>RM</sub> |  |                       | 20   |      | A    |

