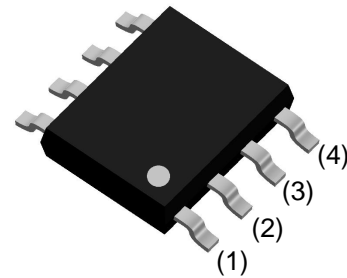
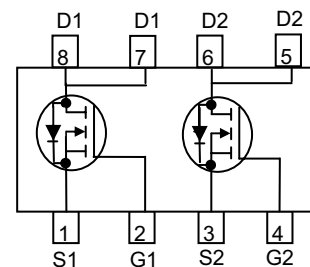


**WPMD4953**
**Dual P-Channel, -30V, -4.9A, Power MOSFET**
[Http://www.willsemi.com](http://www.willsemi.com)

| $V_{DS}$ (V) | $R_{ds(on)}$ ( $\Omega$ ) |
|--------------|---------------------------|
| -30          | 0.049@ $V_{GS}=-10V$      |
|              | 0.070@ $V_{GS}=-4.5V$     |


**SOP-8L**

**Pin configuration (Top view)**


WLSI = Company  
 4953 = Device Code  
 PD = Special Code  
 Y = Year  
 W = Week(A~z)

**Marking**
**Descriptions**

The WPMD4953 is the Dual P-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent  $R_{DS(ON)}$  with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit. Standard Product WPMD4953 is Pb-free and Halogen-free.

**Features**

- Super high density cell design for extremely low  $R_{DS(ON)}$
- Exceptional on-resistance and maximum DC current capability
- SOP-8L package design

**Applications**

- Power Management in Note book
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

**Order information**

| Device        | Package | Shipping       |
|---------------|---------|----------------|
| WPMD4953-8/TR | SOP-8L  | 4000/Reel&Tape |

**Absolute Maximum ratings**

| Parameter                              |                        | Symbol    | 10 S       | Steady State | Unit             |
|--|------------------------|-----------|------------|--------------|------------------|
| Drain-Source Voltage                   |                        | $V_{DS}$  | -30        |              | V                |
| Gate-Source Voltage                    |                        | $V_{GS}$  | $\pm 20$   |              |                  |
| Continuous Drain Current <sup>a</sup>  | $T_A=25^\circ\text{C}$ | $I_D$     | -4.9       | -3.8         | A                |
|  | $T_A=70^\circ\text{C}$ |           | -3.9       | -3.0         |                  |
| Maximum Power Dissipation <sup>a</sup> | $T_A=25^\circ\text{C}$ | $P_D$     | 1.9        | 1.1          | W                |
|  | $T_A=70^\circ\text{C}$ |           | 1.2        | 0.7          |                  |
| Continuous Drain Current <sup>b</sup>  | $T_A=25^\circ\text{C}$ | $I_D$     | -4.5       | -3.6         | A                |
|  | $T_A=70^\circ\text{C}$ |           | -3.6       | -2.9         |                  |
| Maximum Power Dissipation <sup>b</sup> | $T_A=25^\circ\text{C}$ | $P_D$     | 1.6        | 1.0          | W                |
|  | $T_A=70^\circ\text{C}$ |           | 1.0        | 0.6          |                  |
| Pulsed Drain Current <sup>c</sup>      |                        | $I_{DM}$  | -25        |              | A                |
| Operating Junction Temperature         |                        | $T_J$     | 150        |              | $^\circ\text{C}$ |
| Lead Temperature                       |                        | $T_L$     | 260        |              | $^\circ\text{C}$ |
| Storage Temperature Range              |                        | $T_{stg}$ | -55 to 150 |              | $^\circ\text{C}$ |

**Thermal resistance ratings**

| Single Operation                                    |                       |                 |         |         |                           |
|---|-----------------------|-----------------|---------|---------|---------------------------|
| Parameter   |                       | Symbol          | Typical | Maximum | Unit                      |
| Junction-to-Ambient Thermal Resistance <sup>a</sup> | $t \leq 10 \text{ s}$ | $R_{\theta JA}$ | 56      | 65      | $^\circ\text{C}/\text{W}$ |
|   | Steady State          |                 | 87      | 105     |                           |
| Junction-to-Ambient Thermal Resistance <sup>b</sup> | $t \leq 10 \text{ s}$ | $R_{\theta JA}$ | 64      | 76      |                           |
|   | Steady State          |                 | 96      | 115     |                           |
| Junction-to-Case Thermal Resistance                 |                       | $R_{\theta JC}$ | 32      | 40      |                           |
| Dual Operation                                      |                       |                 |         |         |                           |
| Junction-to-Ambient Thermal Resistance <sup>a</sup> | $t \leq 10 \text{ s}$ | $R_{\theta JA}$ | 61      | 70      |                           |
|   | Steady State          |                 | 92      | 112     |                           |
| Junction-to-Ambient Thermal Resistance <sup>b</sup> | $t \leq 10 \text{ s}$ | $R_{\theta JA}$ | 69      | 82      |                           |
|   | Steady State          |                 | 102     | 120     |                           |
| Junction-to-Case Thermal Resistance                 |                       | $R_{\theta JC}$ | 36      | 45      |                           |

a Surface mounted on FR4 Board using 1 square inch pad size, 1oz copper

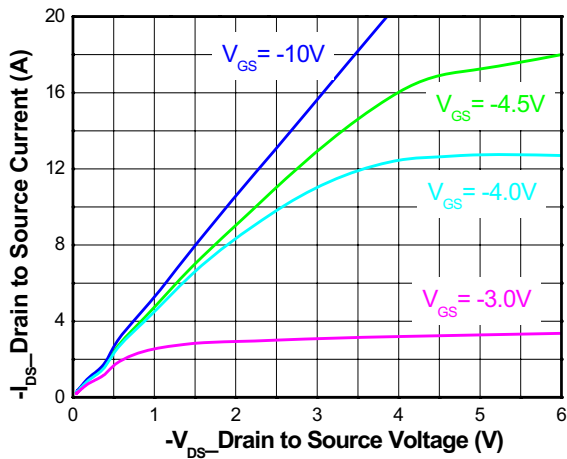
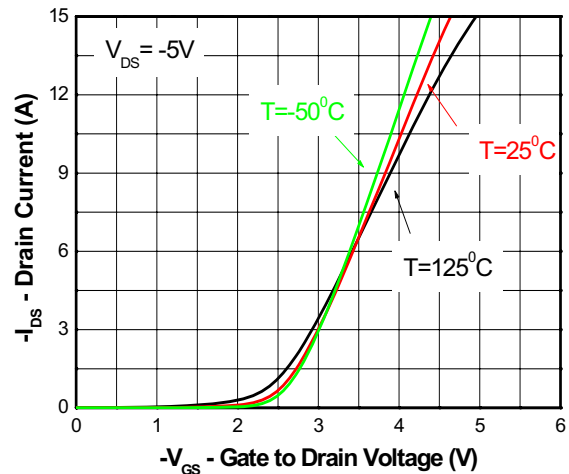
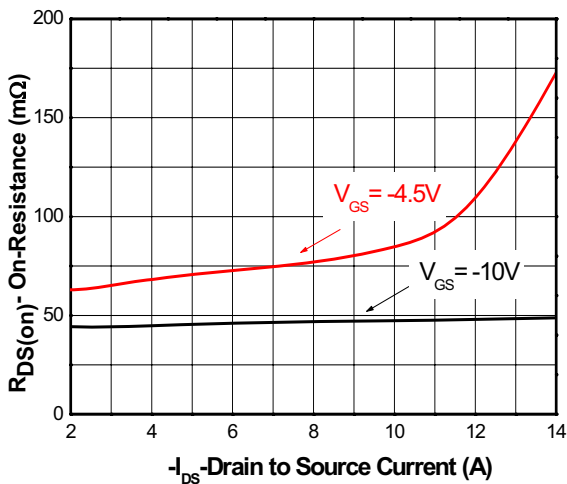
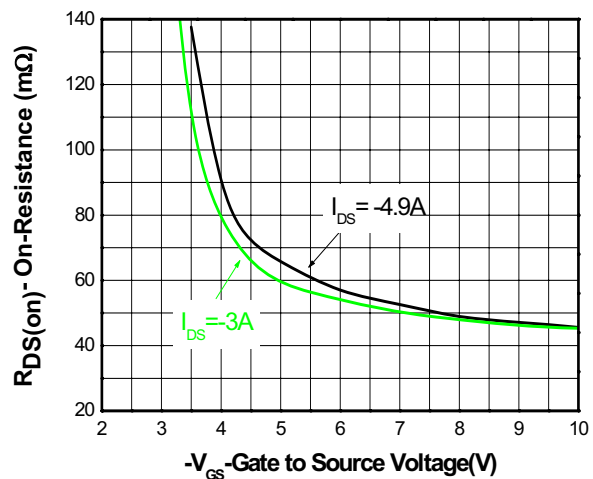
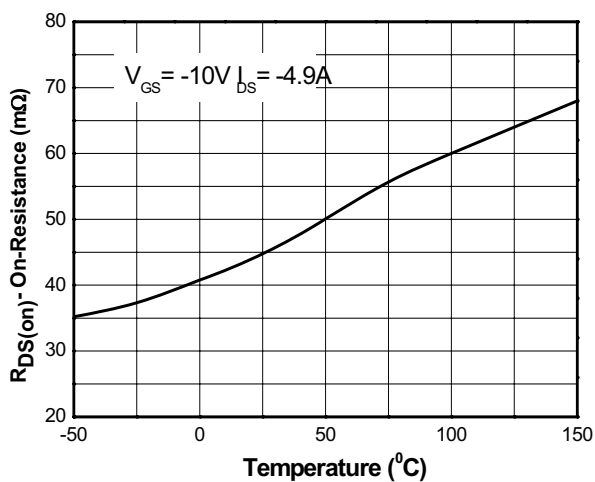
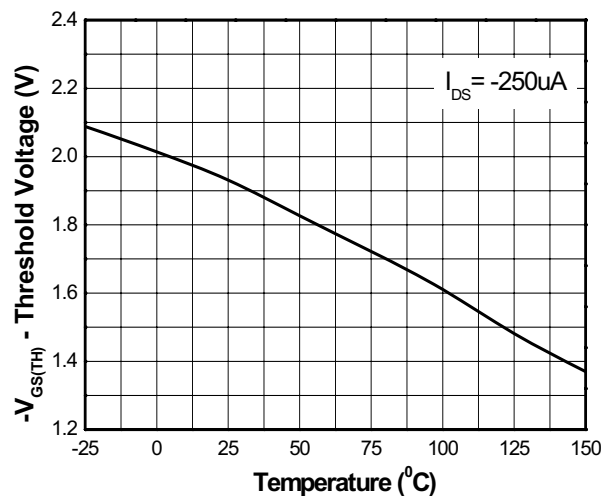
b Surface mounted on FR4 board using minimum pad size, 1oz copper

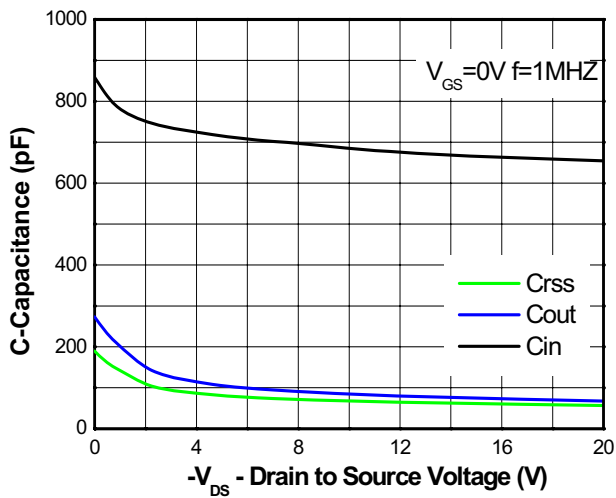
c Repetitive rating, pulse width limited by junction temperature,  $t_p=10\mu\text{s}$ , Duty Cycle=1%

d Repetitive rating, pulse width limited by junction temperature  $T_J=150^\circ\text{C}$ .

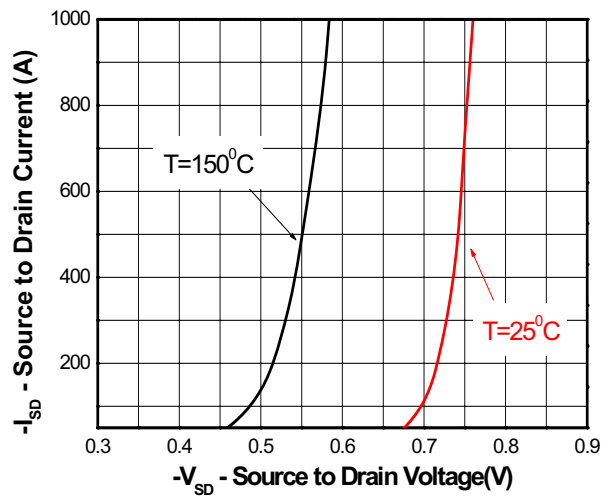
**Electronics Characteristics (Ta=25°C, unless otherwise noted)**

| Parameter  | Symbol       | Test Conditions   | Min   | Typ   | Max       | Unit          |
|--|--------------|---|-------|-------|-----------|---------------|
| <b>OFF CHARACTERISTICS</b>                       |              |   |       |       |           |               |
| Drain-to-Source Breakdown Voltage                | $BV_{DSS}$   | $V_{GS} = 0\text{ V}, I_D = -250\mu\text{A}$  | -30   |       |           | V             |
| Zero Gate Voltage Drain Current                  | $I_{DSS}$    | $V_{DS} = -24\text{ V}, V_{GS} = 0\text{ V}$  |       |       | -1        | $\mu\text{A}$ |
| Gate-to-source Leakage Current                   | $I_{GSS}$    | $V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$                                     |       |       | $\pm 100$ | nA            |
| <b>ON CHARACTERISTICS</b>                        |              |   |       |       |           |               |
| Gate Threshold Voltage                           | $V_{GS(TH)}$ | $V_{GS} = V_{DS}, I_D = -250\mu\text{A}$  | -1.5  | -1.9  | -2.5      | V             |
| Drain-to-source On-resistance                    | $R_{DS(on)}$ | $V_{GS} = -10\text{ V}, I_D = -4.9\text{ A}$  |       | 49    | 60        | m $\Omega$    |
|  |              | $V_{GS} = -4.5\text{ V}, I_D = -4.0\text{ A}$                                       |       | 70    | 90        |               |
| Forward Transconductance                         | $g_{FS}$     | $V_{DS} = -15\text{ V}, I_D = -3.0\text{ A}$  |       | 5.0   |           | S             |
| <b>CHARGES, CAPACITANCES AND GATE RESISTANCE</b> |              |   |       |       |           |               |
| Input Capacitance                                | $C_{ISS}$    | $V_{GS} = 0\text{ V}, f = 1\text{ MHz}, V_{DS} = -15\text{ V}$                      |       | 670   |           | pF            |
| Output Capacitance                               | $C_{OSS}$    |   |       | 75    |           |               |
| Reverse Transfer Capacitance                     | $C_{RSS}$    |   |       | 62    |           |               |
| Total Gate Charge                                | $Q_{G(TOT)}$ | $V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V}, I_D = -4.9\text{ A}$                 |       | 14.0  |           | nC            |
| Threshold Gate Charge                            | $Q_{G(TH)}$  |   |       | 1.31  |           |               |
| Gate-to-Source Charge                            | $Q_{GS}$     |   |       | 1.80  |           |               |
| Gate-to-Drain Charge                             | $Q_{GD}$     |   |       | 1.60  |           |               |
| <b>SWITCHING CHARACTERISTICS</b>                 |              |   |       |       |           |               |
| Turn-On Delay Time                               | $t_d(ON)$    | $V_{GS} = -10\text{ V}, V_{DS} = -15\text{ V}, R_L = 5.0\ \Omega, R_G = 15\ \Omega$ |       | 6.8   |           | ns            |
| Rise Time  | $t_r$        |   |       | 3.2   |           |               |
| Turn-Off Delay Time                              | $t_d(OFF)$   |   |       | 25.2  |           |               |
| Fall Time  | $t_f$        |   |       | 4.4   |           |               |
| <b>BODY DIODE CHARACTERISTICS</b>                |              |   |       |       |           |               |
| Forward Voltage                                  | $V_{SD}$     | $V_{GS} = 0\text{ V}, I_S = -1.0\text{ A}$  | -0.55 | -0.78 | -1.5      | V             |

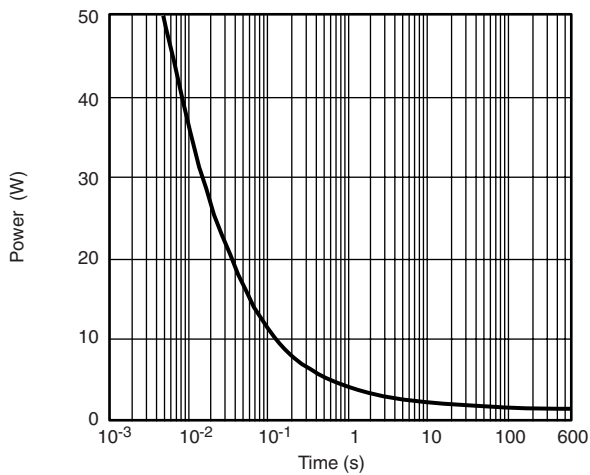
**Typical Characteristics (Ta=25°C, unless otherwise noted)**

**Output characteristics**

**Transfer characteristics**

**On-Resistance vs. Drain current**

**On-Resistance vs. Gate-to-Source voltage**

**On-Resistance vs. Junction temperature**

**Threshold voltage vs. Temperature**



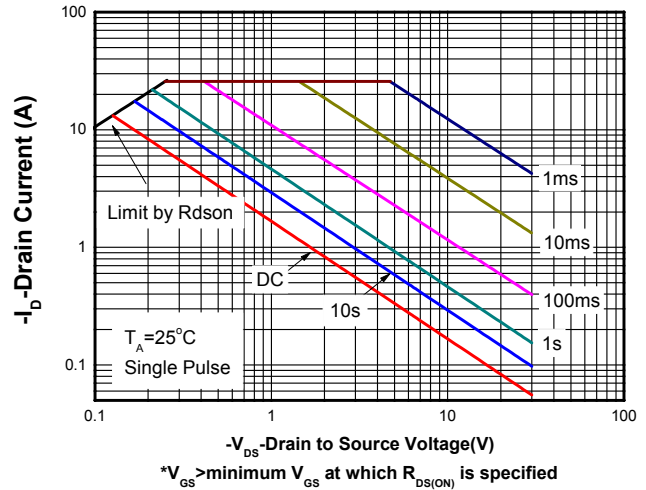
Capacitance



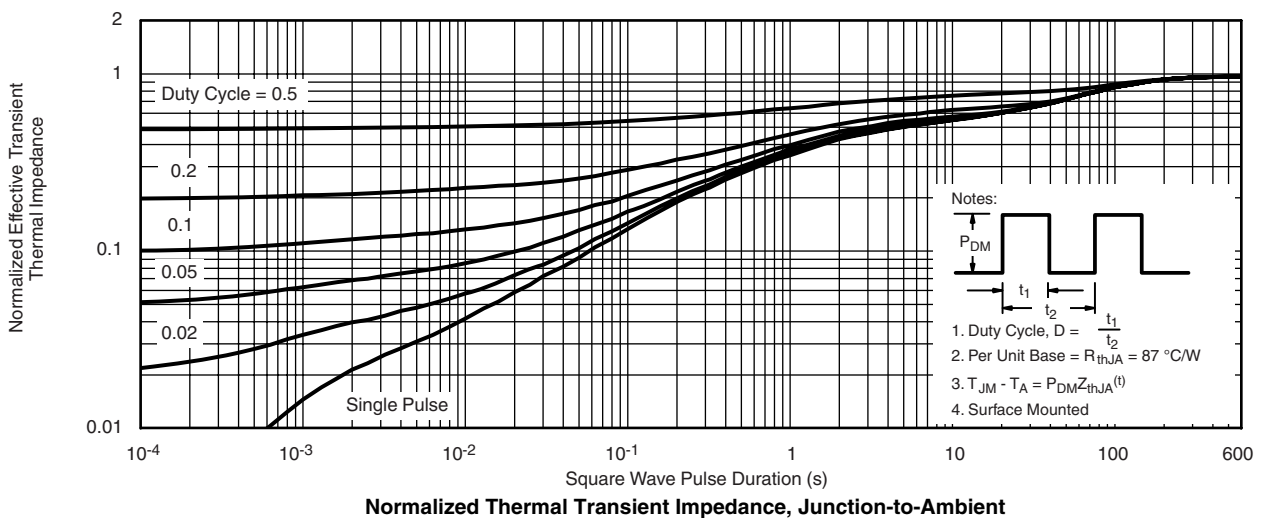
Body diode forward voltage

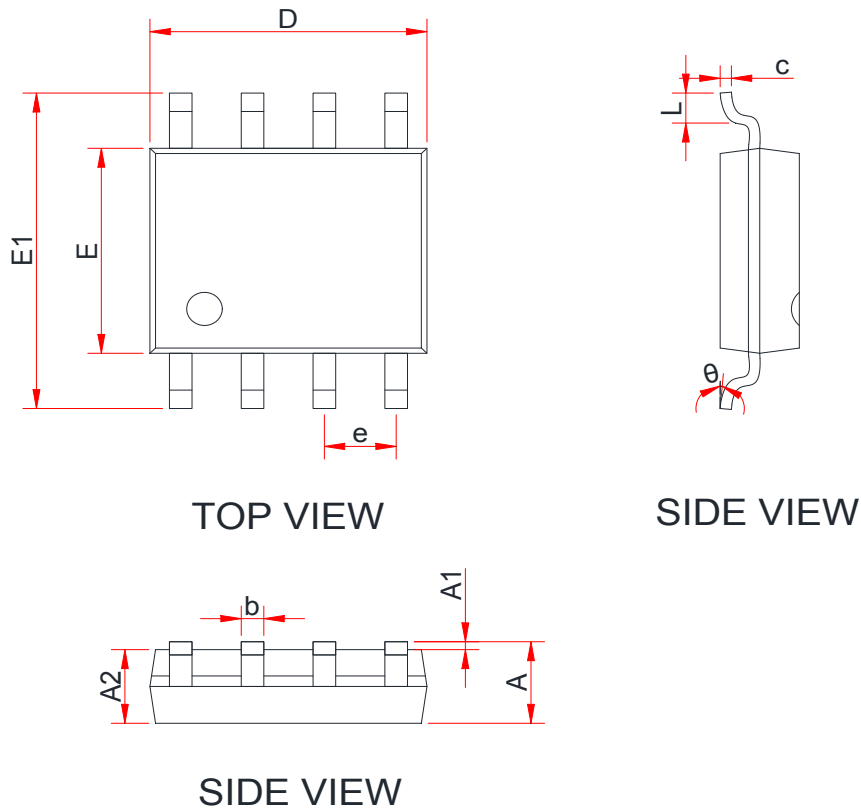


Single pulse power

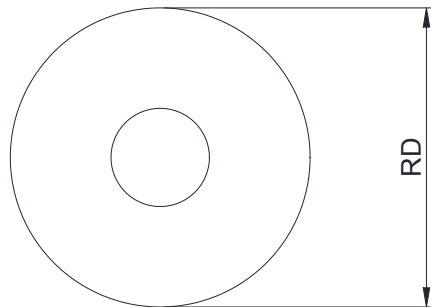
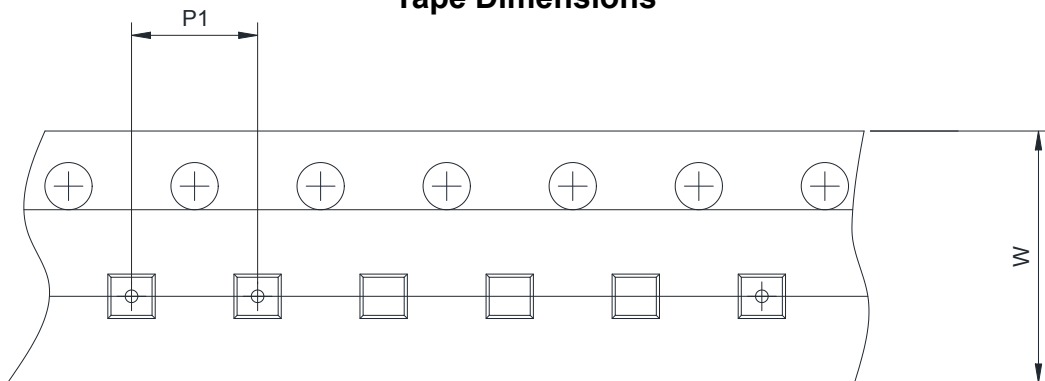
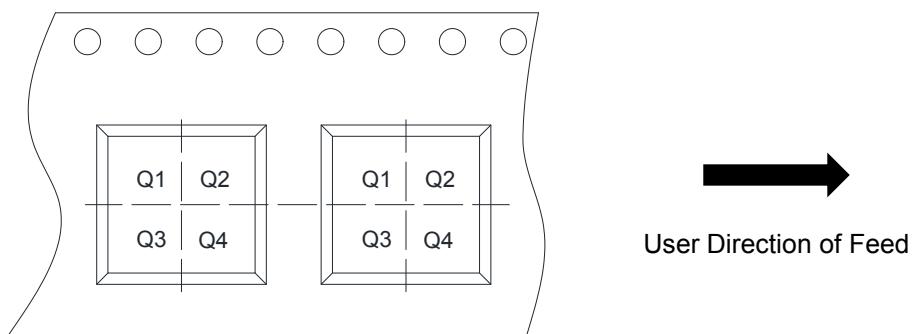


Safe operating power



**Package outline dimensions**
**SOP-8L**


| Symbol   | Dimensions In Millimeters (mm) |      |      |
|----------|--------------------------------|------|------|
|          | Min.                           | Typ. | Max. |
| A        | 1.35                           | 1.55 | 1.75 |
| A1       | 0.05                           | 0.15 | 0.25 |
| A2       | 1.25                           | 1.40 | 1.65 |
| b        | 0.33                           | -    | 0.51 |
| c        | 0.15                           | -    | 0.26 |
| D        | 4.70                           | 4.90 | 5.10 |
| E        | 3.70                           | 3.90 | 4.10 |
| E1       | 5.80                           | 6.00 | 6.20 |
| e        | 1.27BSC                        |      |      |
| L        | 0.40                           | -    | 1.27 |
| $\theta$ | 0°                             | -    | 8°   |

**TAPE AND REEL INFORMATION**
**Reel Dimensions**

**Tape Dimensions**

**Quadrant Assignments For PIN1 Orientation In Tape**


|      |   |  |  |   |                             |
|------|---|--|--|---|-----------------------------|
| RD   | Reel Dimension                          | <input type="checkbox"/> 7inch         | <input checked="" type="checkbox"/> 13inch |   |                             |
| W    | Overall width of the carrier tape       | <input type="checkbox"/> 8mm           | <input checked="" type="checkbox"/> 12mm   |   |                             |
| P1   | Pitch between successive cavity centers | <input type="checkbox"/> 2mm           | <input type="checkbox"/> 4mm               | <input checked="" type="checkbox"/> 8mm |                             |
| Pin1 | Pin1 Quadrant                           | <input checked="" type="checkbox"/> Q1 | <input type="checkbox"/> Q2                | <input type="checkbox"/> Q3             | <input type="checkbox"/> Q4 |