

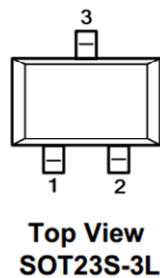
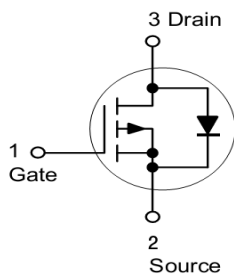
## P-Channel -50V MOSFET

### Features:

- Surface-mounted package
- Voltage controlled p-channel small signal switch
- Reduce power loss conserve energy
- Halogen free

### Application

- DC-DC converters
- Energy efficient
- Power management in portable and battery-powered product.



$B_{VDSS} = -50V$  ,  
 $R_{DS(ON)} \leq 10\Omega @ V_{GS} = -5V$   
 $I_D = -130mA$

### Absolute Maximum Ratings (T<sub>A</sub>=25°C Unless Otherwise Noted)

| Parameter  | Symbol                                 | BSS84      | Unit |
|--|--|------------|------|
|  | Marking                                | PD         |      |
| Drain-Source Voltage                             | V <sub>DSS</sub>                       | -50        | V    |
| Gate-Source Voltage                              | V <sub>GS</sub>                        | ±20        | V    |
| Continuous Drain Current@T <sub>a</sub> =25°C    | I <sub>D</sub>                         | -130       | mA   |
| Pulsed Drain Current(t <sub>p</sub> ≤ 10us)      | I <sub>DM</sub>                        | -520       | mA   |
| Power Dissipation                                | T <sub>a</sub> =25°C<br>P <sub>D</sub> | 225        | mW   |
| Operating Junction and Storage Temperature Range | T <sub>J</sub> , T <sub>stg</sub>      | -55 to 150 | °C   |

### Thermal Characteristics

| Symbol           | Characteristic      | Typ. | Max. | Units |
|------------------|---------------------|------|------|-------|
| R <sub>θJA</sub> | Junction-to-Ambient | ---  | 556  | °C/W  |

## P-Channel -50V MOSFET

### Electrical Characteristics (TA =25°C Unless Otherwise Specified)

| Symbol   | Parameter                            | Test Condition   | Min. | Typ. | Max. | Unit |
|--|--------------------------------------|--|------|------|------|------|
| Static <sup>(1)</sup>                          |                                      |  |      |      |      |      |
| BV <sub>DSS</sub>                              | Drain-Source Breakdown Voltage       | V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA  | -50  | --   | --   | V    |
| V <sub>GS(th)</sub>                            | Gate Threshold Voltage               | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA  | -0.8 | --   | -2   | V    |
| I <sub>GSS</sub>                               | Gate-Body Leakage                    | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V   | --   | --   | ±100 | nA   |
| I <sub>DSS</sub>                               | Zero Gate Voltage Drain Current      | V <sub>DS</sub> =-50V, V <sub>GS</sub> =0V   | --   | --   | -15  | μA   |
| R <sub>DS(ON)</sub>                            | Drain-Source On-Resistance           | V <sub>GS</sub> =-5 V, I <sub>D</sub> =-100mA  | --   | 8    | 10   | Ω    |
| Dynamic <sup>(2)</sup>                         |                                      |  |      |      |      |      |
| C <sub>iss</sub>                               | Input Capacitance                    | V <sub>DS</sub> =-5V, V <sub>GS</sub> =0V,<br>f =1.0MHz  | --   | 35   | --   | pF   |
| C <sub>oss</sub>                               | Output Capacitance                   |  | --   | 14   | --   |      |
| C <sub>rss</sub>                               | Reverse Transfer Capacitance         |  | --   | 6    | --   |      |
| t <sub>d(on)</sub>                             | Turn-On Delay Time                   | V <sub>DS</sub> =-15V, I <sub>D</sub> =-0.25Adc,<br>V <sub>GS</sub> =-10Vdc, R <sub>GEN</sub> =25Ω,<br>R <sub>L</sub> =50Ω | --   | 1    | --   | ns   |
| t <sub>r</sub>                                 | Turn-On Rise Time                    |  | --   | 20   | --   |      |
| t <sub>d(off)</sub>                            | Turn-Off Delay Time                  |  | --   | 12   | --   |      |
| t <sub>f</sub>                                 | Turn-Off Fall Time                   |  | --   | 23   | --   |      |
| Q <sub>T</sub>                                 | Gate Charge                          | V <sub>DS</sub> =-40V, V <sub>GS</sub> =-10V, I <sub>D</sub> =-1A  | --   | 2    | --   | nC   |
| Source-Drain Diode Ratings and Characteristics |                                      |  |      |      |      |      |
| V <sub>SD</sub>                                | Diode Forward voltage <sup>(2)</sup> | I <sub>S</sub> =130mA  | --   | --   | -2.2 | V    |

#### Notes :

- (1) Pulse test : pulse width ≤ 300us, duty cycle ≤ 2%
- (2) Switching characteristics are independent of operating junction temperature.

### TYPICAL ELECTRICAL CHARACTERISTICS

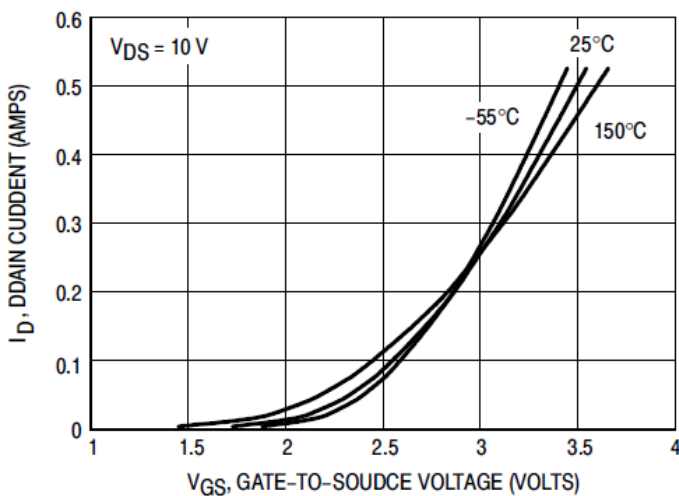


Figure 1. Transfer Characteristics

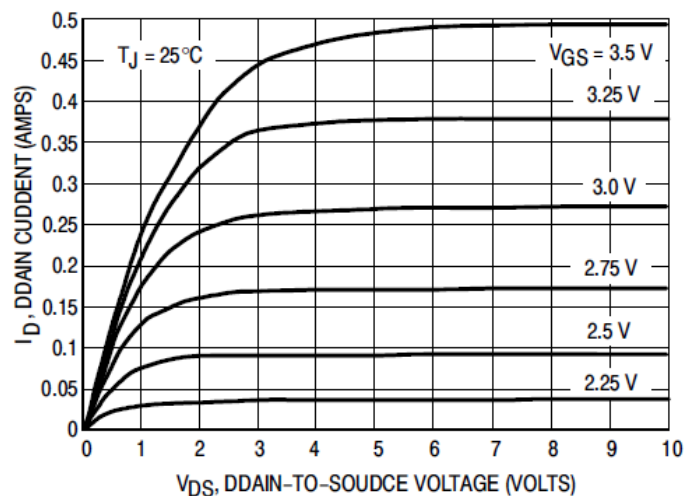


Figure 2. On-Region Characteristics

P-Channel -50V MOSFET

TYPICAL ELECTRICAL CHARACTERISTICS

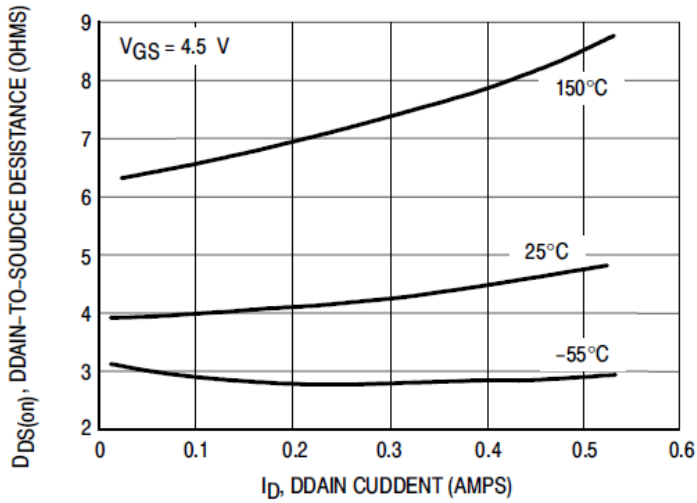


Figure 3. On-Resistance versus Drain Current

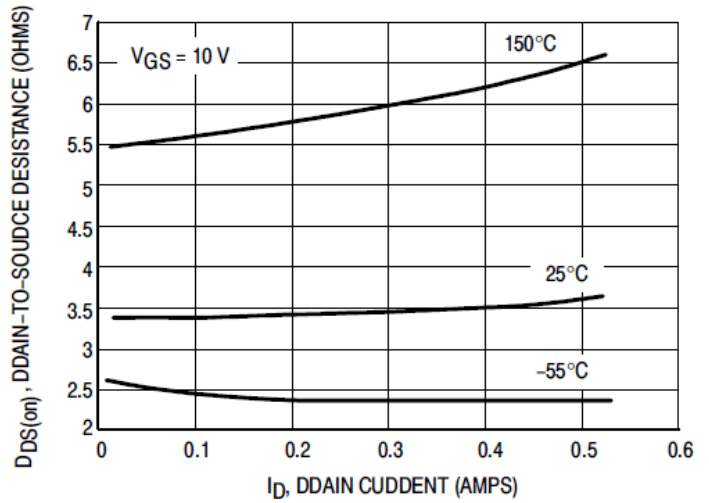


Figure 4. On-Resistance versus Drain Current

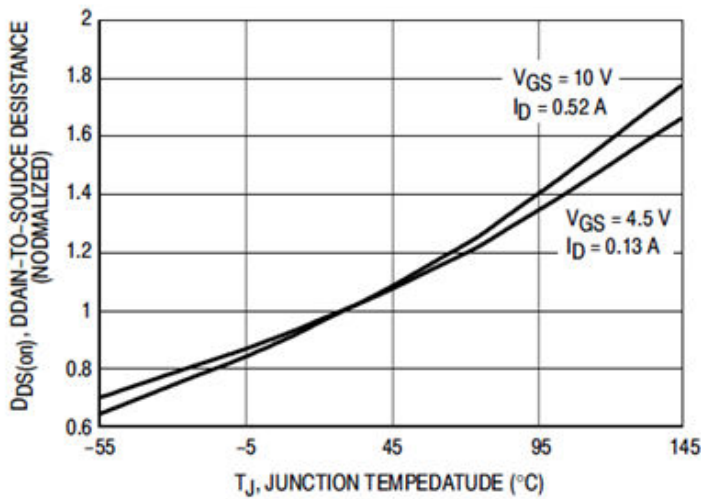


Figure 5. On-Resistance Variation with Temperature

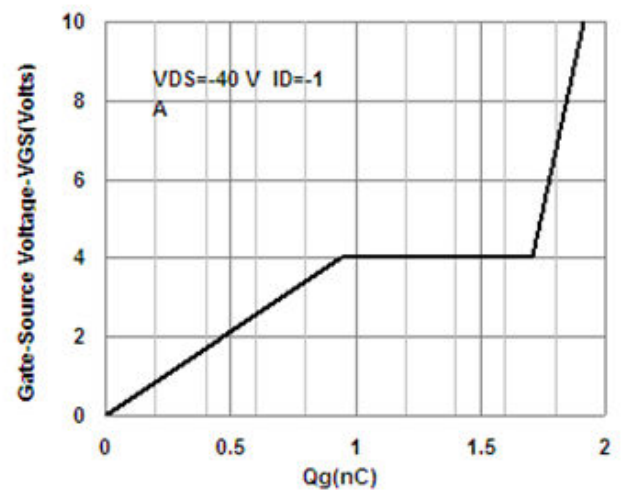


Figure 6. Gate-Charge Characteristics

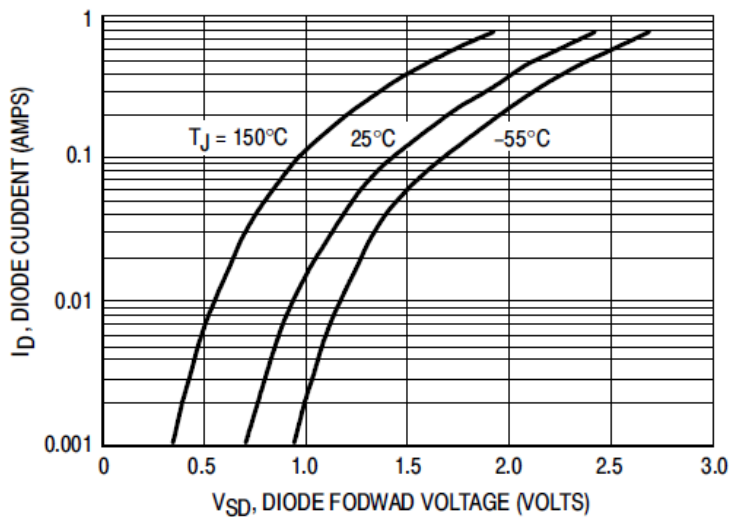
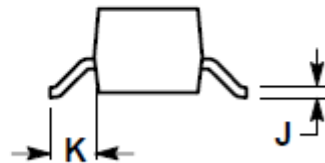
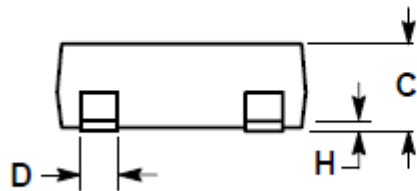
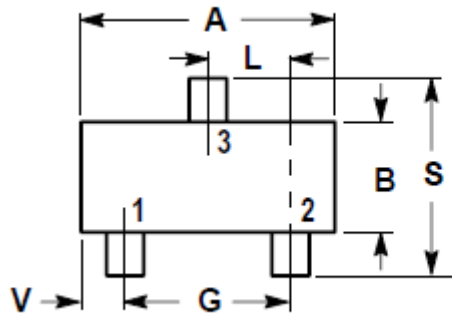


Figure 7. Body Diode Forward Voltage

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Package Dimension : SOT-23

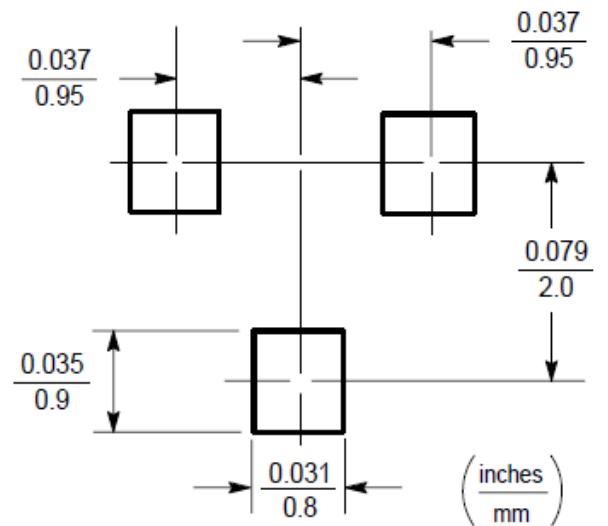


NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M,1982
2. CONTROLLING DIMENSION: INCH.

| DIM | INCHES |        | MILLIMETERS |       |
|-----|--------|--------|-------------|-------|
|     | MIN    | MAX    | MIN         | MAX   |
| A   | 0.1102 | 0.1197 | 2.80        | 3.04  |
| B   | 0.0472 | 0.0551 | 1.20        | 1.40  |
| C   | 0.0350 | 0.0440 | 0.89        | 1.11  |
| D   | 0.0150 | 0.0200 | 0.37        | 0.50  |
| G   | 0.0701 | 0.0807 | 1.78        | 2.04  |
| H   | 0.0005 | 0.0040 | 0.013       | 0.100 |
| J   | 0.0034 | 0.0070 | 0.085       | 0.177 |
| K   | 0.0140 | 0.0285 | 0.35        | 0.69  |
| L   | 0.0350 | 0.0401 | 0.89        | 1.02  |
| S   | 0.0830 | 0.1039 | 2.10        | 2.64  |
| V   | 0.0177 | 0.0236 | 0.45        | 0.60  |

SOLDERING FOOTPRINT\*



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