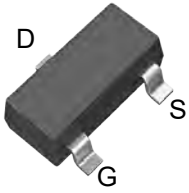
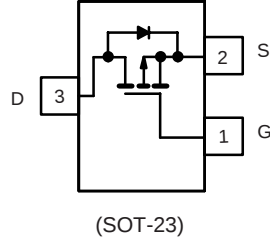


# SMOS2333A

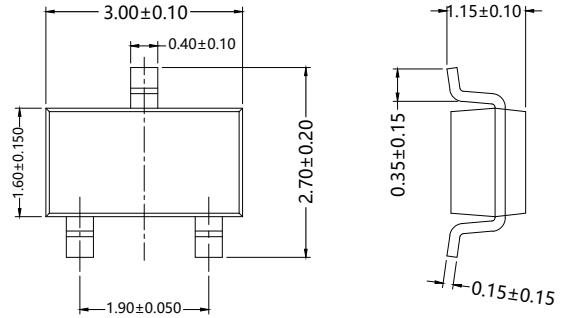
## P-channel Enhancement Mode Power MOSFETs



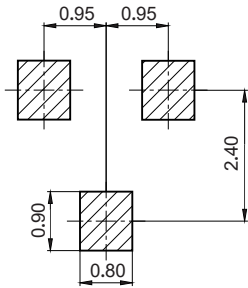
G=Gate, D=Drain,  
S=Source



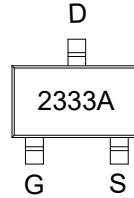
Dimensions SOT-23-3L (mm)



Mounting Pad Layout (mm)



Marking



| Symbol    | Test Conditions                                                              | Maximum Ratings | Unit               |
|-----------|------------------------------------------------------------------------------|-----------------|--------------------|
| $V_{DSS}$ | $T_J=25^{\circ}\text{C}$ to $150^{\circ}\text{C}$                            | -12             | V                  |
| $V_{DGR}$ | $T_J=25^{\circ}\text{C}$ to $150^{\circ}\text{C}$ ; $R_{GS}=1\text{M}\Omega$ | -12             | V                  |
| $V_{GS}$  | Continuous                                                                   | $\pm 12$        | V                  |
| $V_{GSM}$ | Transient                                                                    | $\pm 15$        | V                  |
| $I_D$     | $T_C=25^{\circ}\text{C}$                                                     | -7              | A                  |
|           | $T_C=100^{\circ}\text{C}$                                                    | -4.6            | A                  |
| $I_{DM}$  | $T_C=25^{\circ}\text{C}$ ; pulse width limited by $T_{JM}$                   | -20             | A                  |
| $P_D$     | $T_C=25^{\circ}\text{C}$                                                     | 1.2             | W                  |
| $T_J$     |                                                                              | -55...+150      | $^{\circ}\text{C}$ |
| $T_{JM}$  |                                                                              | 150             | $^{\circ}\text{C}$ |
| $T_{stg}$ |                                                                              | -55...+150      | $^{\circ}\text{C}$ |

# SMOS2333A

## P-channel Enhancement Mode 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> =-250uA               | -12                   |      |      | V    |
| V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> ; I <sub>D</sub> =-250uA | -0.4                  | -0.7 | -1.0 | V    |
| I <sub>GSS</sub>    | V <sub>GS</sub> =±12V <sub>DC</sub> ; V <sub>DS</sub> =0  |                       |      | ±100 | nA   |
| I <sub>DSS</sub>    | V <sub>DS</sub> =-12V; T <sub>J</sub> =25°C               |                       |      | -1.0 | uA   |
|                     | V <sub>GS</sub> =0V; T <sub>J</sub> =125°C                |                       |      | -100 | uA   |

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

| Symbol                                                                        | Test Conditions                                                                                      | Characteristic Values |                     |          | Unit                 |
|-------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------|---------------------|----------|----------------------|
|                                                                               |                                                                                                      | min.                  | typ.                | max.     |                      |
| R <sub>DS(on)</sub>                                                           | V <sub>GS</sub> =-4.5V; I <sub>D</sub> =-7A<br>V <sub>GS</sub> =-2.5V; I <sub>D</sub> =-5A           |                       | 19.50<br>26.50      | 27<br>40 | mΩ                   |
| C <sub>ies</sub><br>C <sub>oes</sub><br>C <sub>res</sub>                      | V <sub>GS</sub> =0V; V <sub>DS</sub> =-6V; f=1MHz                                                    |                       | 1300<br>305<br>280  |          | pF                   |
| Q <sub>g(on)</sub><br>Q <sub>gs</sub><br>Q <sub>gd</sub>                      | V <sub>GS</sub> =-6V; V <sub>DS</sub> =-4.5V; I <sub>D</sub> =-7A                                    |                       | 19<br>3.9<br>4.4    |          | nC                   |
| t <sub>d(on)</sub><br>t <sub>r</sub><br>t <sub>d(off)</sub><br>t <sub>f</sub> | V <sub>GS</sub> =-4.5V; V <sub>DS</sub> =-6V; I <sub>D</sub> =-4A<br>R <sub>G</sub> =2.5Ω (External) |                       | 11<br>36<br>29<br>8 |          | ns<br>ns<br>ns<br>ns |
| R <sub>thJF</sub>                                                             |                                                                                                      |                       |                     | 50       | K/W                  |
| R <sub>thJA</sub>                                                             |                                                                                                      |                       |                     | 65       | K/W                  |

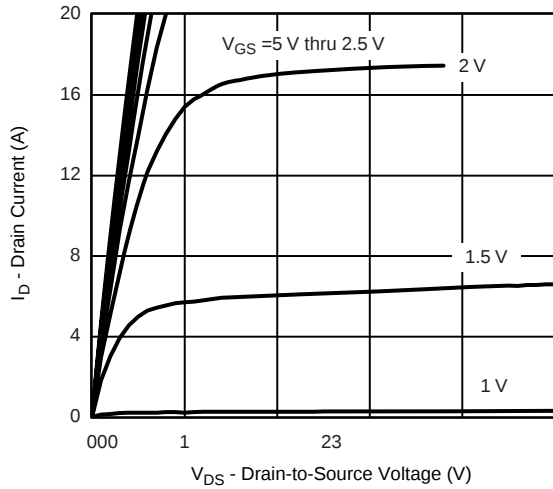
### Source-Drain Diode

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

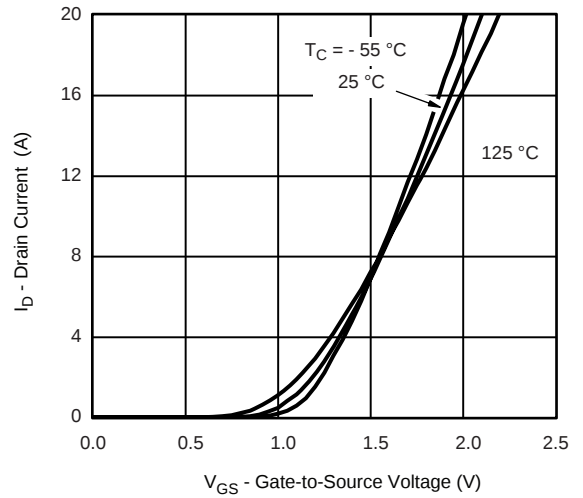
| Symbol          | Test Conditions                                                                    | Characteristic Values |      |      | Unit |
|-----------------|------------------------------------------------------------------------------------|-----------------------|------|------|------|
|                 |                                                                                    | min.                  | typ. | max. |      |
| I <sub>S</sub>  | V <sub>GS</sub> =0V                                                                |                       |      | -7   | A    |
| I <sub>SM</sub> | Repetitive;<br>pulse width limited by T <sub>JM</sub>                              |                       |      | -28  | A    |
| V <sub>SD</sub> | I <sub>S</sub> =-7A; V <sub>GS</sub> =0V;<br>Pulse test, t ≤300us, duty cycle d≤2% |                       | -0.8 | -1.2 | V    |

# SMOS2333A

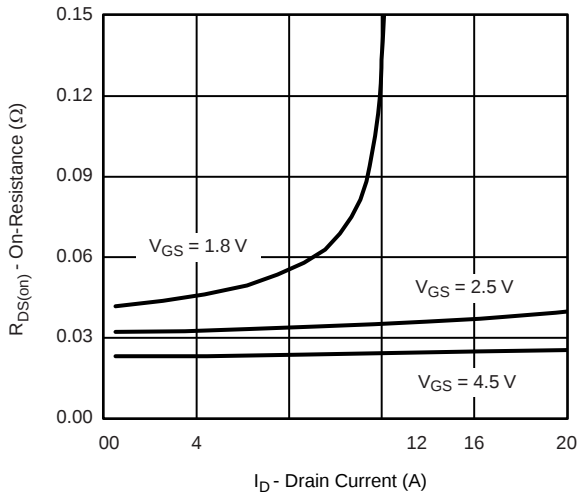
## P-channel Enhancement Mode Power MOSFETs



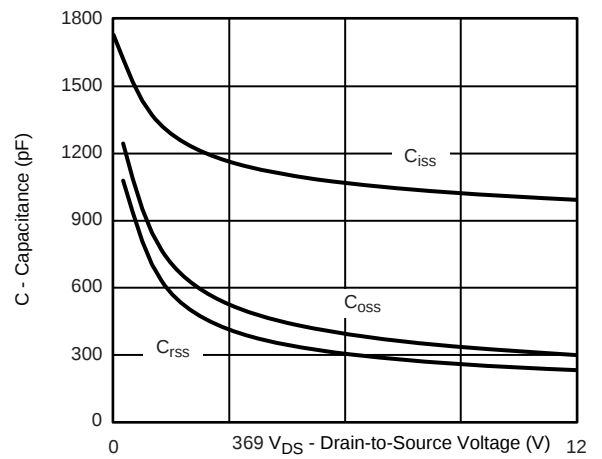
Output Characteristics



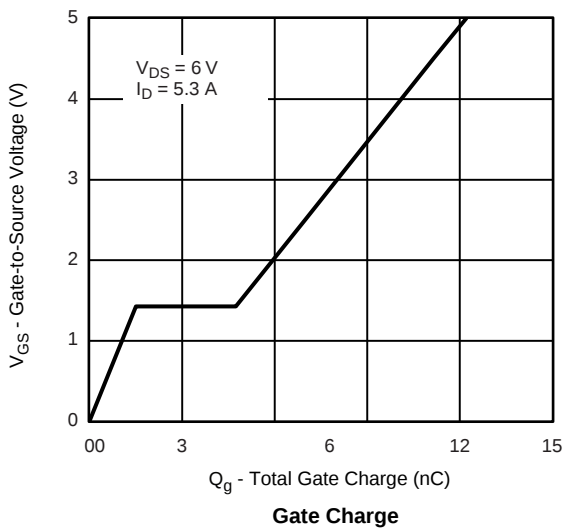
Transfer Characteristics



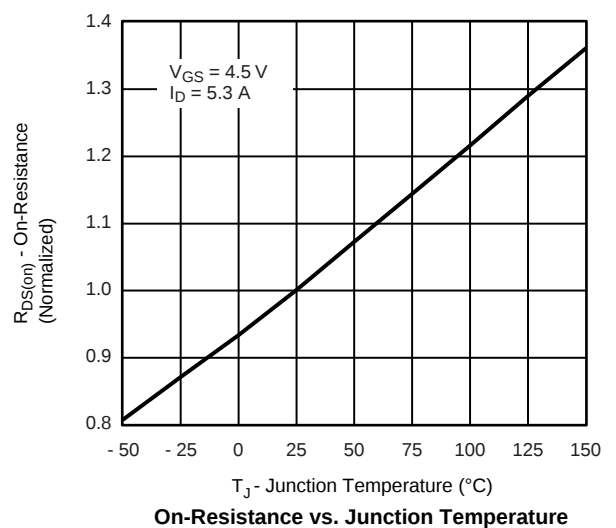
On-Resistance vs. Drain Current



Capacitance



Gate Charge

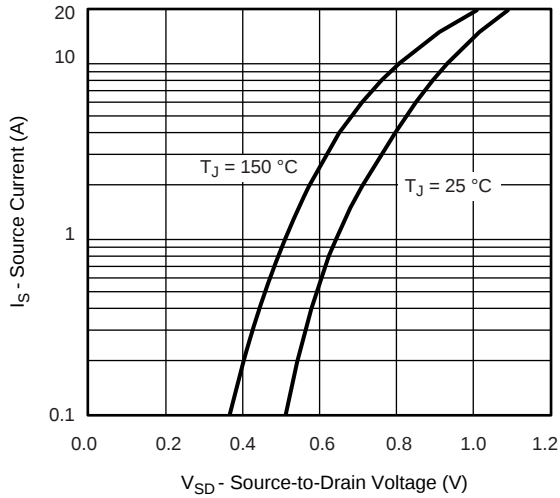


On-Resistance vs. Junction Temperature

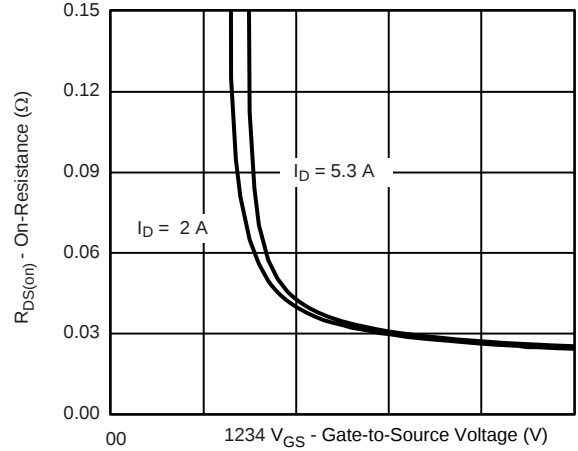
**Sirectifier®**

# SMOS2333A

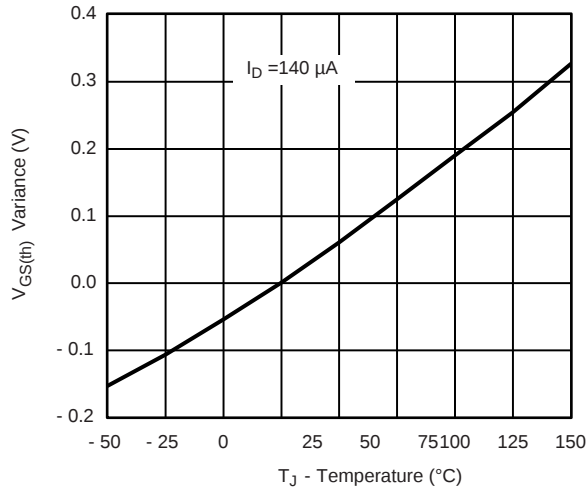
## P-channel Enhancement Mode Power MOSFETs



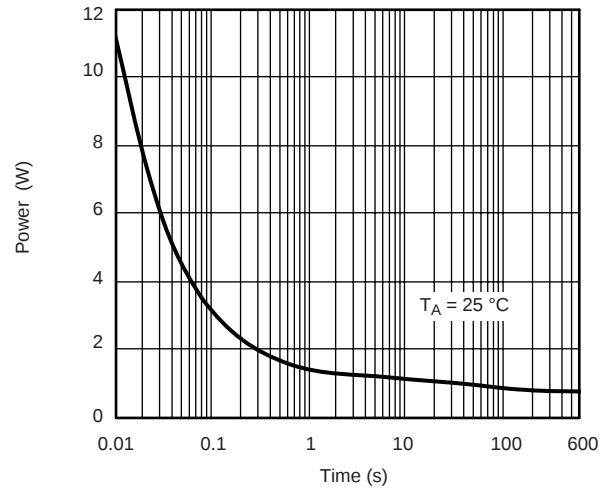
Source-Drain Diode Forward Voltage



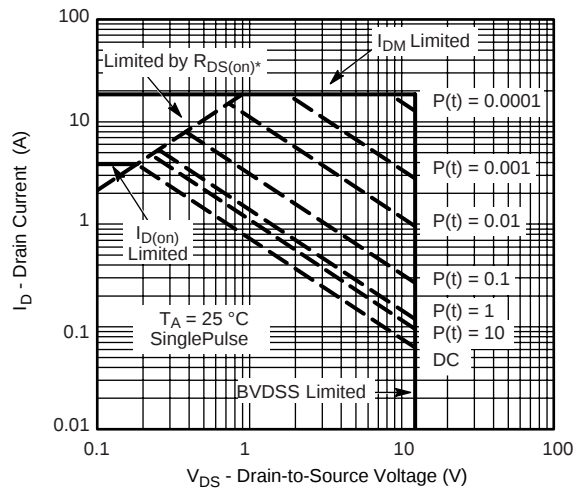
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



Single Pulse Power



\*  $V_{GS} >$  minimum  $V_{GS}$  at which  $R_{DS(on)}$  is specified

Safe Operating Area

**Sirectifier®**

# SMOS2333A

## P-channel Enhancement Mode Power MOSFETs

