

# EVVOSEMI<sup>®</sup>

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



DC-DC

## Product Specification

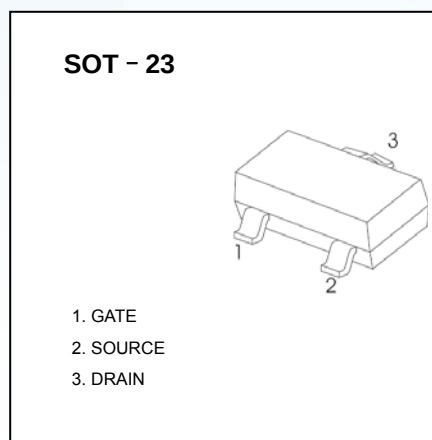
|              |             |         |
|--------------|-------------|---------|
| ▶ Domestic   | Part Number | SI2328A |
| ▶ Overseas   | Part Number | SI2328A |
| ▶ Equivalent | Part Number | SI2328A |

EV is the abbreviation of name EVVO

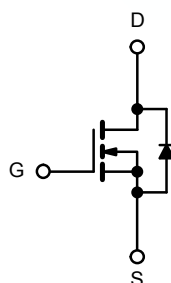
## SOT-23 Plastic-Encapsulate MOSFETS

### ■ Features

- $V_{DS} (V) = 100V$
- $I_D = 1.5 A (V_{GS} = 10V)$
- $R_{DS(ON)} < 245 m\Omega (V_{GS} = 10 V)$
- $R_{DS(ON)} < 265 m\Omega (V_{GS} = 4.5V)$



### Equivalent Circuit



### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

| Parameter                                                              |         | Symbol            | 5 sec      | Steady State | Unit |
|------------------------------------------------------------------------|---------|-------------------|------------|--------------|------|
| Drain-Source Voltage                                                   |         | V <sub>DS</sub>   | 100        |              | V    |
| Gate-Source Voltage                                                    |         | V <sub>GS</sub>   | ±20        |              |      |
| Continuous Drain Current   *1                                          | Ta=25℃  | I <sub>D</sub>    | 1.5        | 1.15         | A    |
|                                                                        | Ta=70℃  |                   | 1.2        | 0.92         |      |
| Pulsed Drain Current   *2                                              |         | I <sub>DM</sub>   | 6          |              |      |
| Avalanche Current       *2                                             | L=0.1mH | I <sub>AS</sub>   | 6          |              | mJ   |
| Single Avalanche Energy                                                |         | E <sub>AS</sub>   | 1.8        |              |      |
| Power Dissipation   *1                                                 | Ta=25℃  | P <sub>D</sub>    | 1.25       | 0.73         | W    |
|                                                                        | Ta=70℃  |                   | 0.8        | 0.47         |      |
| Thermal Resistance.Junction- to-Ambient   *1   t≤5 sec<br>Steady State |         | R <sub>thJA</sub> | 100        |              | ℃/W  |
|                                                                        |         |                   | 170        |              |      |
| Thermal Resistance.Junction-to-Foot                                    |         | R <sub>thJF</sub> | 55         |              | ℃    |
| Junction Temperature                                                   |         | T <sub>J</sub>    | 150        |              |      |
| Storage Temperature Range                                              |         | T <sub>stg</sub>  | -55 to 150 |              |      |

\*1 Surface Mounted on 1" x 1" FR4 Board.

\*2 Pulse width limited by maximum junction temperature

## SOT-23 Plastic-Encapsulate MOSFETS

### ■ Electrical Characteristics Ta = 25℃

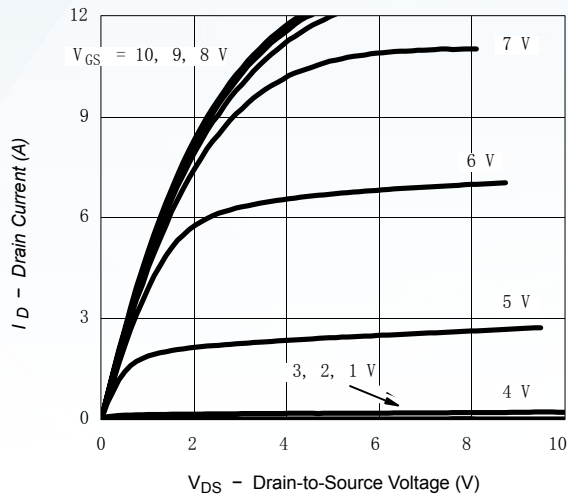
| Parameter                             | Symbol              | Test Conditions                                                                                              | Min | Typ  | Max  | Unit |
|---------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------|-----|------|------|------|
| Drain-Source Breakdown Voltage        | V <sub>DSS</sub>    | I <sub>D</sub> =1mA, V <sub>GS</sub> =0V                                                                     | 100 |      |      | V    |
| Zero Gate Voltage Drain Current       | I <sub>DSS</sub>    | V <sub>DS</sub> =100V, V <sub>GS</sub> =0V                                                                   |     |      | 1    | μ A  |
|                                       |                     | V <sub>DS</sub> =100V, V <sub>GS</sub> =0V, Ta=70℃                                                           |     |      | 75   |      |
| Gate-Body Leakage Current             | I <sub>GSS</sub>    | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V                                                                   |     |      | ±100 | nA   |
| Gate Threshold Voltage                | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μ A                                                   | 2   |      | 4    | V    |
| On-State Drain Current *1             | I <sub>D(on)</sub>  | V <sub>DS</sub> ≥ 15 V, V <sub>GS</sub> = 10 V                                                               | 6   |      |      | A    |
| Static Drain-Source On-Resistance *1  | R <sub>DS(on)</sub> | V <sub>GS</sub> =10V, I <sub>D</sub> =1.5A                                                                   |     |      | 245  | mΩ   |
|                                       |                     | V <sub>GS</sub> =4.5V, I <sub>D</sub> = 1 A                                                                  |     |      | 265  | mΩ   |
| Forward Transconductance *1           | g <sub>FS</sub>     | V <sub>DS</sub> =15V, I <sub>D</sub> =1.5A                                                                   |     | 4    |      | S    |
| Gate Resistance                       | R <sub>g</sub>      |                                                                                                              | 0.5 |      | 2.4  | Ω    |
| Total Gate Charge                     | Q <sub>g</sub>      | V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =1.5A                                             |     | 3.3  | 4    | nC   |
| Gate Source Charge                    | Q <sub>gs</sub>     |                                                                                                              |     | 0.47 |      |      |
| Gate Drain Charge                     | Q <sub>gd</sub>     |                                                                                                              |     | 1.45 |      |      |
| Turn-On DelayTime                     | t <sub>d(on)</sub>  | I <sub>D</sub> =0.2A, V <sub>DS</sub> =50V, V <sub>GEN</sub> =10V<br>R <sub>L</sub> =33Ω, R <sub>G</sub> =6Ω |     | 7    | 11   | ns   |
| Turn-On Rise Time                     | t <sub>r</sub>      |                                                                                                              |     | 11   | 17   |      |
| Turn-Off DelayTime                    | t <sub>d(off)</sub> |                                                                                                              |     | 9    | 15   |      |
| Turn-Off Fall Time                    | t <sub>f</sub>      |                                                                                                              |     | 10   | 15   |      |
| Body Diode Reverse Recovery Time      | t <sub>rr</sub>     | I <sub>F</sub> = 1.5A, di/dt= 100A/ μ s                                                                      |     | 50   | 100  |      |
| Maximum Body-Diode Continuous Current | I <sub>S</sub>      |                                                                                                              |     |      | 1.0  | A    |
| Diode Forward Voltage                 | V <sub>SD</sub>     | I <sub>S</sub> =1.0A, V <sub>GS</sub> =0V                                                                    |     | 0.8  | 1.2  | V    |

\*1 Pulse test: PW ≤ 300us duty cycle ≤ 2%.

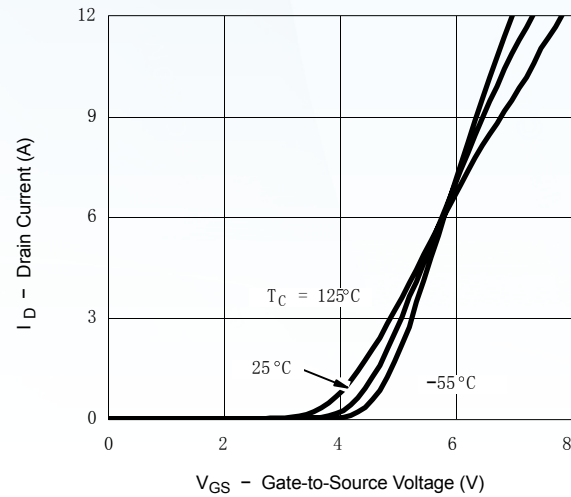
# SOT-23 Plastic-Encapsulate MOSFETS

## ■ Typical Characteristics

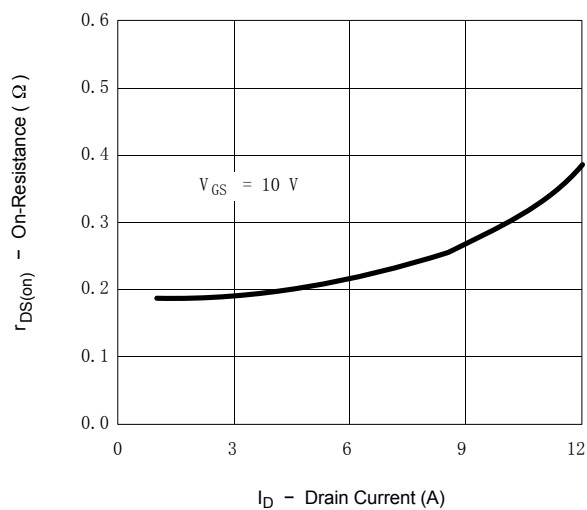
### Output Characteristics



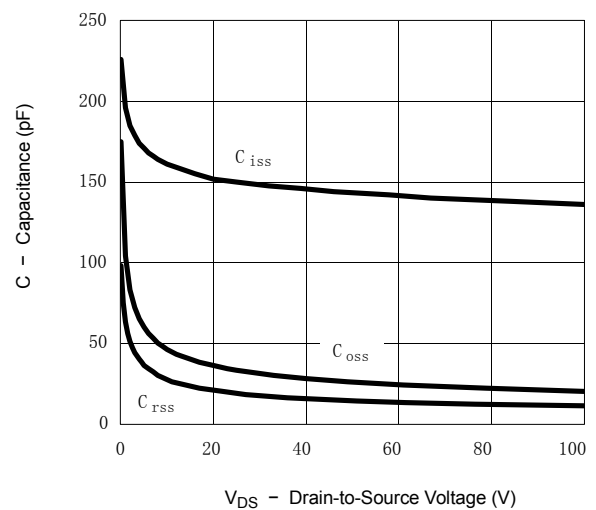
### Transfer Characteristics



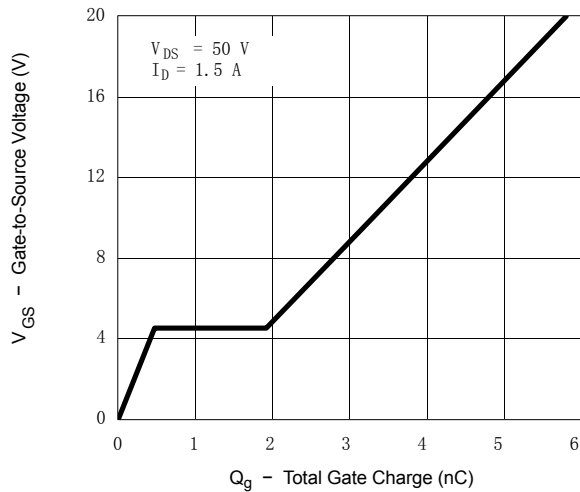
### On-Resistance vs. Drain Current



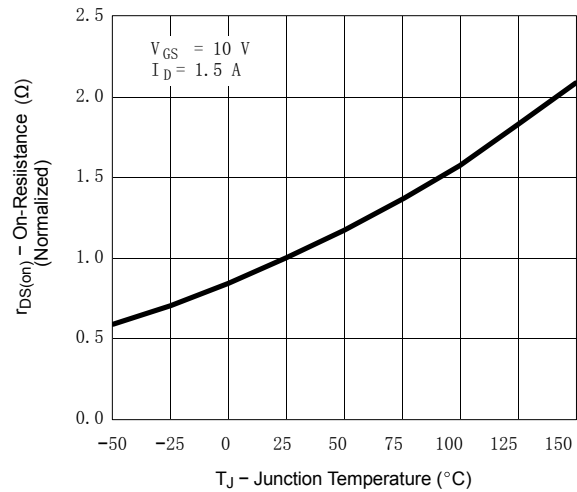
### Capacitance



### Gate Charge

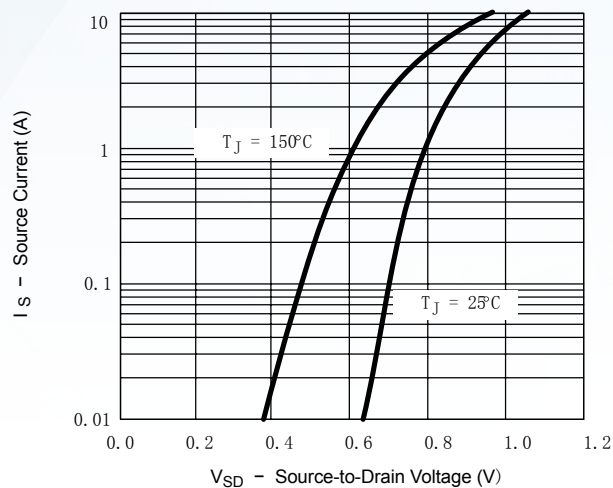


### On-Resistance vs. Junction Temperature

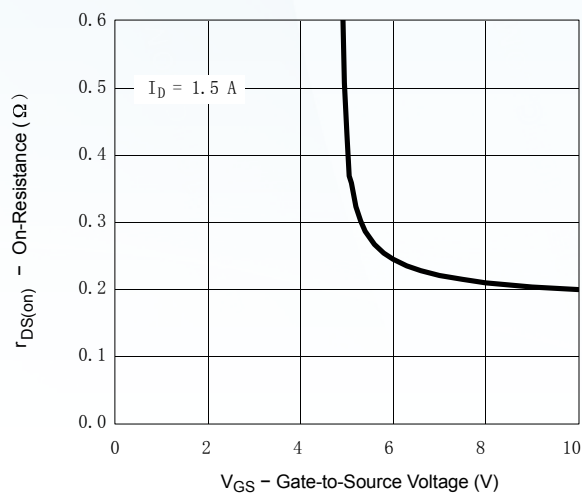


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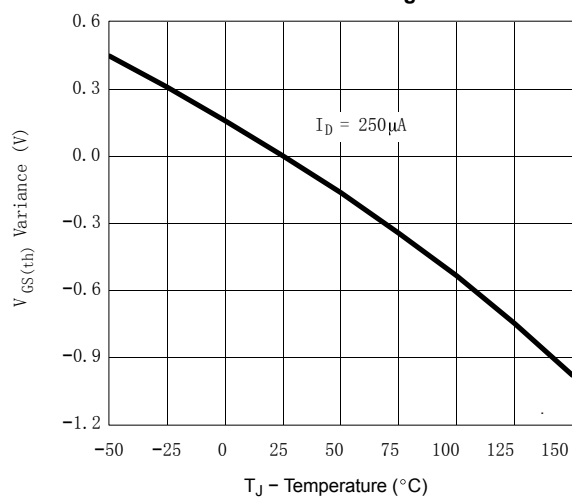
## Typical Characteristics Source-Drain Diode Forward Voltage



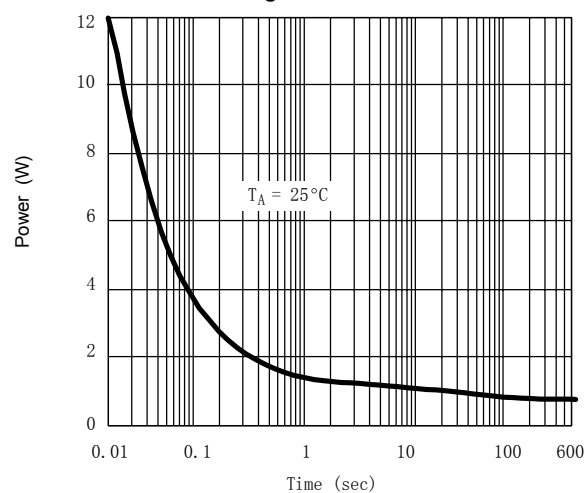
## On-Resistance vs. Gate-to-Source Voltage



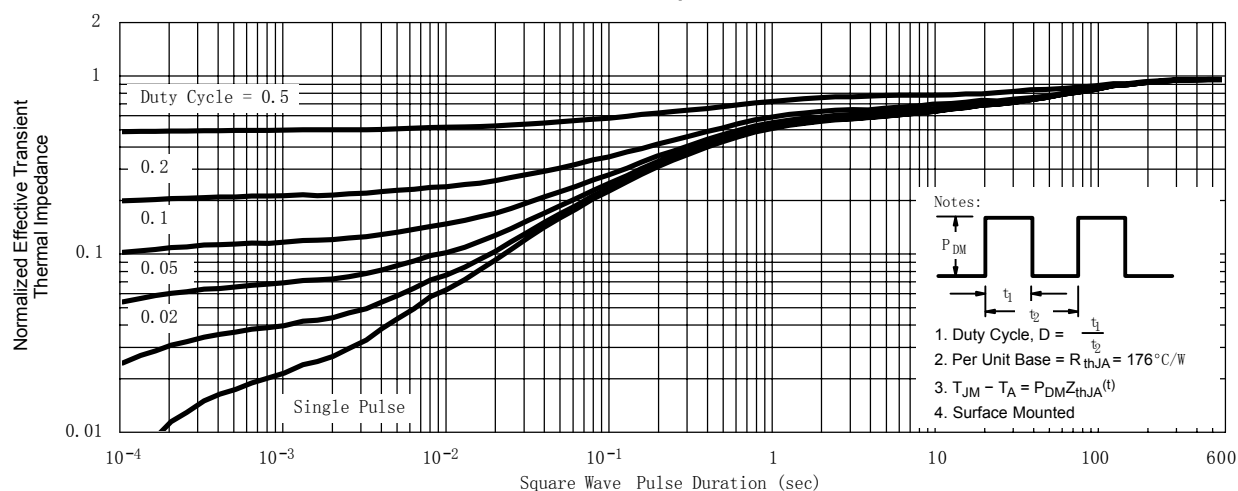
## Threshold Voltage



## Single Pulse Power

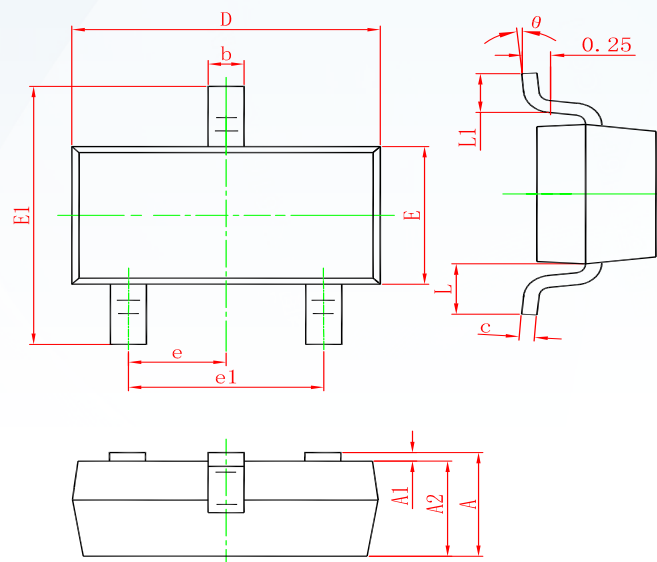


## Normalized Thermal Transient Impedance, Junction-to-Ambient



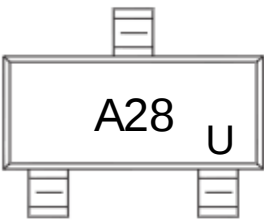
SOT-23 Plastic-Encapsulate MOSFETS

SOT-23 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP.                |       | 0.037 TYP.           |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF.                |       | 0.022 REF.           |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| θ      | 0°                        | 8°    | 0°                   | 8°    |

Marking



Ordering information

| Order code | Package | Baseqty | Deliverymode  |
|------------|---------|---------|---------------|
| SI2328A    | SOT-23  | 3000    | Tape and reel |

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