# SSC8162GS6

## N-Channel Small Switching MOSFET with ESD Protection

### ➢ Features

| $V_{DS}$ | $V_{GS}$ | $R_{DS(ON)}$ Typ. | $I_D$ | ESD |
|---|---|---|---|---|
| 60V | ±12V | 1Ω@10V | 0.5A | 500V |
| | | 1.5Ω@4V5 | | |

### ➢ Description

This device is an N-Channel enhancement mode MOSFET which is produced with high cell density and DMOS trench technology. This device particularly suits low voltage applications, especially for battery powered circuits, the tiny and thin outline saves PCB consumption.

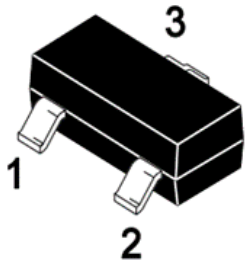
### ➢ Applications

- Direct Logic-Level Interface: TTL/CMOS
- Drivers: Relays, Solenoids, Lamps, Hammers
- Display, Memories, Transistors, etc.
- Battery Operated System
- Solid-State Relays

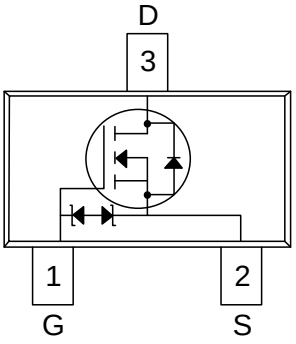
### ➢ Ordering Information

| Device | Package | Shipping |
|---|---|---|
| SSC8162GS6 | SOT-23 | 3000/Reel |

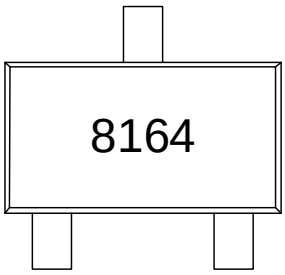
### ➢ Pin configuration




**SOT-23**




**Pin Configuration (Top View)**




**Marking**

## ➢ Absolute Maximum Ratings ($T_A$=25℃ unless otherwise noted)

| Symbol | Parameter | Ratings | Unit |
|---|---|---|---|
| $V_{DSS}$ | Drain-to-Source Voltage | 60 | V |
| $V_{GSS}$ | Gate-to-Source Voltage | ±12 | V |
| $I_D$ | Continuous Drain Current [a] | 0.5 | A |
| $I_{DM}$ | Pulsed Drain Current [b] | 1 | A |
| $P_D$ | Power Dissipation [c] | 0.85 | W |
| $P_{DSM}$ | Power Dissipation [a] | 0.36 | W |
| $T_J$ | Operation junction temperature | -55~150 | ℃ |
| $T_{STG}$ | Storage temperature range | -55~150 | ℃ |

## ➢ Thermal Resistance Ratings ($T_A$=25℃ unless otherwise noted)

| Symbol | Parameter | Maximum | Unit |
|---|---|---|---|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance [a] | 360 | ℃/W |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | 155 | ℃/W |

Note:

a. The value of $R_{\theta JA}$ is measured with the device mounted on 1 $in^2$ FR-4 board with 2oz.copper, in a still air environment with $T_A$=25℃.The value in any given application depends on the user is specific board design. The power dissipation is based on the t≤10s thermal resistance rating.

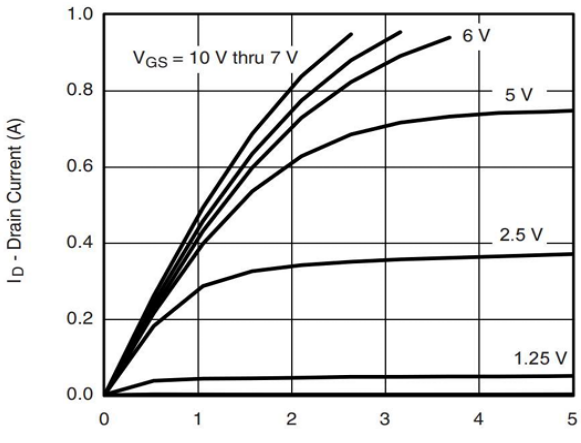
b. Repetitive rating, pulse width limited by junction temperature.

c. The power dissipation $P_D$ is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

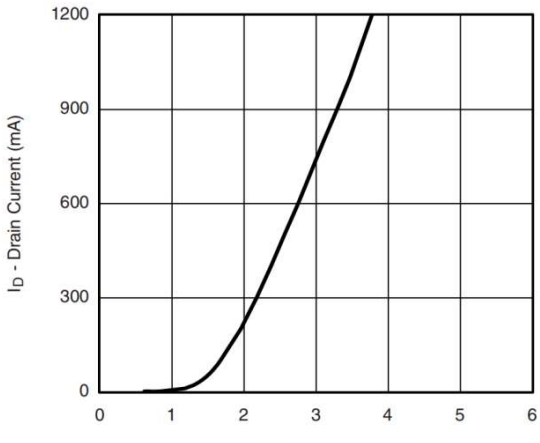
## ➢ Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 60 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250uA | 0.6 | 1 | 1.25 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 0.5A | | 1.1 | 2.5 | Ω |
| | | $V_{GS}$ = 4.5V, $I_D$ = 0.5A | | 1.5 | 3.5 | |
| | | $V_{GS}$ = 2.5V, $I_D$ = 0.2A | | 1.7 | 4 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 60V, $V_{GS}$ = 0V | | | 1 | μA |
| Gate-Source Leak Current | $I_{GSS}$ | $V_{GS}$ = ±12V, $V_{DS}$ = 0V | | | ±10 | μA |
| Transconductance | $G_{FS}$ | $V_{DS}$ = 10V, $I_D$ = 0.2A | | 0.1 | | s |
| Forward Voltage | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = 0.2A | | | 1.3 | V |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$ = 25V, $V_{GS}$ = 0V, f = 1MHz | | 32 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 6.3 | | |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 2.9 | | |
| Turn-on Delay Time | $T_{D(ON)}$ | $V_{GS}$ = 10V, $V_{DS}$ = 10V, $I_D$ = 0.1A | | 26 | | ns |
| Rise Time | $T_r$ | | | 10.5 | | |
| Turn-off Delay Time | $T_{D(OFF)}$ | | | 37 | | |
| Fall Time | $T_f$ | | | 21 | | |
| Total Gate Charge | $Q_G$ | $V_{GS}$ = 10V, $V_{DS}$ = 15V, $I_D$ = 0.2A | | 0.4 | | nC |
| Gate to Source Charge | $Q_{GS}$ | | | 0.1 | | |
| Gate to Drain Charge | $Q_{GD}$ | | | 0.11 | | |

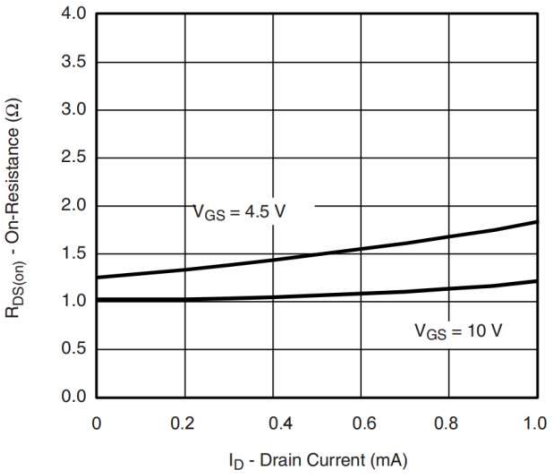
## ➢ Typical Performance Characteristics ($T_A$=25℃ unless otherwise noted)



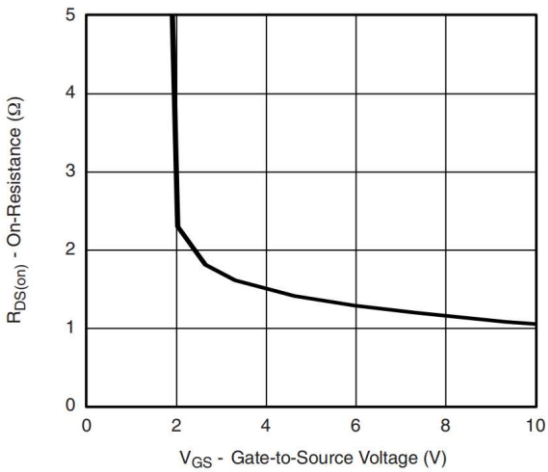

**Output Characteristics**



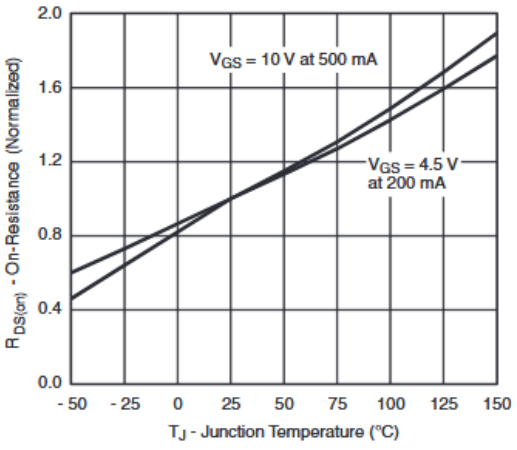

**Transfer Characteristics**



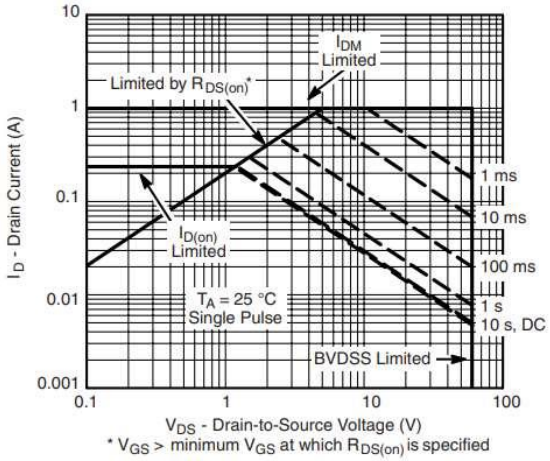

**On-Resistance vs. Drain Current**




**On-Resistance vs. Gate-Source Voltage**

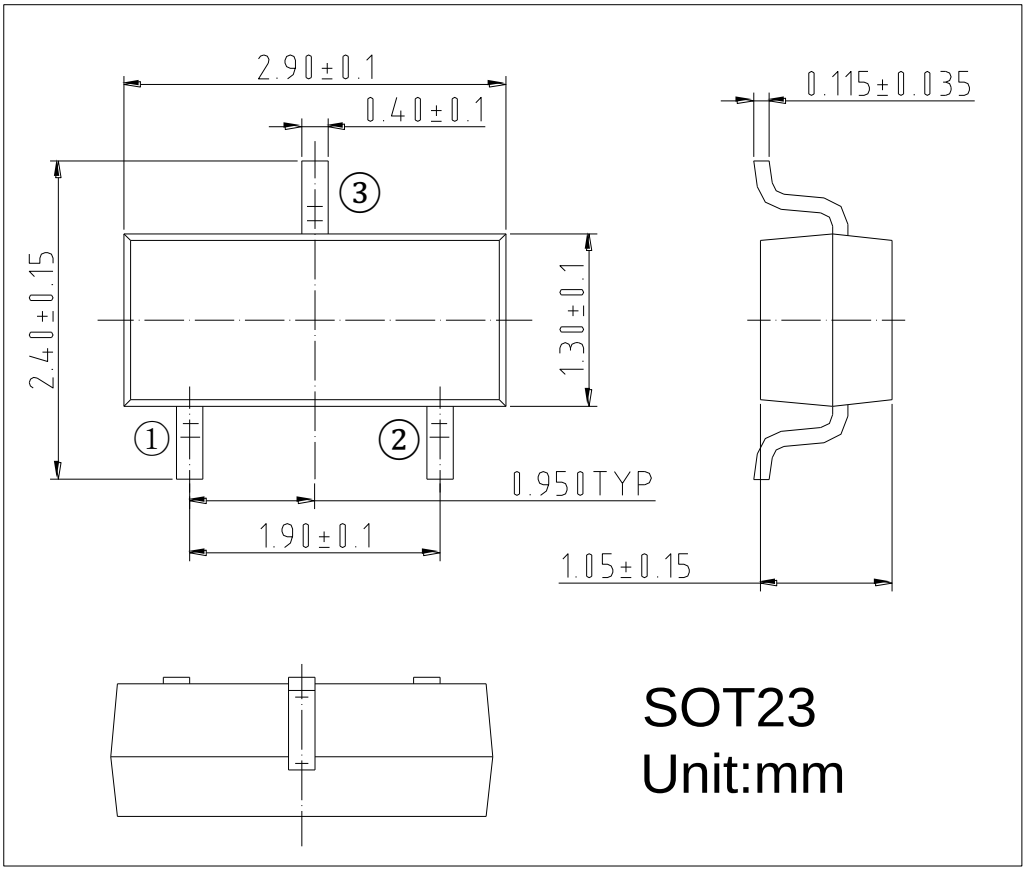



**On-Resistance vs. Junction Temperature**

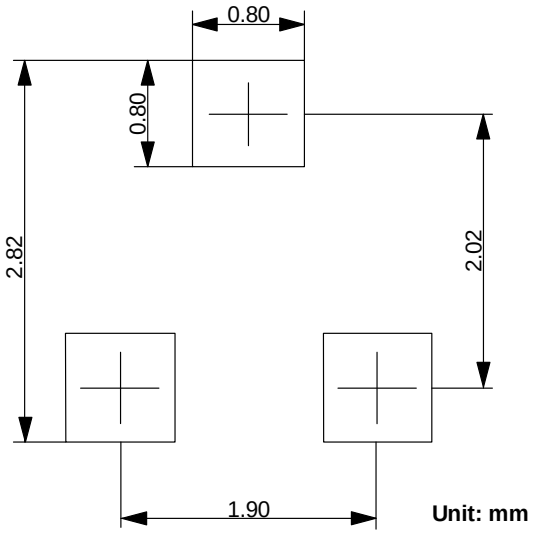



**Safe Operating Area**

## ➢ Package Information




## ➢ Suggested Pad Layout



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