# SSCL090P60GT8

## P-Channel Enhancement Mode MOSFET

### ➢ Features

| $V_{DS}$ | $V_{GS}$ | $R_{DS(ON)}$ Typ. | $I_D$ |
|---|---|---|---|
| -60V | ±20V | 9.0mΩ@-10V | -88A |
| | | 10.3mΩ@-4V5 | |

### ➢ Description

This device is P-Channel enhancement MOSFET. Uses SGT technology and design to provide excellent RDSON with low gate charge. This device is suitable for use in DC-DC conversion, power switch and charging circuit.

***100% UIS + ΔVDS + Rg Tested!***

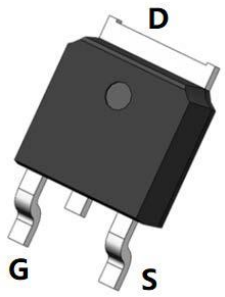
### ➢ Applications

- Load Switch
- PWM Application
- Power Management
- DC/DC Conversion

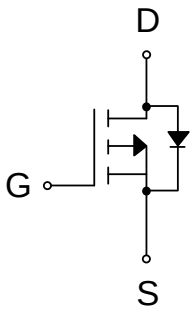
### ➢ Ordering Information

| Device | Package | Shipping |
|---|---|---|
| SSCL090P60GT8 | TO-252-2L | 2500/Reel |

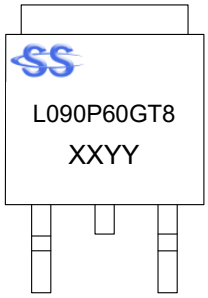
### ➢ Pin configuration




**TO-252-2L (Top View)**




**Pin Configuration**




**Marking**

(XXYY: Internal Traceability Code)

## ➢ 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 | | ±20 | V |
| $I_D$ | Continuous Drain Current [d] | $T_C$=25℃ | -88 | A |
| | | $T_C$=100℃ | -49 | |
| $I_{DSM}$ | Continuous Drain Current [a] | $T_A$=25℃ | -15 | A |
| | | $T_A$=70℃ | -11 | |
| $I_{DM}$ | Pulsed Drain Current [b] | | -352 | A |
| $P_D$ | Power Dissipation [c] | $T_C$=25℃ | 113 | W |
| | | $T_C$=100℃ | 45 | |
| $P_{DSM}$ | Power Dissipation [a] | $T_A$=25℃ | 3.3 | W |
| | | $T_A$=70℃ | 2.1 | |
| $E_{AS}$ | Avalanche Energy [b] L=0.5mH Single Pulse | | 160 | mJ |
| $T_J$ | Operation junction temperature | | -55~150 | ℃ |
| $T_{STG}$ | Storage temperature range | | -55~150 | |

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

| Symbol | Parameter | Ratings | Max. | Unit |
|---|---|---|---|---|
| $R_{\theta JA}$ | Junction-to-Ambient Thermal Resistance [a] | 38 | 50 | ℃/W |
| $R_{\theta JC}$ | Junction-to-Case Thermal Resistance | 1.1 | 1.5 | |

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.

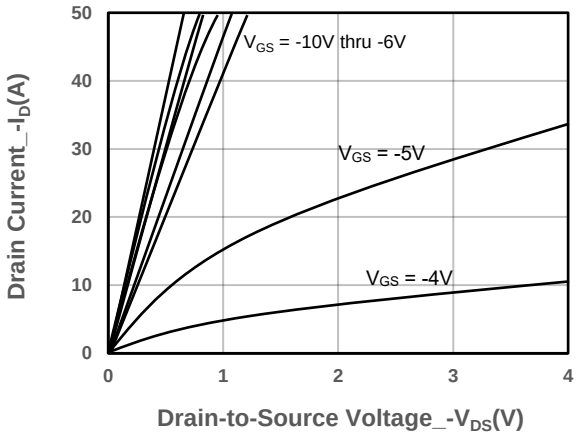
c. The power dissipation $P_D$ is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heat sinking is used.

d. The maximum current rating is package limited.

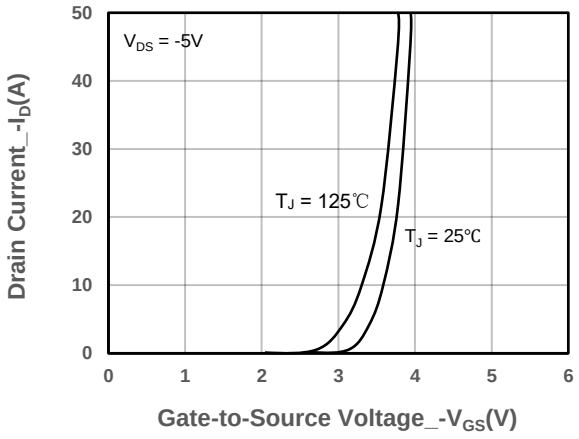
## ➢ Electrical Characteristics ($T_A$=25℃ unless otherwise noted)

| 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 | -1 | -1.8 | -2.5 | V |
| Drain-Source On-Resistance | $R_{DS(on)}$ | $V_{GS}$ = -10V, $I_D$ = -20A | | 9.0 | 12 | mΩ |
| | | $V_{GS}$ = -4.5V, $I_D$ = -10A | | 10.3 | 15 | |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = -60V, $V_{GS}$ = 0V | | | -1 | μA |
| Gate-Source Leak Current | $I_{GSS}$ | $V_{GS}$ = ±20V, $V_{DS}$ = 0V | | | ±100 | nA |
| Forward Voltage | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = -10A | | -0.8 | -1.3 | V |
| Gate Resistance | $R_G$ | $V_{DS}$ = 0V, f = 1MHz | | 8 | | Ω |
| Input Capacitance | $C_{ISS}$ | $V_{DS}$ = -30V, $V_{GS}$ = 0V, f = 1MHz | | 4300 | | pF |
| Output Capacitance | $C_{OSS}$ | | | 700 | | |
| Reverse Transfer Capacitance | $C_{RSS}$ | | | 150 | | |
| Total Gate Charge | $Q_G$ | $V_{GS}$ = -10V, $V_{DS}$ = -30V, $I_D$ = -20A | | 80 | | nC |
| Gate to Source Charge | $Q_{GS}$ | | | 17 | | |
| Gate to Drain Charge | $Q_{GD}$ | | | 19 | | |
| Turn-on Delay Time | $T_{D(ON)}$ | $V_{GS}$ = -10V, $V_{DS}$ = -30V, $I_D$ = -20A ,$R_G$ = 3Ω, | | 16 | | ns |
| Rise Time | $T_r$ | | | 86 | | |
| Turn-off Delay Time | $T_{D(OFF)}$ | | | 121 | | |
| Fall Time | $T_f$ | | | 112 | | |
| Diode Recovery Time | $T_{rr}$ | $I_F$=-20A, di/dt=100A/us | | 95 | | ns |
| Diode Recovery Charge | $Q_{rr}$ | $I_F$=-20A, di/dt=100A/us | | 50 | | nC |

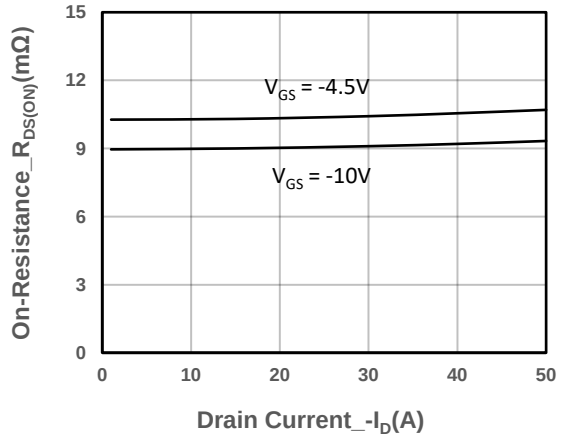
## ➢ Typical Performance Characteristics ($T_A$=25℃ unless otherwise noted)



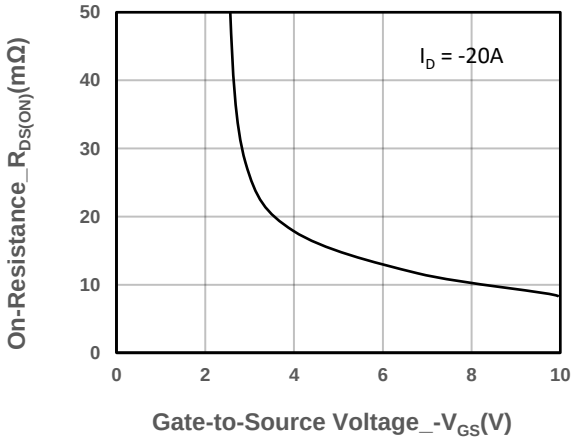

**Output Characteristics**



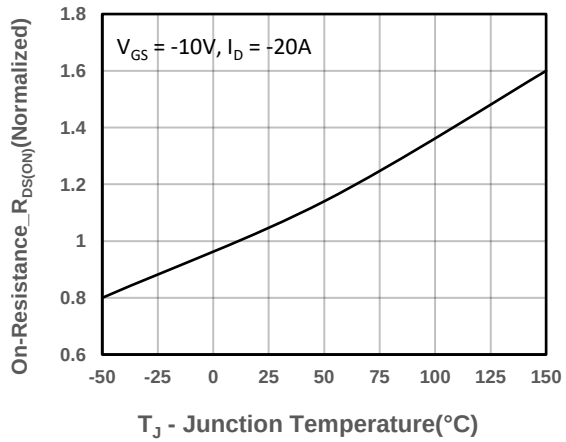

**Transfer Characteristics**



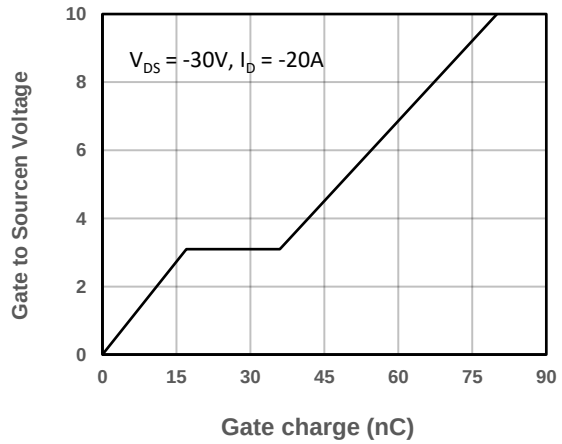

**On-Resistance vs. Drain Current and Gate Voltage**



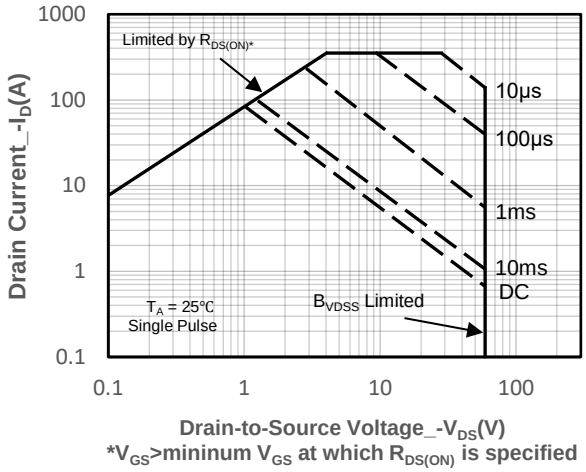

**On-Resistance vs. Gate-to-Source Voltage**




**On-Resistance vs. Junction Temperature**

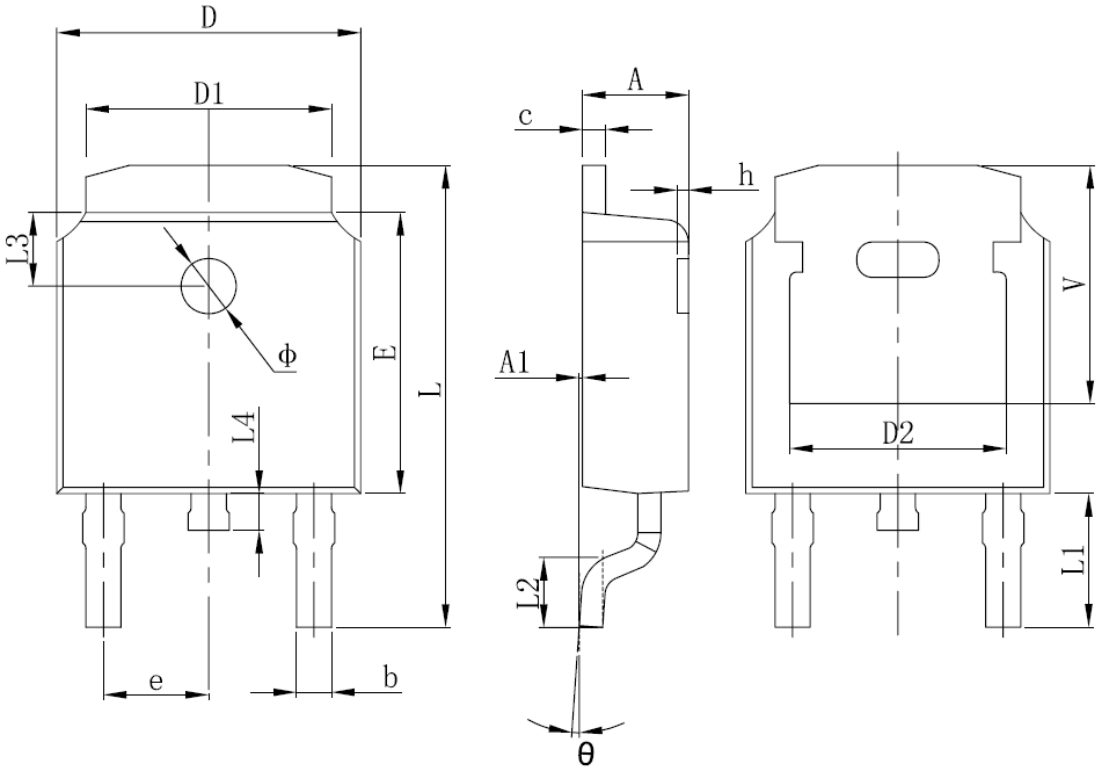



**Gate-Source Voltage vs. Gate charge**




**Safe Operating Area vs. Junction-to-Ambient**

## ➢ Package Information




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.635 | 0.770 | 0.025 | 0.030 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.830 REF. | | 0.190 REF. | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.712 | 10.312 | 0.382 | 0.406 |
| L1 | 2.900 REF. | | 0.114 REF. | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 1.600 REF. | | 0.063 REF. | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| Φ | 1.100 | 1.300 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.250 REF. | | 0.207 REF. | |

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