## GENERAL DESCRIPTION

- 20V N-Channel Enhancement-Mode MOSFET
- Vds=20V
- $R_{DS(ON)}$=30 mΩ (TYP.) , VGS @2.5V, Ids@5.2A
- $R_{DS(ON)}$=22 mΩ (TYP.), VGS @4.5V, Ids@6A

## FEATURES

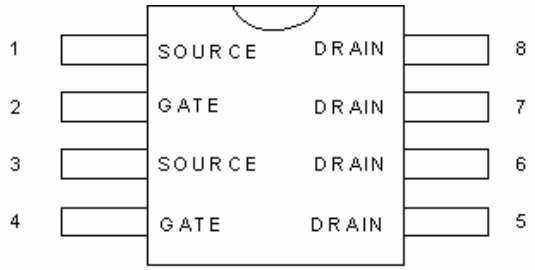
- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance
- High Power and Current handing capacity
- Fully Characterized Avalanche Voltage and Current
- Ideal for Li ion battery pack applications

## APPLICATIONS

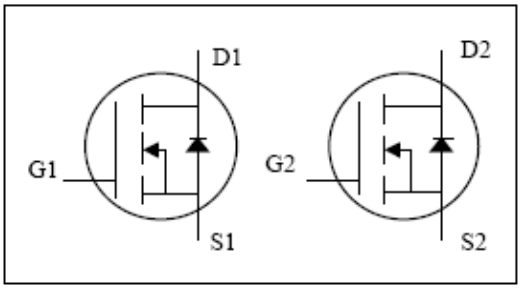
- Power Management in Notebook
- Portable Equipment
- Battery Powered System
- DC/DC Converter
- Load Switch
- DSC
- LCD Display inverter

## PIN CONFIGURATION

8-PIN SOP (S08)
Top View




## SYMBOL




**N-Channel MOSFET**

## ORDERING INFORMATION

| Part Number | Package |
|---|---|
| CMT9926G | SOP-8 |

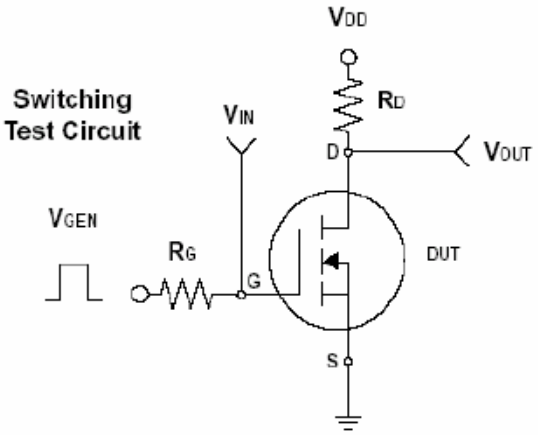
***Note:** G : Suffix for Pb Free Product

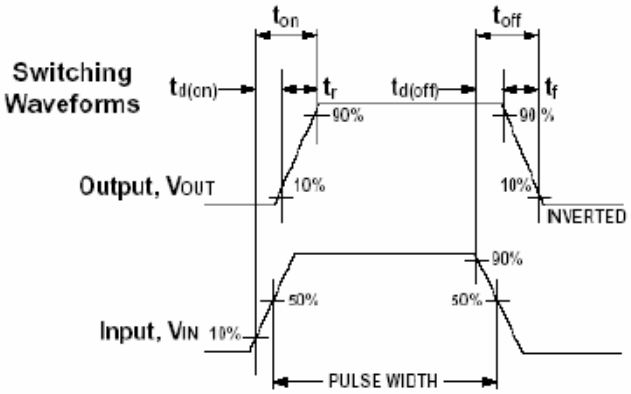
## ABSOLUTE MAXIMUM RATINGS

(TA=25℃ unless otherwise notes)

| Rating | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain- to- Source Voltage | | $V_{DSS}$ | 20 | V |
| Gate-to-Source Voltage | | $V_{GSS}$ | ±12 | V |
| Continuous Drain Current ($T_J$=150℃) ($T_A$=25℃) | | $I_D$ | 6 | A |
| Pulsed Drain Current | | $I_{DM}$ | 20 | A |
| Maximum Power Dissipation | $T_A$=25℃ | $P_D$ | 2.0 | W |
| | $T_A$=75℃ | $P_D$ | 1.3 | W |
| Operating Junction Temperature Range | | $T_J$ | -55 to150 | ℃ |
| Storage Temperature Range | | $T_{STG}$ | -55 to 150 | ℃ |
| Thermal Resistance Junction-ambient (PCB mount) | | Rthj-a | 62.5 | ℃/W |

Note : 1. Repetitive Rating : Pulse width limited by the Maximum junction temperation
2. 1-in$^2$ 2oz Cu PCB board
3. Guaranteed by design ; not subject to production testing



## ELECTRICAL CHARACTERISTICS

(TA=25℃ unless otherwise notes)

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $BV_{DSS}$ | Drain-Source Breakdown Voltage | $V_{GS}$=0V, $I_D$=-250uA | 20 | - | - | V |
| $R_{DS(ON)}$ | Static Drain-Source On-Resistancem | $V_{GS}$=4.5V, $I_D$=6A | - | 22 | 28 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=5.2A | - | 30 | 40 | mΩ |
| $V_{GS(th)}$ | Gate Threshold Voltage | $V_{DS}$=$V_{GS}$, $I_D$=-250uA | 0.6 | - | - | V |
| $g_{fs}$ | Forward Transconductance | $V_{DS}$=10V, $I_D$=6A | 7 | 13 | - | S |
| $I_{DSS}$ | Drain-Source Leakage Current | $V_{DS}$=20V, $V_{GS}$=0V | - | - | 1 | uA |
| $I_{GSS}$ | Gate-Source Forward Leakage | $V_{GS}$=12V | - | - | 100 | nA |
| | Gate-Source Reverse Leakage | $V_{GS}$=-12V | - | - | -100 | nA |
| $Q_g$ | Total Gate Charge | $I_D$=6A, $V_{DS}$=10V, $V_{GS}$=4.5V | - | 4.86 | - | nC |
| $Q_{gs}$ | Gate-Source Charge | | - | 0.92 | - | nC |
| $Q_{gd}$ | Gate-Drain ("Miller") Charge | | - | 1.4 | - | nC |
| $t_{d(on)}$ | Turn-on Delay Time | $V_{DD}$=10V, $I_D$=1A, $R_G$=6Ω, $V_{GEN}$=4.5V | - | 8.1 | - | ns |
| $t_r$ | Rise Time | | - | 9.95 | - | ns |
| $t_{d(off)}$ | Turn-off Delay Time | | - | 21.85 | - | ns |
| $t_f$ | Fall Time | | - | 5.35 | - | ns |
| $C_{iss}$ | Input Capacitance | $V_{GS}$=0V, $V_{DS}$=8V, f=1.0MHz | - | 562 | - | pF |
| $C_{oss}$ | Output Capacitance | | - | 106 | - | pF |
| $C_{rss}$ | Reverse Transfer Capacitance | | - | 75 | - | pF |

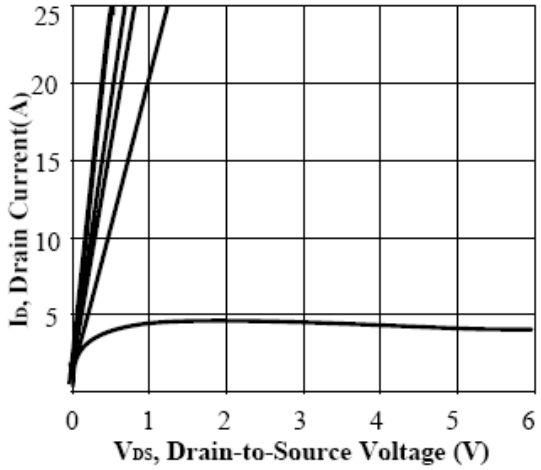
## Source-Drain Diode

| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Units |
|---|---|---|---|---|---|---|
| $V_{SD}$ | Diode Forward Voltage | $T_j$=25℃ , $I_S$=1.7A, $V_{GS}$=0V | - | - | 1.2 | V |
| $I_s$ | Max. Diode Forward Current | | - | - | 1.7 | A |

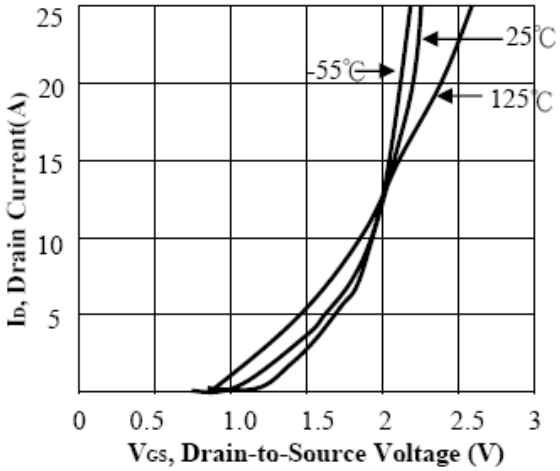
**Notes:**

Pulse test : Pulse width ≤300us , duty cycle ≤2%.

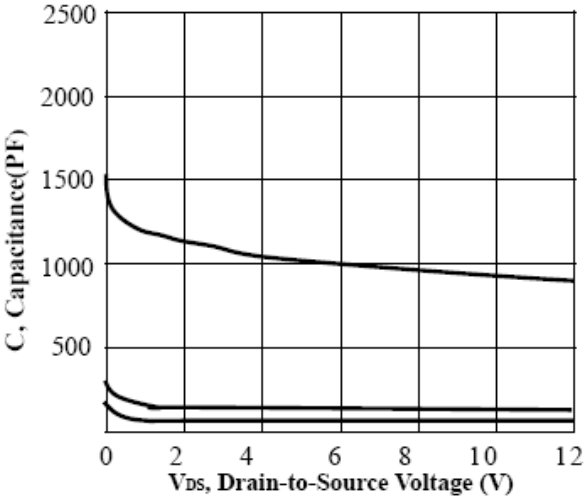
## TYPICAL CHARACTERISTICS



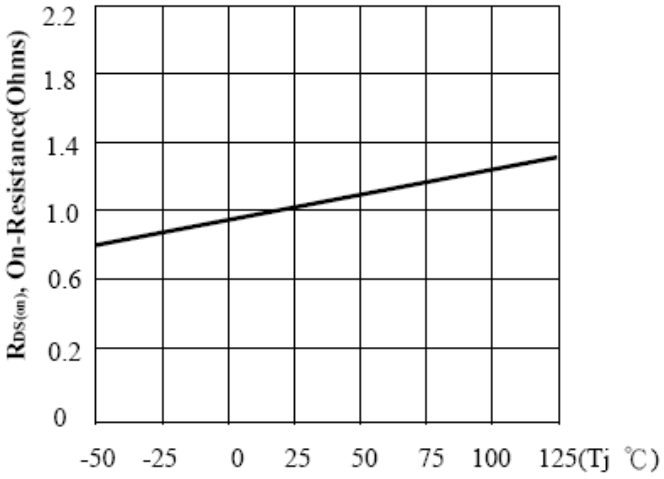

Output Characteristics



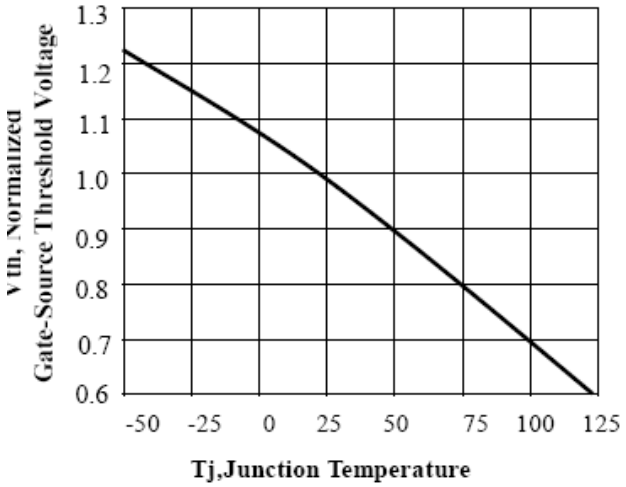

Transfer Characteristics



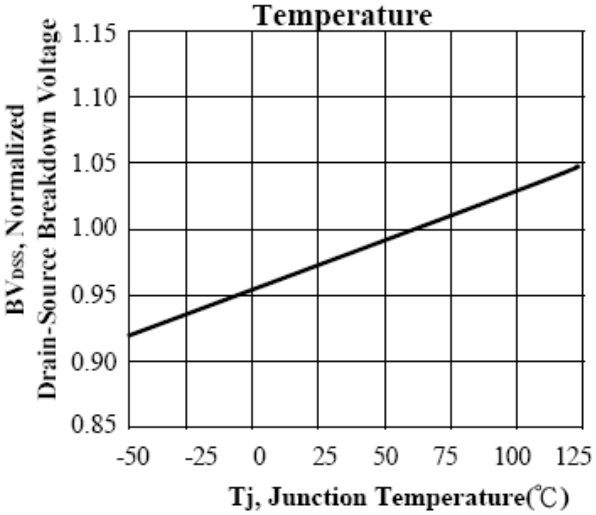

Capacitance



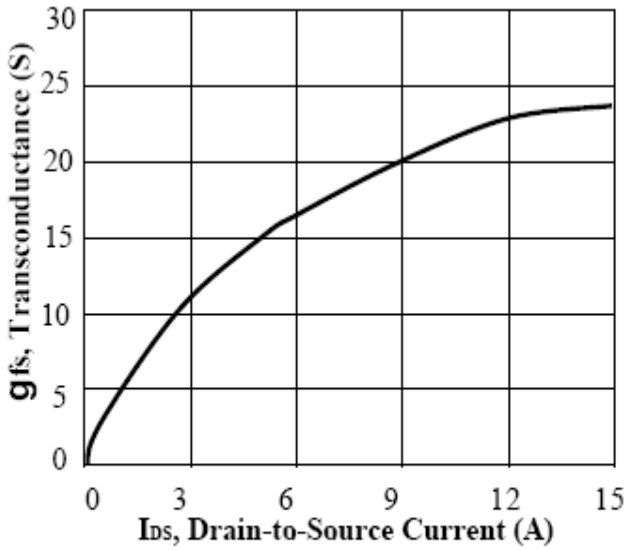

On-Resistance Variation with Temperature



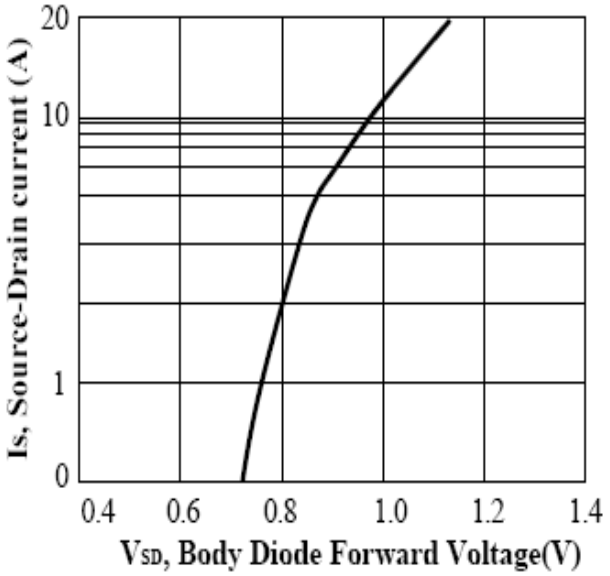

Gate Threshold Variation with Temperature



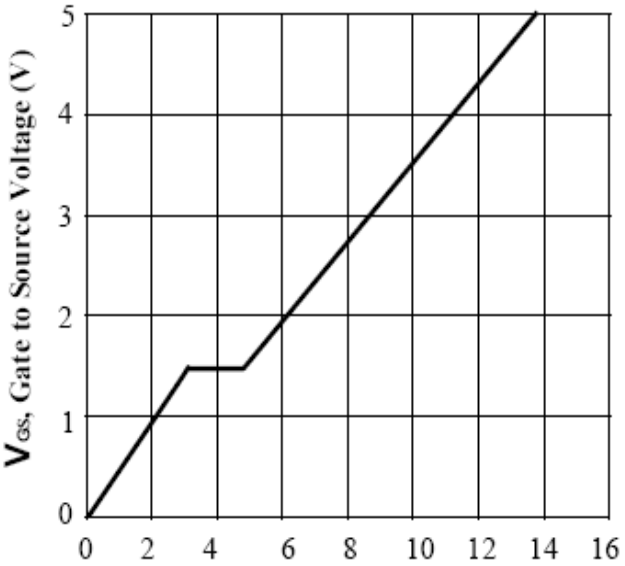

Breakdown Voltage Variation with Temperature




Transconductance Variation with Drain Current



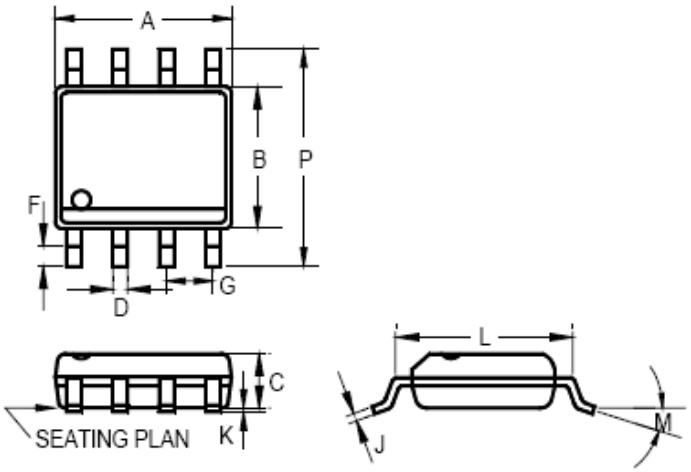

Body Diode Forward Voltage Variation with Source Current




Gate Charge

## PACKAGE DIMENSION

**8-PIN SOP (S08)**




| | INCHES | | | MILLIMETERS | | |
|---|---|---|---|---|---|---|
| | MIN | TYP | MAX | MIN | TYP | MAX |
| A | 0.183 | - | 0.202 | 4.65 | - | 5.13 |
| B | 0.144 | - | 0.163 | 3.66 | - | 4.14 |
| C | 0.068 | - | 0.074 | 1.73 | - | 1.88 |
| D | 0.010 | - | 0.020 | 0.25 | - | 0.51 |
| F | 0.015 | - | 0.035 | 0.38 | - | 0.89 |
| G | 0.050 BSC | | | 1.27 BSC | | |
| J | 0.007 | - | 0.010 | 0.19 | - | 0.25 |
| K | 0.005 | - | 0.010 | 0.13 | - | 0.25 |
| L | 0.189 | - | 0.205 | 4.80 | - | 5.21 |
| M | - | - | 8° | - | - | 8° |
| P | 0.228 | - | 0.244 | 5.79 | - | 6.20 |

# IMPORTANT NOTICE

Champion Microelectronic Corporation (CMC) reserves the right to make changes to its products or to discontinue any integrated circuit product or service without notice, and advises its customers to obtain the latest version of relevant information to verify, before placing orders, that the information being relied on is current.

A few applications using integrated circuit products may involve potential risks of death, personal injury, or severe property or environmental damage. CMC integrated circuit products are not designed, intended, authorized, or warranted to be suitable for use in life-support applications, devices or systems or other critical applications. Use of CMC products in such applications is understood to be fully at the risk of the customer. In order to minimize risks associated with the customer's applications, the customer should provide adequate design and operating safeguards.

**HsinChu Headquarter**

5F, No. 11, Park Avenue II,
Science-Based Industrial Park,
HsinChu City, Taiwan
TEL: +886-3-567 9979
FAX: +886-3-567 9909

**Sales & Marketing**

7F-6, No.32, Sec. 1, Chenggong Rd., Nangang District, Taipei City 115, Taiwan
TEL: +886-2-2788 0558
FAX: +886-2-2788 2985