# YGMOS Technology Crop.

20V Dual N-Channel Enhancement-Mode MOSFET 20V 双 N 沟道增强型 MOS 管

**VDS= 20V ID= 7.0A** **ESD Protected : 2000V**

**RDS(ON), Vgs@4.5V, Ids@7.0A = 20mΩ**

**RDS(ON), Vgs@4.0V, Ids@7.0A = 22mΩ**

**RDS(ON), Vgs@3.1V, Ids@6.5A = 23mΩ**

**RDS(ON), Vgs@2.5V, Ids@6.5A = 25mΩ**

**RDS(ON), Vgs@1.8V, Ids@5.0A = 28mΩ**

## Features 特性

Advanced trench process technology 高级的加工技术

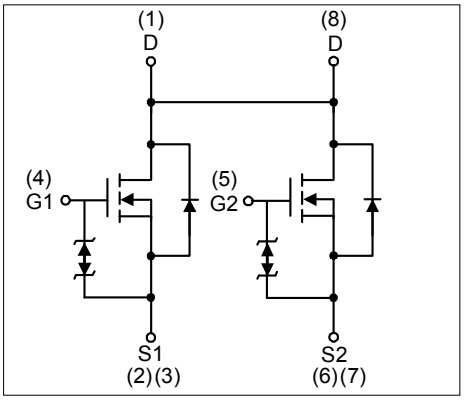
High Density Cell Design For Ultra Low On-Resistance

Specially Designed for Li ion battery packs use

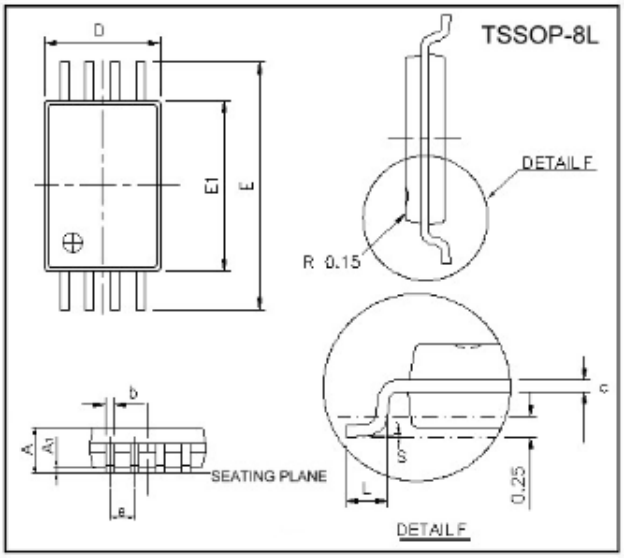
Designed for battery switch applications

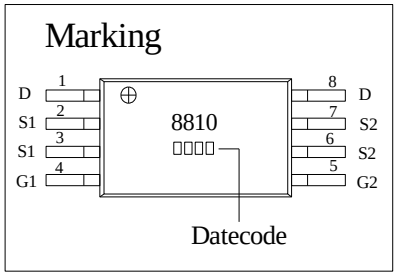
Battery Swicth, ESD protected

极低的导通电阻高密度的单元设计、专为锂电池设计、静电保护




Package Dimensions




| REF. | Millimeter | | REF. | Millimeter | |
|---|---|---|---|---|---|
| | Min. | Max. | | Min. | Max. |
| A | -- | 1.20 | E1 | 4.3 | 4.5 |
| A1 | 0.05 | 0.15 | L | 0.35 | 0.49 |
| b | 0.19 | 0.30 | L1 | 1.35 | 1.75 |
| c | | 0.13 | e | 0.65 REF. | |
| D | 2.9 | 3.1 | | | |
| E | 6.2 | 6.6 | | | |

Maximum Ratings and Thermal Characteristics (TA = 25 °C unless otherwise noted) 25 °C 极限参数和热特性

| Parameter 极限参数 | | Symbol 符号 | Limit 范围 | Unit 单位 |
|---|---|---|---|---|
| Drain-Source Voltage 漏源电压 | | $V_{DS}$ | 20 | V |
| Gate-Source Voltage 栅源电压 | | $V_{GS}$ | ± 12 | |
| Continuous Drain Current 连续漏极电流 | | $I_D$ | 6.5 | A |
| Pulsed Drain Current 脉冲漏极电流 | | $I_{DM}$ | 24 | |
| Maximum Power Dissipation 最大耗散功率 | TA = 25°C | $P_D$ | 2 | W |
| | TA = 75°C | | 0.64 | |
| Operating Junction and Storage Temperature Range 使用及储存温度 | | $T_J$, $T_{stg}$ | -55 to 150 | °C |
| Junction-to-Ambient Thermal Resistance (PCB mounted) 结环热阻 | | $R_{\theta JA}$ | 62.5 | °C/W |

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

| Parameter | Symbol | Condition | Min | Typc | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V,$I_D$=250μA | 20 | - | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=20V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V,$V_{DS}$=0V | - | - | ±10 | μA |
| **On Characteristics** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 0.5 | 0.85 | 1.5 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=4.5V, $I_D$=4.5A | | 15 | 20 | mΩ |
| | | $V_{GS}$=4.0V, $I_D$=4.5A | | 16 | 22 | mΩ |
| | | $V_{GS}$=3.1V, $I_D$=4.5A | | 17 | 23 | mΩ |
| | | $V_{GS}$=2.5V, $I_D$=4.5A | | 20 | 25 | mΩ |
| | | $V_{GS}$=1.8V, $I_D$=3.5A | | 22 | 28 | mΩ |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=5V,$I_D$=4.75A | - | 28 | - | S |
| **Dynamic Characteristics** [b] | | | | | | |
| Input Capacitance | $C_{lss}$ | $V_{DS}$=10V, $V_{GS}$=0V, F=0.2MHz | - | 750 | - | pF |
| Output Capacitance | $C_{oss}$ | | - | 117 | - | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 99 | - | pF |
| **Switching Characteristics** [b] | | | | | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=10V, $I_D$=4.75A $V_{GS}$=4.5V, $R_{GEN}$=3Ω , | - | 11.5 | - | nS |
| Turn-on Rise Time | $t_r$ | | - | 13 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 73 | - | nS |
| Turn-Off Fall Time | $t_f$ | | - | 34 | - | nS |
| Total Gate Charge | $Q_g$ | $V_{DS}$=10V, $I_D$=1.5A, $V_{GS}$=4.5V | - | 12 | - | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 0.6 | - | nC |
| Gate-Drain Charge | $Q_{gd}$ | | - | 3.6 | - | nC |
| **Drain-Source Diode Characteristics** | | | | | | |
| Diode Forward Voltage | $V_{SD}$ | $V_{GS}$=0V,$I_S$=1.7A | - | 0.8 | 1.2 | V |
| Maximum Body-Diode Continuous | $I_S$ | - | - | - | 2.5 | A |

Notes

a.Pulse Test:Pulse Width < 10us, Duty Cycle < 1%.

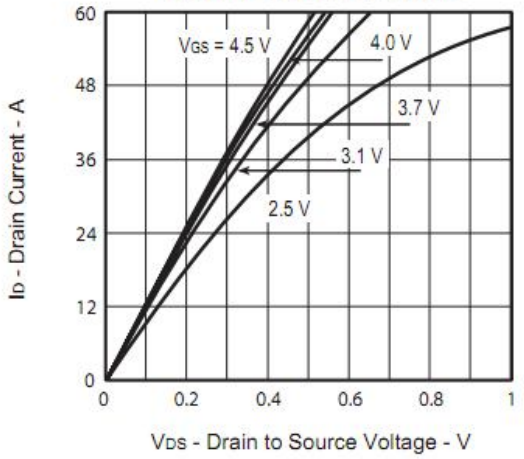
b.Guaranteed by design, not subject to production testing.

c.Drain current limited by maximum junction temperature.

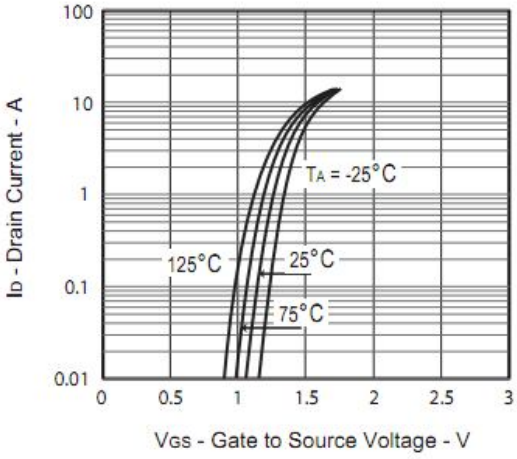
d.Mounted on FR4 Board of 1 inch2 , 2oz.

## TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

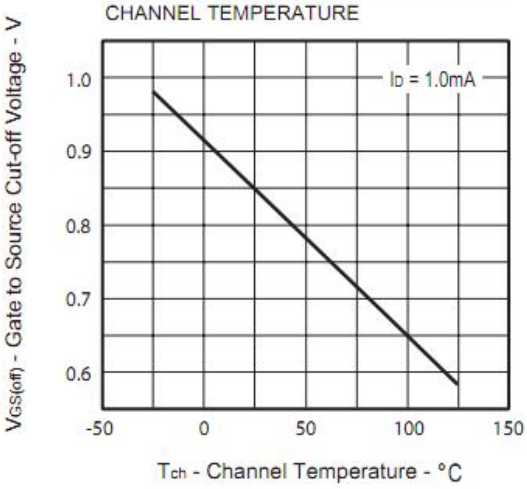
DRAIN CURRENT vs.
DRAIN TO SOURCE VOLTAGE



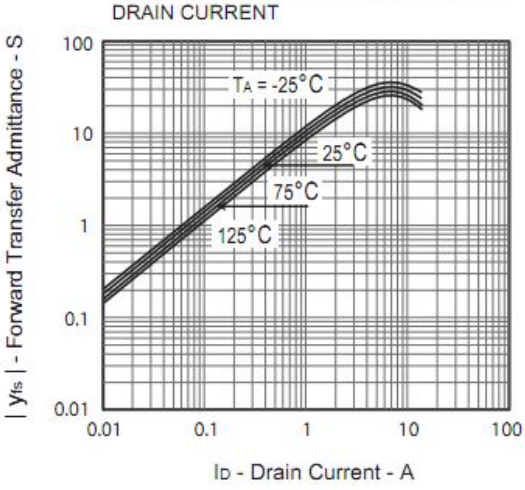

FORWARD TRANSFER CHARACTERISTICS



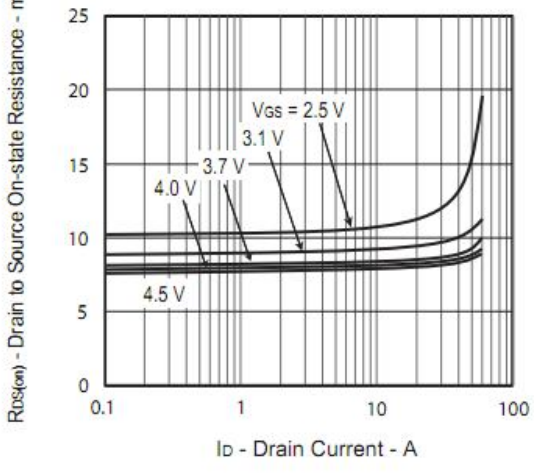

GATEBTO SOURE CUT-OFF VOLTAGE vs.
CHANNEL TEMPERATURE




FORWARD TRANSFER ADMITTANCE vs.
DRAIN CURRENT




DRAIN TO SOURCE ON-STATE RESISTANCE vs.
DRAIN CURRENT




DRAIN TO SOURCE ON-STATE RESISTANCE vs.
GATE TO SOURCE VOLTAGE