

## FEATURES

$V_{DS} = 20V, I_D = 7A, R_{DS(ON)} < 1.8m\Omega @ V_{GS} = 4.5V$

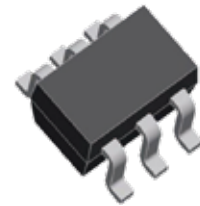
$R_{DS(ON)} < 30m\Omega @ V_{GS} = 2.5V$

High Power and current handing capability

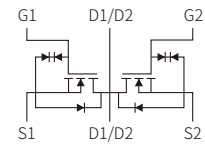
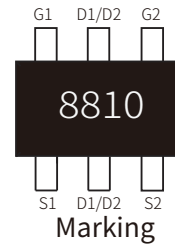
Lead free product is acquired

Surface Mount Package

ESD



SOT-23-6L



Schematic Symbol

## APPLICATION

PWM applications

Load switch

Power management

## APPROVALS

**RoHS** Compliance with 2011/65/EU

**HF** Compliance with IEC61249-2-21:2003

## ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$ )

| Parameter                                                     |                    | Symbol          | Value      | Unit         |
|---------------------------------------------------------------|--------------------|-----------------|------------|--------------|
| Drain-source voltage                                          |                    | $V_{DS}$        | 20         | V            |
| Continuous drain current ( $T_J = 150^\circ C$ ) <sup>a</sup> | $T_A = 25^\circ C$ | $I_D$           | 7.0        | A            |
|                                                               | $T_A = 70^\circ C$ |                 | 4.1        | A            |
| Pulsed Drain Current                                          |                    | $I_{DM}$        | 19         | A            |
| Gate-source voltage                                           |                    | $V_{GS}$        | $\pm 10$   | V            |
| Power dissipation <sup>a</sup>                                | $T_A = 25^\circ C$ | $P_D$           | 0.75       | W            |
|                                                               | $T_A = 70^\circ C$ |                 | 0.5        | W            |
| Maximum junction-to-ambient Steady-State <sup>a</sup>         |                    | $R_{\theta JA}$ | 151        | $^\circ C/W$ |
| Operating junction and storage temperature range              |                    | $T_J, T_{STG}$  | -55 to 150 | $^\circ C$   |

a. Surface mounted on 1" x 1" FR4 board

# ELECTRICAL CHARACTERISTICS (T<sub>A</sub>=25°C)

| Parameter                                     | Symbol              | Test Conditions                                                                        | Min | Typ  | Max | Unit |
|-----------------------------------------------|---------------------|----------------------------------------------------------------------------------------|-----|------|-----|------|
| Off Characteristic                            |                     |                                                                                        |     |      |     |      |
| Drain-source Breakdown Voltage                | BV <sub>DSS</sub>   | V <sub>GS</sub> =0V,I <sub>D</sub> =250μA                                              | 20  |      |     | V    |
| Zero Gate Voltage Drain Current               | I <sub>DSS</sub>    | V <sub>DS</sub> =20V,V <sub>GS</sub> =0V                                               |     |      | 1   | μA   |
| Gate–Body Leakage Current                     | I <sub>GSS</sub>    | V <sub>GS</sub> =±10V,V <sub>DS</sub> =0V                                              |     |      | ±10 | μA   |
| ON Characteristics                            |                     |                                                                                        |     |      |     |      |
| Gate Threshold Voltage                        | V <sub>GS(th)</sub> | V <sub>DS</sub> =V <sub>GS</sub> ,I <sub>D</sub> =250μA                                | 0.4 | 0.7  | 1.0 | V    |
| Drain-Source On–State Resistance <sup>a</sup> | R <sub>DS(on)</sub> | V <sub>GS</sub> =4.5V,I <sub>D</sub> =4A                                               |     | 13.5 | 18  | mΩ   |
|                                               |                     | V <sub>GS</sub> =2.5V,I <sub>D</sub> =3A                                               |     | 21   | 30  | mΩ   |
| Forward transconductance <sup>a</sup>         | g <sub>FS</sub>     | V <sub>DS</sub> =5V,I <sub>D</sub> =1A                                                 |     | 10   |     | S    |
| Dynamic Characteristics <sup>b</sup>          |                     |                                                                                        |     |      |     |      |
| Input Capacitance                             | C <sub>iss</sub>    | V <sub>DS</sub> =10V,V <sub>GS</sub> =0V,F=1.0MHz                                      |     | 545  |     | pF   |
| Output Capacitance                            | C <sub>oss</sub>    |                                                                                        |     | 103  |     | pF   |
| Reverse Transfer Capacitance                  | C <sub>rss</sub>    |                                                                                        |     | 90   |     | pF   |
| Switching Characteristics                     |                     |                                                                                        |     |      |     |      |
| Turn–On Delay Time                            | t <sub>d(on)</sub>  | V <sub>DD</sub> =10V,I <sub>D</sub> =1A,V <sub>GEN</sub> =5V<br>R <sub>GEN</sub> =3ohm |     | 0.5  |     | nS   |
| Turn–On Rise Time                             | t <sub>r</sub>      |                                                                                        |     | 1    |     | nS   |
| Turn–Off Delay Time                           | t <sub>d(off)</sub> |                                                                                        |     | 12   |     | nS   |
| Turn–Off Fall Time                            | t <sub>f</sub>      |                                                                                        |     | 4    |     | nS   |
| Total Gate Charge                             | Q <sub>g</sub>      | V <sub>DS</sub> =10V,V <sub>GS</sub> =4.5V,I <sub>D</sub> =4.8A                        |     | 8    |     | nC   |
| Gate- Source Charge                           | Q <sub>gs</sub>     |                                                                                        |     | 2.5  |     | nC   |
| Gate- Drain Charge                            | Q <sub>gd</sub>     |                                                                                        |     | 3.0  |     | nC   |
| Drain-Source Diode Characteristics            |                     |                                                                                        |     |      |     |      |
| Diode Forward Voltage <sup>(Note 3)</sup>     | V <sub>SD</sub>     | V <sub>GS</sub> =0V,I <sub>S</sub> =4A                                                 |     | 0.75 | 1.0 | V    |

**Notes**

a. Pulse test: Pulse width &lt; 300 μs, duty cycle &lt; 2 %

b. Guaranteed by design, not subject to production testing

## PARAMETER CHARACTERISTIC CURVE

Figure1: Output Characteristics

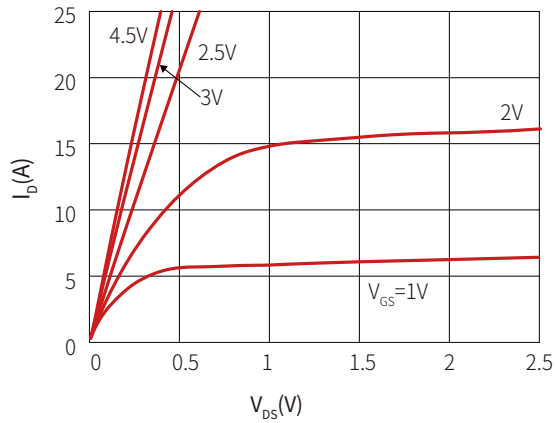


Figure 2: Typical Transfer Characteristics

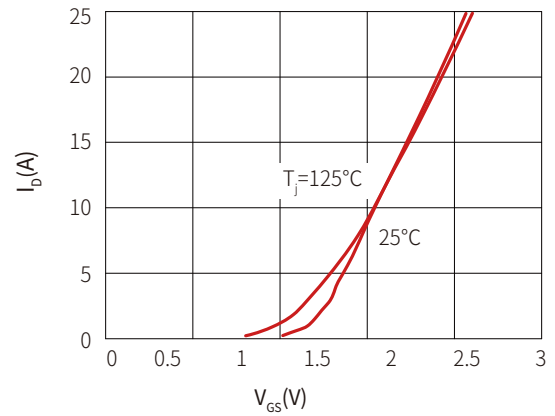


Figure 3: On-resistance vs. Drain Current

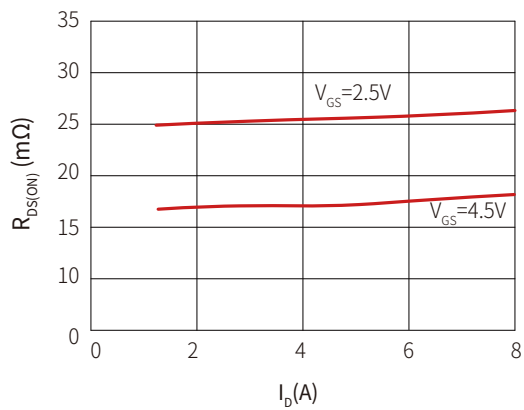


Figure 4: Body Diode Characteristics

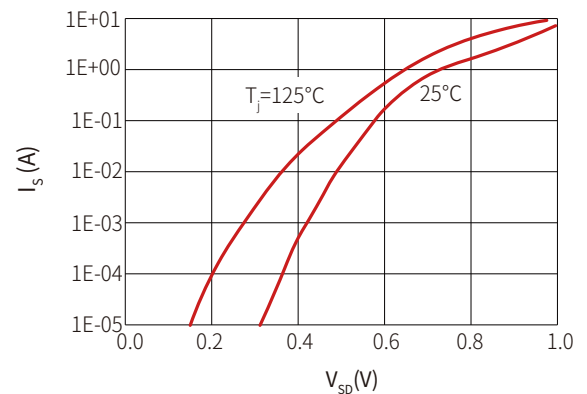


Figure 5: Gate Charge Characteristics

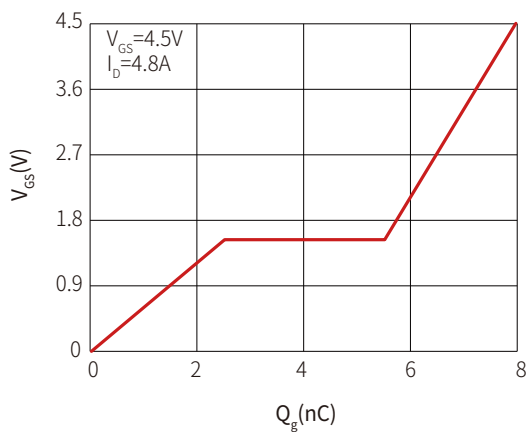
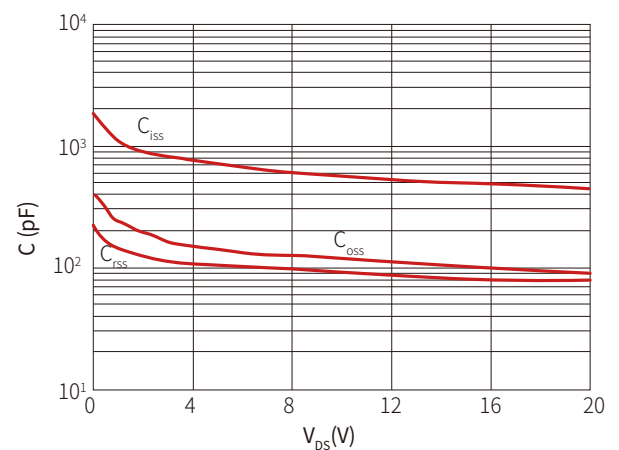
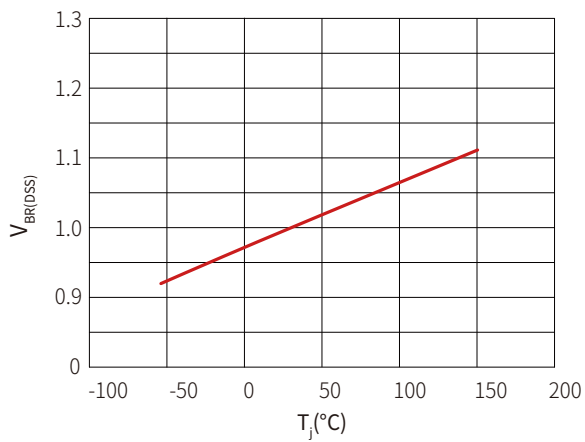
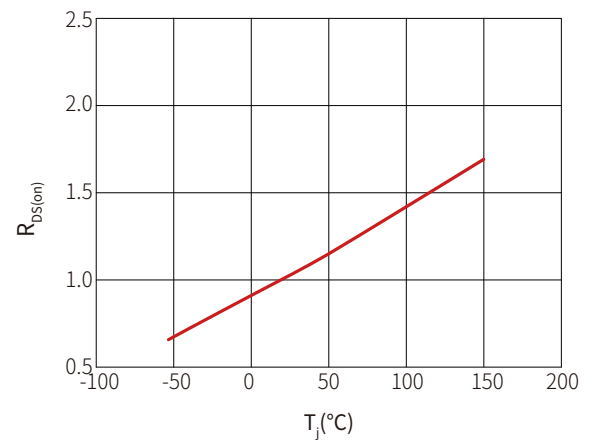
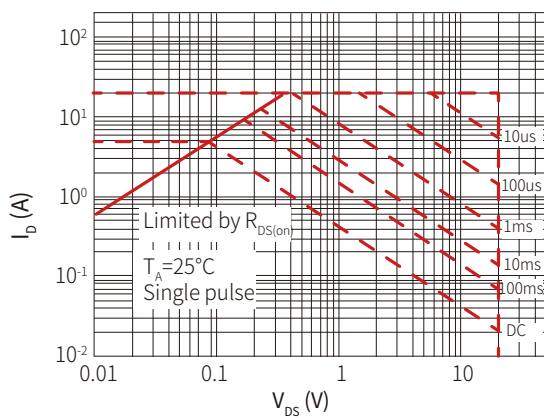
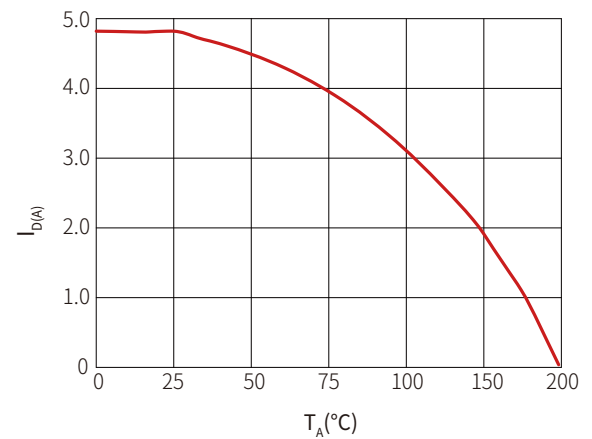


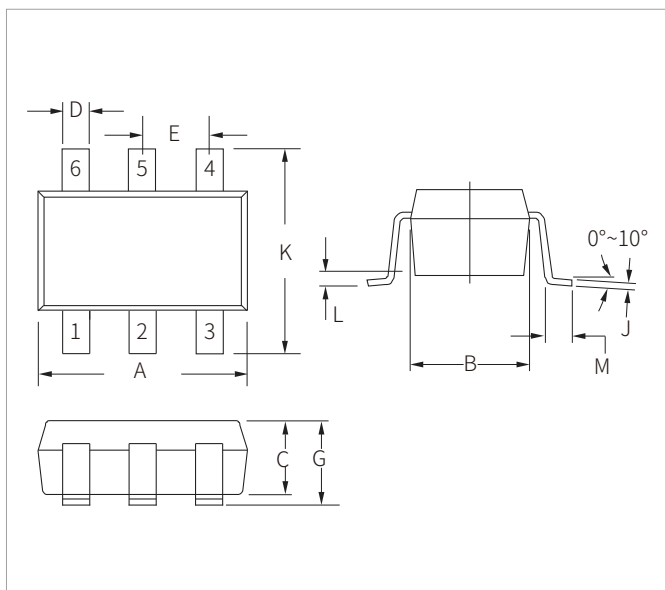
Figure 6: Capacitance Characteristics



0.8 1.0 1.2

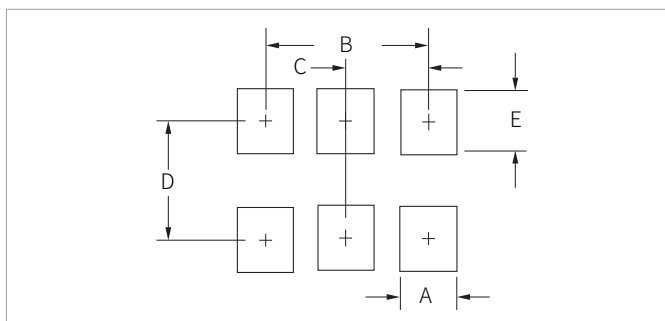
**Figure 7: Normalized Breakdown Voltage vs. Junction Temperature**

**Figure 8: Normalized on Resistance vs. Junction Temperature**

**Figure 9: Maximum Safe Operating Area**

**Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature**


## SOT-23-6L PACKAGE INFORMATION



| Ref. | Millimeters |      | Inches |       |
|------|-------------|------|--------|-------|
|      | Min.        | Max. | Min.   | Max.  |
| A    | 2.80        | 3.10 | 0.110  | 0.125 |
| B    | 1.50        | 1.80 | 0.059  | 0.071 |
| C    | 0.90        | 1.30 | 0.036  | 0.051 |
| D    | 0.25        | 0.50 | 0.010  | 0.020 |
| E    | 0.85        | 1.05 | 0.033  | 0.040 |
| G    | 0.90        | 1.45 | 0.036  | 0.057 |
| J    | 0.09        | 0.20 | 0.003  | 0.008 |
| K    | 2.60        | 3.00 | 0.102  | 0.118 |
| L    | 0.0         | 0.15 | 0.0    | 0.006 |
| M    | 0.30        | 0.60 | 0.012  | 0.024 |

## RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | Inches  |
|------|-------------|---------|
|      | Nominal     | Nominal |
| A    | 0.70        | 0.028   |
| B    | 1.90        | 0.074   |
| C    | 0.95        | 0.037   |
| D    | 2.40        | 0.094   |
| E    | 1.00        | 0.039   |

## ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| SNM8810     | SOT-23-6L         | 3000PCS  | 7"        |

**Headquarters**

No.3387 Shendu Road  
Pujiang I&E Park  
Minhang Shanghai China  
201000

**Hotline**

400-021-5756

**Web**

<https://www.semiware.com>

**Sales Center**

Tel: 86-21-3463-7458  
Email: [sales18@semiware.com](mailto:sales18@semiware.com)

**Customer Service**

Tel: 86-21-5484-1001  
Email: [sales17@semiware.com](mailto:sales17@semiware.com)

**Technical Support**

Tel: 86-21-3463-7654  
Email: [fae01@semiware.com](mailto:fae01@semiware.com)

**Complaint & Suggestions**

Tel: 86-21-3463-7172  
Ext: 8868  
Email: [cs03@semiware.com](mailto:cs03@semiware.com)

**By QR Code**

Website



Wechat

To find your local partner within Semiware' s global website: [www.semiware.com](http://www.semiware.com)

© 2022 Semiware Semiconductor Inc.

The content of this document has been carefully checked and understood. However, neither Semiware nor its subsidiaries assume any liability whatsoever for any errors or inaccuracies of this document and the consequences thereof. Published specifications are subject to change without notice. Product suitability for any area of application must ultimately be determined by the customer. In all cases, products must never be operated outside their published specifications. Semiware does not guarantee the availability of all published products. This disclaimer shall be governed by substantive Chinese law and resulting disputes shall be settled by the courts at the place of business of Semiware. Latest publications and a complete disclaimer can be downloaded from the Semiware website. All trademarks recognized.