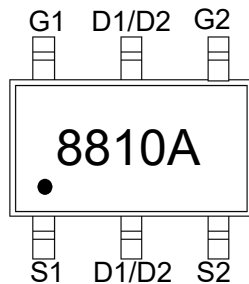


### Features

- High power and current handling capability
- Lead free product is acquired
- Surface mount package
- ESD protected

### Application

- Battery protection
- Load switch
- Power management

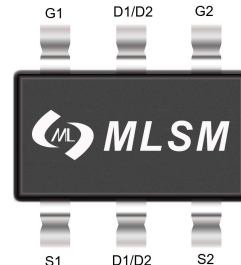


8810A: Device code

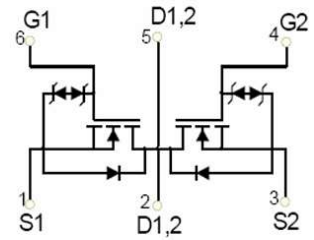
Marking and pin assignment

### Product Summary

| $V_{DS}$ | $R_{DS(ON)} \text{ MAX}$ | $I_D \text{ MAX}$ |
|----------|--------------------------|-------------------|
| 20V      | 15.5mΩ@10V               | 7A                |
|          | 16.6mΩ@4.5V              |                   |



SOT-23-6L top view



Schematic diagram



Halogen-Free

### Absolute Maximum Ratings (TA=25°C unless otherwise noted)

| Symbol | Parameter | Rating | Unit |
|--------|-----------|--------|------|
|--------|-----------|--------|------|

### Common Ratings (TC=25°C Unless Otherwise Noted)

|           |                                  |                        |    |
|-----------|----------------------------------|------------------------|----|
| $V_{DS}$  | Drain-Source Breakdown Voltage   | 20                     | V  |
| $V_{GS}$  | Gate-Source Voltage              | ±12                    | V  |
| $T_J$     | Maximum Junction Temperature     | 150                    | °C |
| $T_{STG}$ | Storage Temperature Range        | -55 to 150             | °C |
| $I_S$     | Diode Continuous Forward Current | $T_c=25^\circ\text{C}$ | 7  |
|           |                                  |                        | A  |

### Mounted on Large Heat Sink

|                 |                                     |                        |      |      |
|-----------------|-------------------------------------|------------------------|------|------|
| $I_{DM}$        | Pulse Drain Current Tested          | $T_c=25^\circ\text{C}$ | 30   | A    |
| $I_D$           | Continuous Drain Current            | $T_c=25^\circ\text{C}$ | 7    | A    |
| $P_D$           | Maximum Power Dissipation           | $T_c=25^\circ\text{C}$ | 1.25 | W    |
| $R_{\theta JA}$ | Thermal Resistance Junction-Ambient |                        | 100  | °C/W |

### Ordering Information (Example)

| Type      | Package   | Marking | Minimum Package(pcs) | Inner Box Quantity(pcs) | Outer Carton Quantity(pcs) | Delivery Mode |
|-----------|-----------|---------|----------------------|-------------------------|----------------------------|---------------|
| MLSL8810A | SOT-23-6L | 8810A   | 3,000                | 45,000                  | 180,000                    | 7"reel        |

| Electrical Characteristics (T <sub>J</sub> =25°C unless otherwise noted)             |                                  |                                                                                           |     |      |      |      |
|--------------------------------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------|-----|------|------|------|
| Symbol                                                                               | Parameter                        | Condition                                                                                 | Min | Typ  | Max  | Unit |
| Static Electrical Characteristics @ T <sub>J</sub> = 25°C (unless otherwise stated)  |                                  |                                                                                           |     |      |      |      |
| BV <sub>(BR)DSS</sub>                                                                | Drain-Source Breakdown Voltage   | V <sub>GS</sub> =0V, I <sub>D</sub> =250μA                                                | 20  | --   | --   | V    |
| I <sub>DSS</sub>                                                                     | Zero Gate Voltage Drain Current  | V <sub>DS</sub> =20V, V <sub>GS</sub> =0V                                                 | --  | --   | 1    | μA   |
| I <sub>GSS</sub>                                                                     | Gate-Body Leakage Current        | V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V                                                | --  | --   | ±5.0 | μA   |
| V <sub>GS(th)</sub>                                                                  | Gate Threshold Voltage           | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA                                  | 0.4 | 0.75 | 1.0  | V    |
| R <sub>DS(on)</sub>                                                                  | Drain-Source On-State Resistance | V <sub>GS</sub> =10V, I <sub>D</sub> =3A                                                  | --  | 12.0 | 15.5 | mΩ   |
|                                                                                      |                                  | V <sub>GS</sub> =4.5V, I <sub>D</sub> =3A                                                 | --  | 12.8 | 16.6 | mΩ   |
|                                                                                      |                                  | V <sub>GS</sub> =3.8V, I <sub>D</sub> =3A                                                 | --  | 13.0 | 17.0 | mΩ   |
|                                                                                      |                                  | V <sub>GS</sub> =2.5V, I <sub>D</sub> =3A                                                 | --  | 15.0 | 19.5 | mΩ   |
|                                                                                      |                                  | V <sub>GS</sub> =1.8V, I <sub>D</sub> =3A                                                 | --  | 21.5 | 35.0 | mΩ   |
| Dynamic Electrical Characteristics @ T <sub>J</sub> = 25°C (unless otherwise stated) |                                  |                                                                                           |     |      |      |      |
| C <sub>ISS</sub>                                                                     | Input Capacitance                | V <sub>DS</sub> =10V, V <sub>GS</sub> =0V, f=1MHz                                         | --  | 783  | --   | pF   |
| C <sub>OSS</sub>                                                                     | Output Capacitance               |                                                                                           | --  | 140  | --   | pF   |
| C <sub>RSS</sub>                                                                     | Reverse Transfer Capacitance     |                                                                                           | --  | 100  | --   | pF   |
| Switching Characteristics                                                            |                                  |                                                                                           |     |      |      |      |
| Q <sub>g</sub>                                                                       | Total Gate Charge                | V <sub>DS</sub> =10V, I <sub>D</sub> =7A,<br>V <sub>GS</sub> =4.5V                        | --  | 7.7  | --   | nC   |
| Q <sub>gs</sub>                                                                      | Gate Source Charge               |                                                                                           | --  | 1.2  | --   | nC   |
| Q <sub>gd</sub>                                                                      | Gate Drain Charge                |                                                                                           | --  | 2.4  | --   | nC   |
| t <sub>d(on)</sub>                                                                   | Turn-on Delay Time               | V <sub>DD</sub> =10V, R <sub>L</sub> =1.35Ω,<br>V <sub>GS</sub> =4.5V, R <sub>G</sub> =3Ω | --  | 8.8  | --   | nS   |
| t <sub>r</sub>                                                                       | Turn-on Rise Time                |                                                                                           | --  | 2.2  | --   | nS   |
| t <sub>d(off)</sub>                                                                  | Turn-Off Delay Time              |                                                                                           | --  | 65   | --   | nS   |
| t <sub>f</sub>                                                                       | Turn-Off Fall Time               |                                                                                           | --  | 26   | --   | nS   |
| Source- Drain Diode Characteristics                                                  |                                  |                                                                                           |     |      |      |      |
| V <sub>SD</sub>                                                                      | Forward on voltage               | T <sub>J</sub> =25°C, I <sub>S</sub> =7A                                                  | --  | --   | 1.2  | V    |

## Typical Operating Characteristics

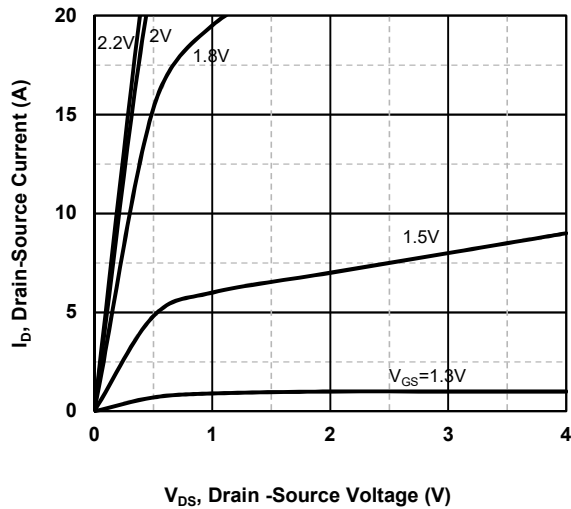


Fig1. Typical Output Characteristics

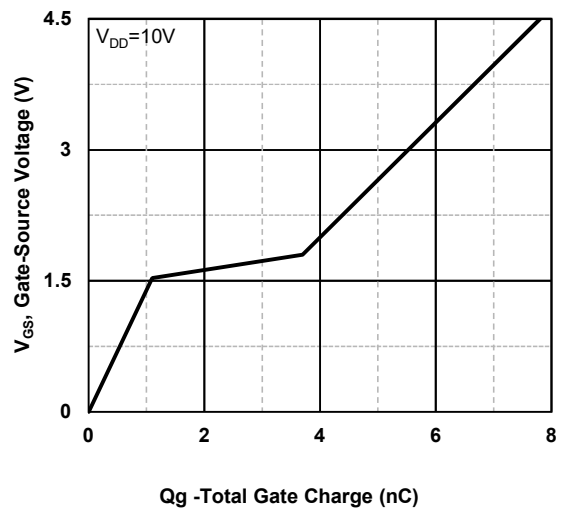


Fig2. Typical Gate Charge Vs. Gate-Source Voltage

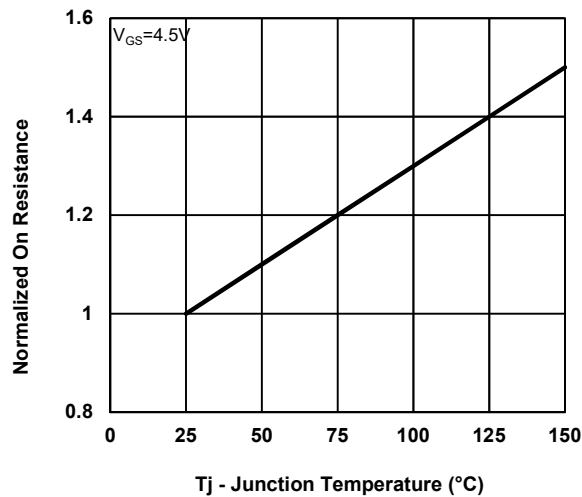


Fig3. Normalized On-Resistance Vs. Temperature

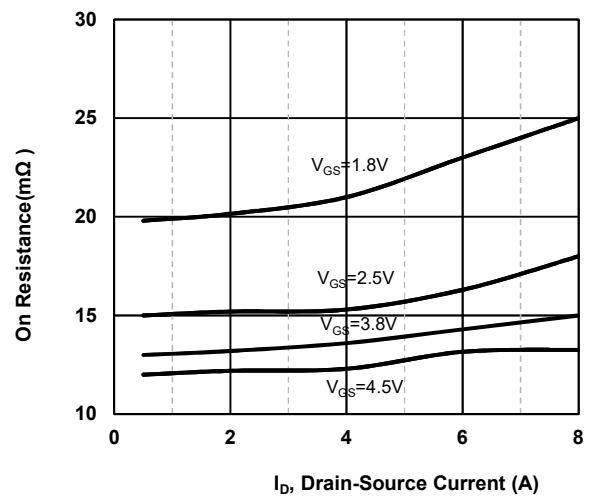


Fig4. On-Resistance Vs. Drain-Source Current

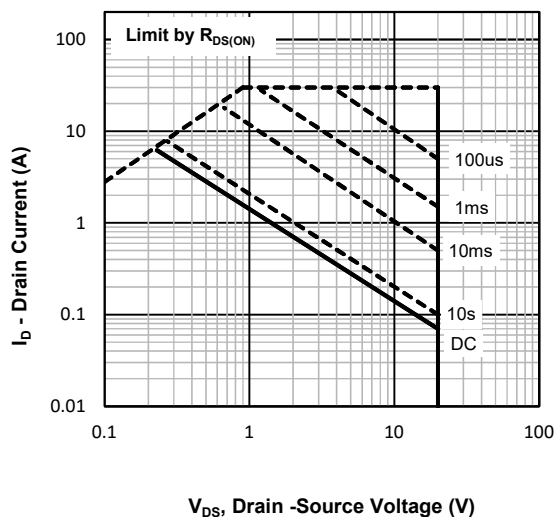


Fig5. Maximum Safe Operating Area

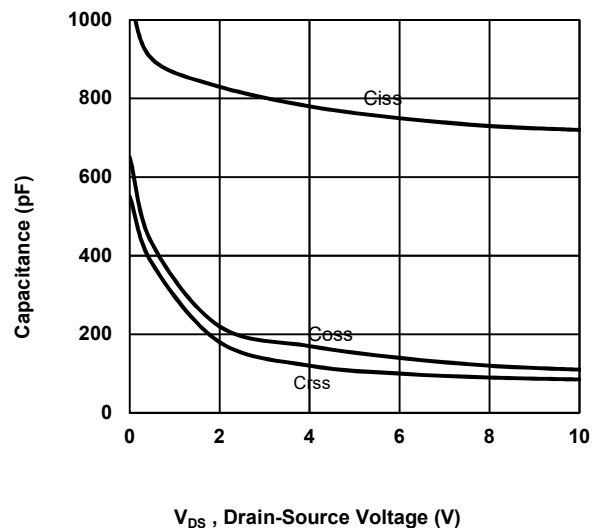
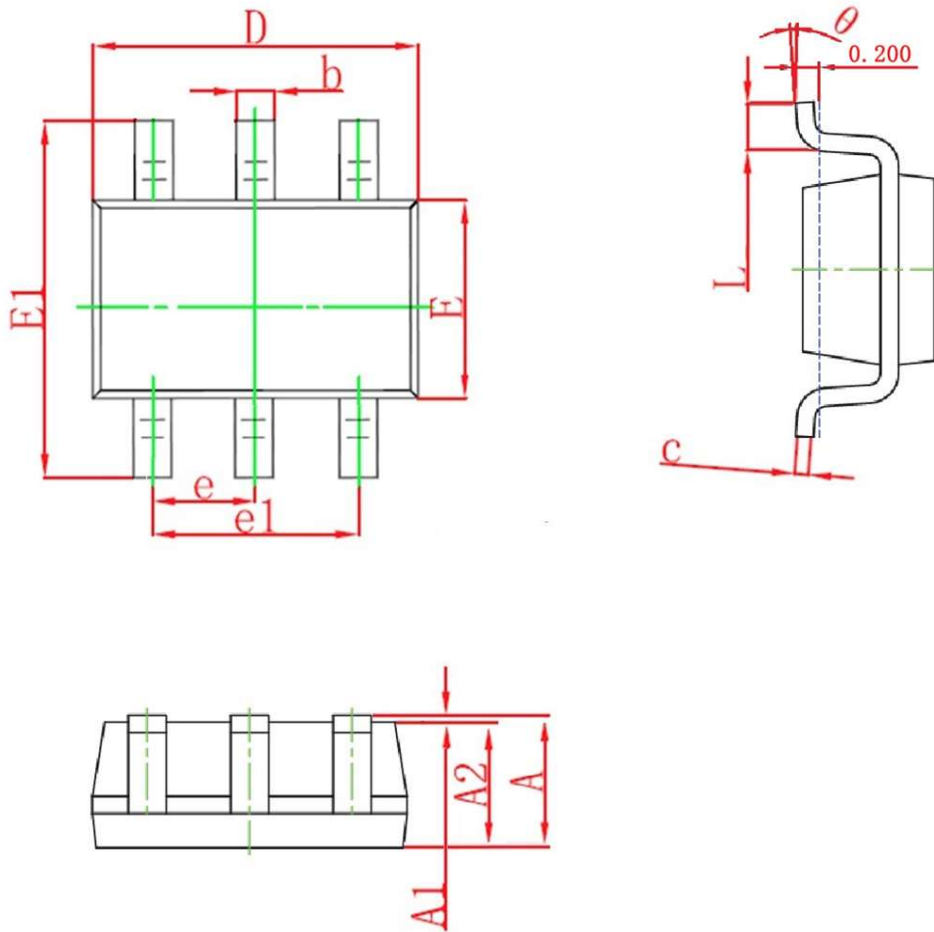


Fig6 Typical Capacitance Vs. Drain-Source Voltage

SOT-23-6L Package information



| Symbol | Dimensions in Millimeters(mm) |       | Dimensions In Inches |       |
|--------|-------------------------------|-------|----------------------|-------|
|        | Min                           | Max   | Min                  | Max   |
| A      | 1.050                         | 1.250 | 0.041                | 0.049 |
| A1     | 0.000                         | 0.100 | 0.000                | 0.004 |
| A2     | 1.000                         | 1.200 | 0.039                | 0.047 |
| b      | 0.300                         | 0.500 | 0.012                | 0.020 |
| c      | 0.100                         | 0.200 | 0.004                | 0.008 |
| D      | 2.820                         | 3.020 | 0.111                | 0.119 |
| E      | 1.500                         | 1.700 | 0.059                | 0.067 |
| E1     | 2.600                         | 3.000 | 0.102                | 0.118 |
| e      | 0.950TYP                      |       | 0.037TYP             |       |
| e1     | 1.800                         | 2.000 | 0.071                | 0.079 |
| L      | 0.300                         | 0.600 | 0.012                | 0.024 |
| K      | 0°                            | 8°    | 0°                   | 8°    |