

SE8209A
Dual N-Channel Enhancement Mode Field Effect Transistor

Revision:A

Features

For a single mosfet

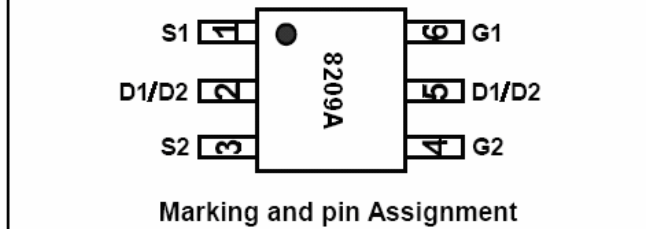
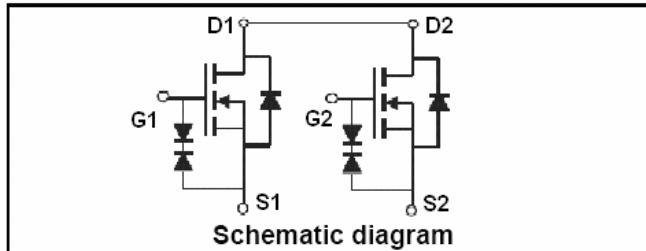
- $V_{DSS} = 20\text{ V}$
- $R_{DS(ON)} = 24\text{m}\Omega @ V_{GS}=4.0\text{V} @ I_{DS}=5\text{A}$
- $R_{DS(ON)} = 36\text{m}\Omega @ V_{GS}=2.5\text{V} @ I_{DS}=3\text{A}$

Applications

- Battery protection
- Load switch
- Power management

Construction

- Silicon epitaxial planer



Absolute Maximum Ratings

| Parameter | | Symbol | Rating | Units |
|--------------------------------------|------------|-----------|------------|--------------------|
| Drain-Source Voltage | | V_{DS} | 20 | V |
| Gate-Source Voltage | | V_{GS} | ± 12 | V |
| Drain Current (Note 1) | Continuous | I_D | 6 | A |
| | Pulsed | I_{DM} | 24 | |
| Drain-Source Diode Forward Current | | I_S | 1.7 | A |
| Maximum Power Dissipation | | P_D | 1.5 | W |
| Operating Junction Temperature Range | | T_J | -55 to 150 | $^{\circ}\text{C}$ |
| Storage Temperature Range | | T_{STG} | | |

SE8209A

| Electrical Characteristics (T _J =25°C unless otherwise noted) | | | | | | |
|--|-----------------------------------|--|-----|-----|-----|-------|
| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
| OFF CHARACTERISTICS | | | | | | |
| B _{VDSS} | Drain-Source Breakdown Voltage | I _D =250μA, V _{GS} =0 V | 20 | | | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =16 V, V _{GS} =0 V | | | 1 | μA |
| I _{GSS} | Gate-Body leakage | V _{DS} =0 V, V _{GS} =±12 V | | | ±10 | μA |
| ON CHARACTERISTICS | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} I _D =250μA | 0.5 | 0.8 | 1.5 | V |
| R _{DS(ON)} | Static Drain-Source On-Resistance | V _{GS} =4.0V, I _D =5A | - | 21 | 24 | mΩ |
| | | V _{GS} =2.5V, I _D =3A | - | 28 | 36 | |
| g _{FS} | Forward Transconductance | V _{DS} =5V, I _D =5A | | 19 | | S |
| DYNAMIC PARAMETERS | | | | | | |
| C _{iss} | Input Capacitance | V _{GS} =0V, V _{DS} =8V, f=1.0MHz | | 693 | | pF |
| C _{oss} | Output Capacitance | | | 189 | | pF |
| C _{rss} | Reverse Transfer Capacitance | | | 136 | | pF |
| SWITCHING PARAMETERS | | | | | | |
| Q _g | Total Gate Charge | V _{GS} =4.0V | | 11 | | nC |
| Q _{gs} | Gate Source Charge | V _{DS} =10V | | 1.8 | | |
| Q _{gd} | Gate Drain Charge | I _D =5A | | 4.9 | | |
| t _{d(on)} | Turn-On DelayTime | V _{GEN} =4.0V | | 31 | | ns |
| t _{d(off)} | Turn-Off DelayTime | R _{GEN} =10Ω | | 96 | | |
| t _{d(r)} | Turn-On Rise Time | V _{DD} =10V | | 62 | | |
| t _{d(f)} | Turn-Off Fall Time | I _D =1A | | 40 | | |

Figure 1. Output Characteristics

Figure 2. Transfer Characteristics

Figure 3. On-Resistance vs. Drain Current and Gate Voltage

Figure 4. On-Resistance Variation with Drain Current and Temperature

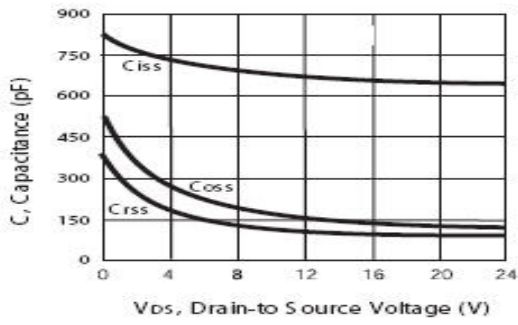


Figure 9. Capacitance

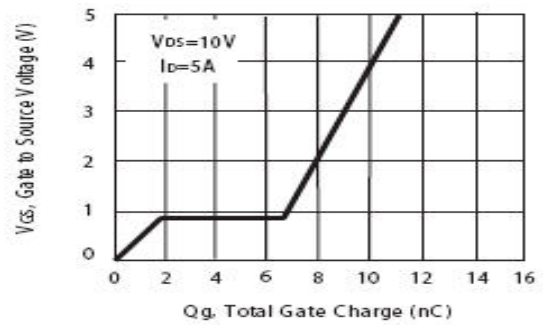


Figure 10. Gate Charge

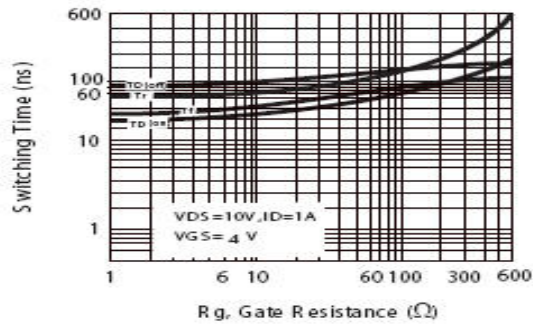


Figure 11. switching characteristics

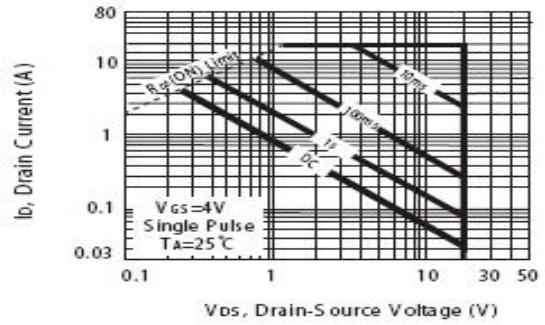


Figure 12. Maximum Safe Operating Area

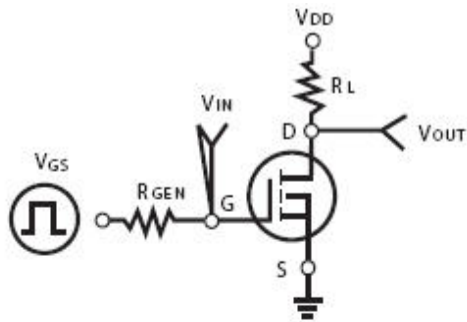


Figure 11. Switching Test Circuit

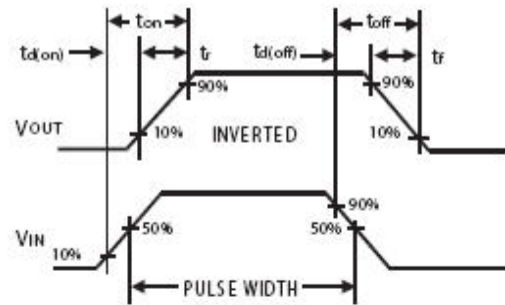
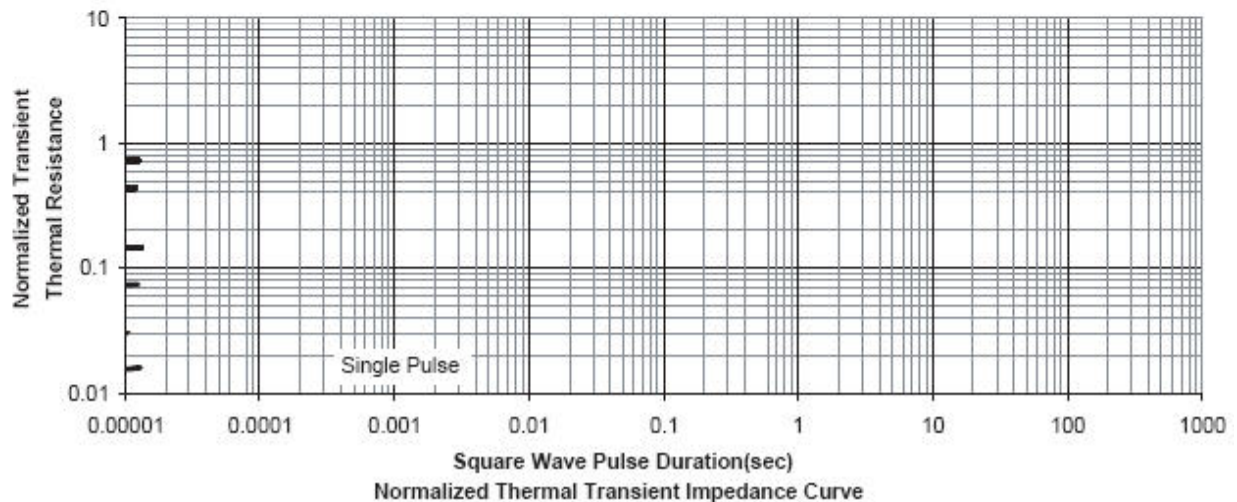
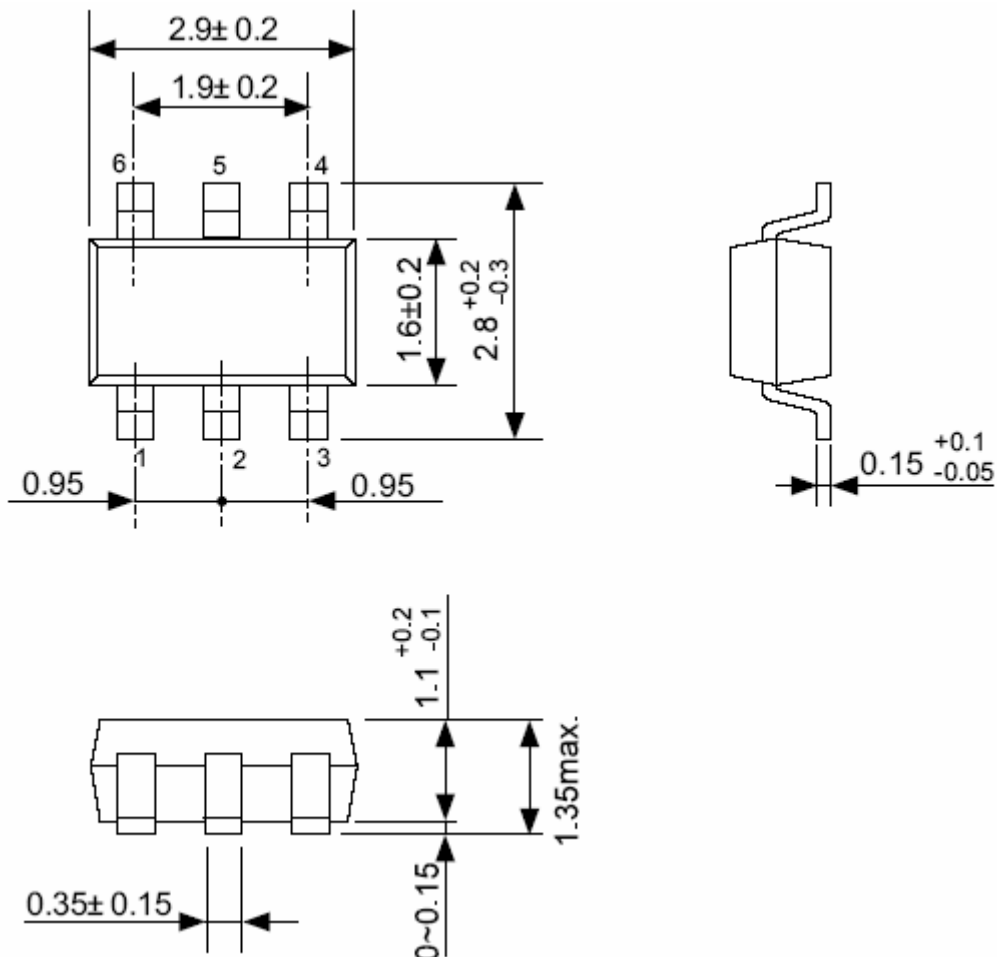


Figure 12. Switching Waveforms



PACKAGE DIMENSION (Unit:mm)

SOT-23-6



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