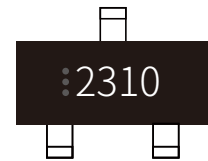
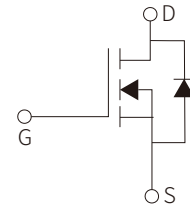


FEATURES

- | High Density Cell Design For Low $R_{DS(On)}$
- | Voltage Controlled Small Signal Switch
- | Rugged and Reliable
- | High Saturation Current Capability
- | Lead free product is acquired



Marking



Schematic Symbol

APPLICATION

- | Direct logic-level interface: TTL/CMOS
- | Drivers: relays, solenoids, lamps
- | hammers, display, memories, etc.
- | Battery operated systems
- | Solid-state relays

APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |

ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$)

| Parameter | Symbol | Value | Unit |
|---|-----------------|------------|-----------------------------|
| Drain-Source Voltage | V_{DS} | 60 | V |
| Gate-Source Voltage | V_{GS} | ± 20 | V |
| Continuous Drain Current | I_D | 3 | A |
| Pulsed Drain Current | I_{DM} | 10 | A |
| Maximum Power Dissipation | P_D | 0.35 | W |
| Junction Temperature | T_J | 150 | $^{\circ}\text{C}$ |
| Storage Temperature Range | T_{STG} | -55 to 150 | $^{\circ}\text{C}$ |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 357 | $^{\circ}\text{C}/\text{W}$ |

ELECTRICAL CHARACTERISTICS (T_A=25°C)

| Parameter | Symbol | Test Conditions | Min | Typ | Max | Unit |
|---|----------------------|--|-----|------|------|------|
| Static | | | | | | |
| Drain-source Breakdown Voltage | V _{(BR)DSS} | V _{GS} =0V, I _D =250μA | 60 | | | V |
| Gate-source leakage ^a | I _{GSS} | V _{DS} =0V, V _{GS} =±20V | | | ±100 | nA |
| Zero gate voltage drain current | I _{DSS} | V _{DS} =60V, V _{GS} =0V | | | 1 | μA |
| Gate-source threshold voltage | V _{GS(th)} | V _{DS} =V _{GS} , I _D =250μA | 0.5 | | 2 | V |
| Drain-source on-state resistance ^a | R _{DS(on)} | V _{GS} =10V, I _D =3A | | | 105 | mΩ |
| | | V _{GS} =4.5V, I _C =3A | | | 125 | mΩ |
| Forward transconductance ^a | g _{fs} | V _{DS} =10V, I _D =2A | 1.4 | | | S |
| Diode forward voltage ^a | V _{SD} | I _S =3A, V _{GS} =0V | | | 1.2 | V |
| Dynamic Characteristics^b | | | | | | |
| Input capacitance | C _{iss} | V _{DS} =30V, V _{GS} =0V, f=1MHz | | 247 | | pF |
| Output capacitance | C _{oss} | | | 34 | | pF |
| Reverse transfer capacitance | C _{rss} | | | 19.5 | | pF |
| Total gate charge | Q _g | V _{DS} =30V, V _{GS} =4.5V, I _D =3A | | 6 | | nC |
| Gate-source charge | Q _{gS} | | | 1 | | nC |
| Gate-drain charge | Q _{gD} | | | 1.3 | | nC |
| Switching^b | | | | | | |
| Turn-on delay time | t _{d(on)} | V _{DD} =30V, V _{GS} =10V I _D =1.5A, R _G =6Ω, R _L =1Ω | | 6 | | ns |
| Rise Time | t _r | | | 15 | | ns |
| Turn-Off Delay Time | t _{d(off)} | | | 15 | | ns |
| Fall yime | t _f | | | 10 | | ns |

Notes:

- a. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
 b. These parameters have no way to verify.

PARAMETER CHARACTERISTIC CURVE

Figure 1: Output Characteristics

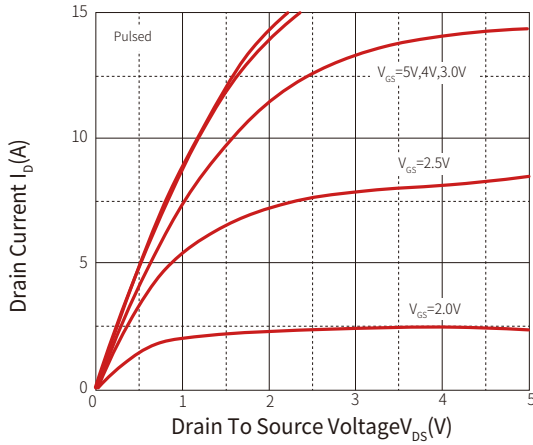


Figure 2: Transfer Characteristics

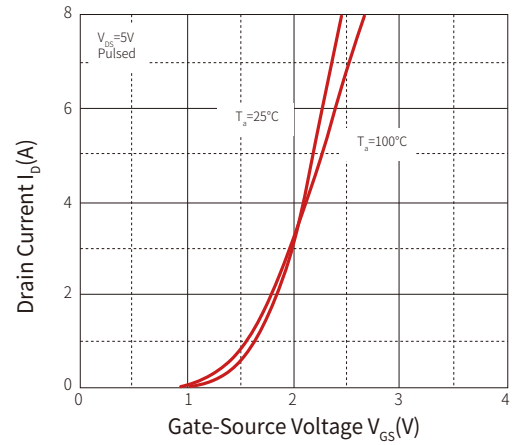


Figure 3: $R_{DS(ON)} - I_D$

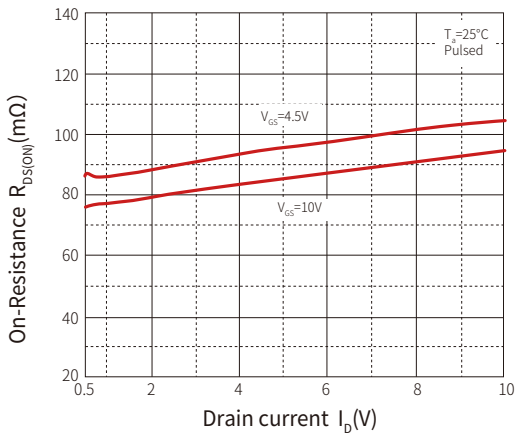


Figure 4: $R_{DS(ON)} - V_{GS}$

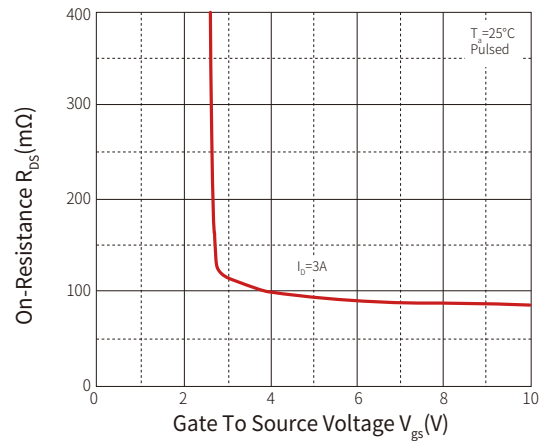


Figure 5: $I_S - V_{SD}$

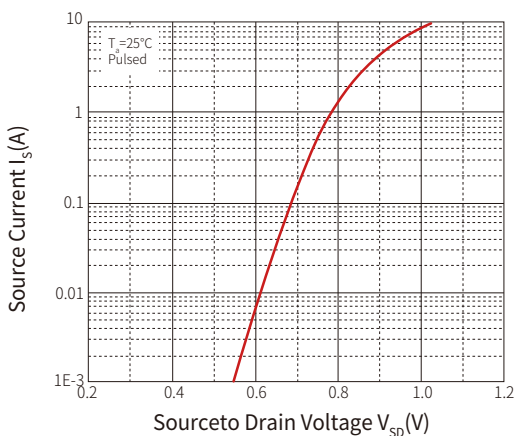
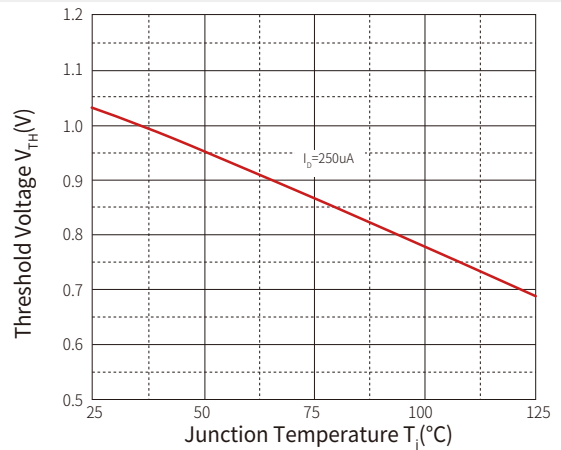
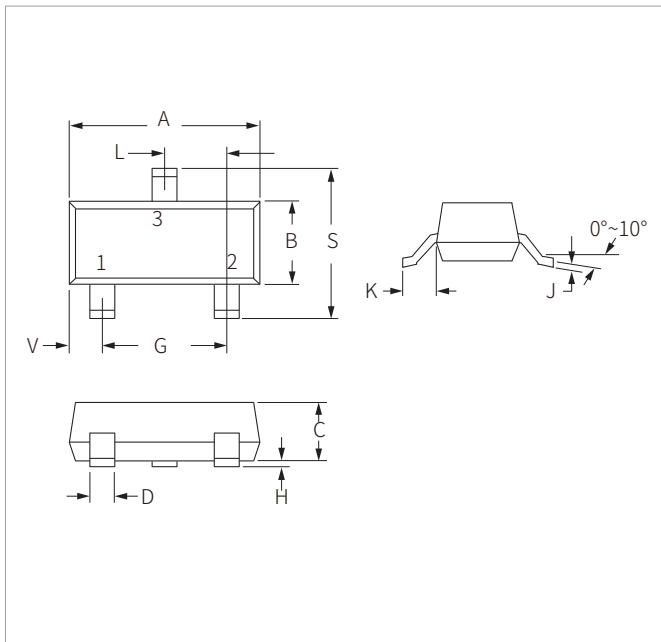


Figure 6: Threshold Voltage

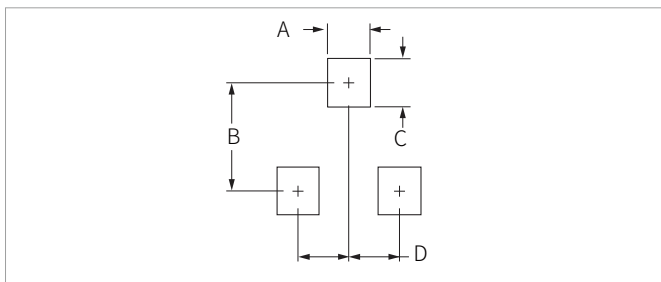


SOT-23 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.80 | 3.05 | 0.110 | 0.120 |
| B | 1.20 | 1.40 | 0.047 | 0.055 |
| C | 0.90 | 1.15 | 0.035 | 0.045 |
| D | 0.37 | 0.50 | 0.015 | 0.020 |
| G | 1.75 | 2.05 | 0.069 | 0.081 |
| H | 0.01 | 0.100 | 0.001 | 0.004 |
| J | 0.085 | 0.180 | 0.003 | 0.007 |
| K | 0.35 | 0.69 | 0.014 | 0.029 |
| L | 0.89 | 1.02 | 0.035 | 0.040 |
| S | 2.10 | 2.65 | 0.083 | 0.104 |
| V | 0.45 | 0.60 | 0.018 | 0.024 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.71 | 0.97 | 0.028 | 0.038 |
| B | 1.88 | 2.13 | 0.074 | 0.084 |
| C | 0.71 | 0.97 | 0.028 | 0.038 |
| D | 0.81 | 1.07 | 0.032 | 0.042 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| SNM2310 | SOT-23 | 3000PCS | 7" |

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