

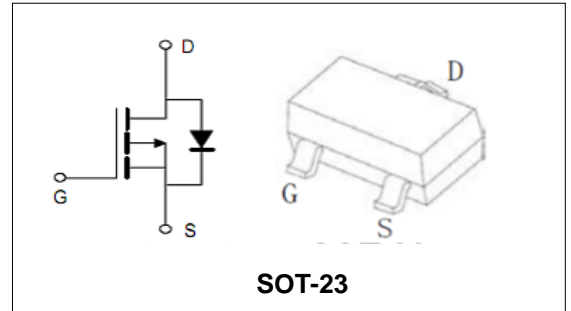
**-30V/-4.2A P-Channel Enhancement Mode MOSFET****Features**

- Advanced trench process technology
- High Density Cell Design For Ultra Low On-Resistance

| | | |
|-----------------|------|----|
| BVDSS | -30 | V |
| ID | -4.2 | A |
| RDSON@VGS=-10V | 44 | mΩ |
| RDSON@VGS=-4.5V | 57 | mΩ |
| RDSON@VGS=-2.5V | 90 | mΩ |

Applications

- Low Side Load Switch
- Battery Switch
- Optimized for Power Management Applications for Portable Products, such as Aeromodelling, Power bank, Brushless motor, Main board , and Others

**Order Information**

| Product | Package | Marking | Reel Size | Reel | Carton |
|---------|---------|---------|-----------|---------|-----------|
| PT3401 | SOT-23 | A19T | 7inch | 3000PCS | 180000PCS |

Absolute Maximum Ratings

| Symbol | Parameter | Rating | Unit | |
|--|--|--------------------|------|------|
| Common Ratings (TC=25°C Unless Otherwise Noted) | | | | |
| $V_{(BR)DSS}$ | Drain-Source Breakdown Voltage | -30 | 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 | $T_A = 25^\circ C$ | -4.2 | A |
| Mounted on Large Heat Sink | | | | |
| I_{DM} | Pulse Drain Current Tested (Silicon Limit) (Note1) | $T_A = 25^\circ C$ | -30 | A |
| I_D | Continuous Drain current | $T_A = 25^\circ C$ | -4.2 | A |
| P_D | Maximum Power Dissipation | $T_A = 25^\circ C$ | 1.4 | W |
| $R_{\theta JA}$ | Thermal Resistance Junction-to-Ambient (Note2) | | 89.2 | °C/W |

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| Symbol | Parameter | Condition | Min. | Typ. | Max. | Unit |
|--|--|--|------|------|------|------|
| Static Electrical Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| V _{(BR)DSS} | Drain- Source Breakdown Voltage | VGS=0V ID=-250μA | -30 | -- | -- | V |
| I _{DSS} | Zero Gate Voltage Drain current | VDS=-24V,VGS=0V | -- | -- | -1 | μA |
| I _{GSS} | Gate-Body Leakage Current | VGS=±12V,VDS=0V | -- | -- | ±100 | nA |
| V _{GS(TH)} | Gate Threshold Voltage | VDS=VGS,ID=-250μA | -0.7 | -1.6 | -1.3 | V |
| R _{DS(ON)} | Drain-Source On-State Resistance (Note3) | VGS=-10V, ID=-4.2A | -- | 44 | 64 | mΩ |
| | | VGS=-4.5V, ID=-4A | -- | 57 | 75 | mΩ |
| | | VGS=-2.5V, ID=-1A | -- | 90 | 120 | mΩ |
| Dynamic Electrical Characteristics @ T_J = 25°C (unless otherwise stated) (Note4) | | | | | | |
| C _{iss} | Input Capacitance | VDS= -15V, VGS=0V, F=1MHz | -- | 954 | -- | pF |
| C _{oss} | Output Capacitance | | -- | 115 | -- | pF |
| C _{rss} | Reverse Transfer Capacitance | | -- | 77 | -- | pF |
| Q _g | Total Gate Charge | VDS= -15V, ID= -4A, VGS= -10V | -- | 9.4 | -- | nC |
| Q _{gs} | Gate-Source Charge | | -- | 2 | -- | nC |
| Q _{gd} | Gate-Drain Charge | | -- | 3 | -- | nC |
| Switching Characteristics (Note4) | | | | | | |
| t _{d(on)} | Turn-on Delay Time | VDD=-15V, ID=-1A, RG=3.7Ω, VGS=-10V | -- | 6.3 | -- | nS |
| t _r | Turn-on Rise Time | | -- | 3.2 | -- | nS |
| t _{d(off)} | Turn-off Delay Time | | -- | 38.2 | -- | nS |
| t _f | Turn-off Fall Time | | -- | 12 | -- | nS |
| Source- Drain Diode Characteristics @ T_J = 25°C (unless otherwise stated) | | | | | | |
| V _{SD} | Forward on voltage (Note3) | IS=-1.8A,VGS=0V | -- | -- | -1.2 | V |

Note:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ≤ 10 sec
3. Pulse Test: pulse width ≤ 300 us, duty cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



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Typical Characteristics

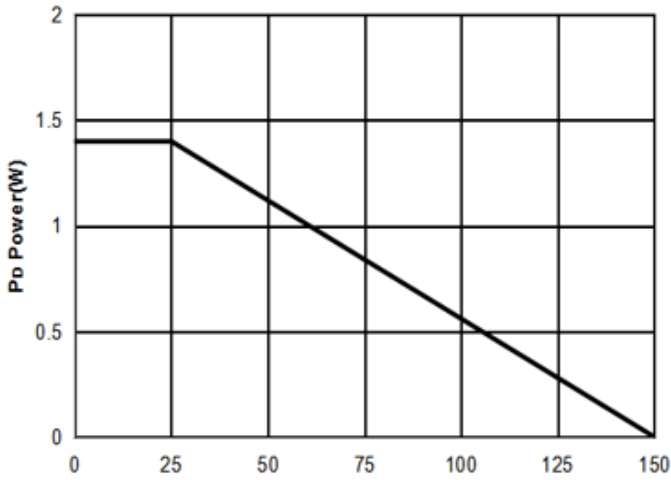


Figure1: Tj Junction Temperature (°C)

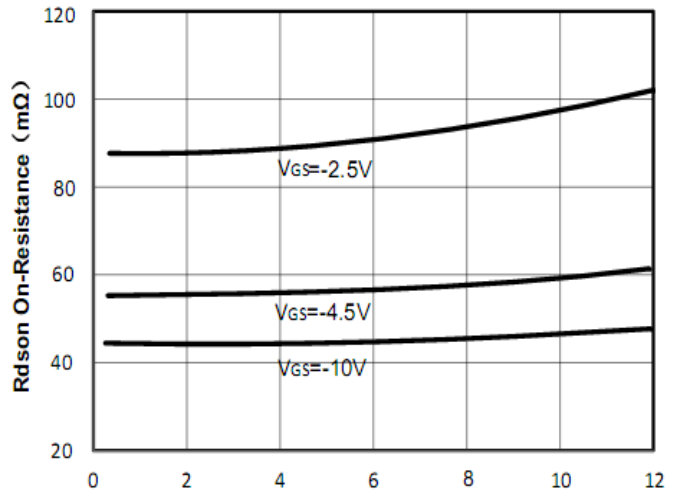


Figure2: -Id Drain Current (A)

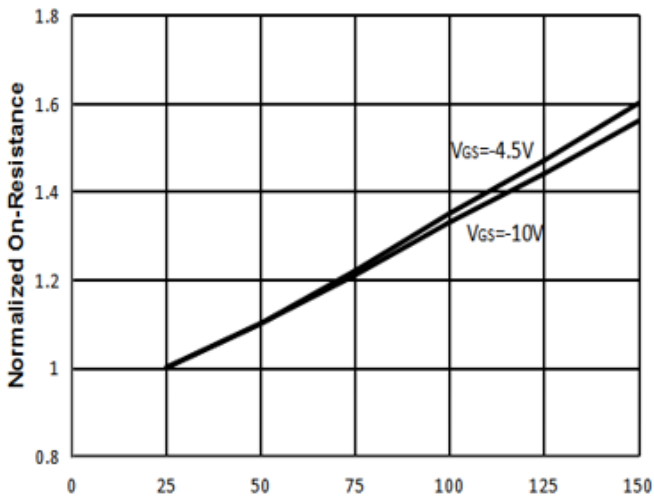


Figure3: Tj Junction Temperature (°C)

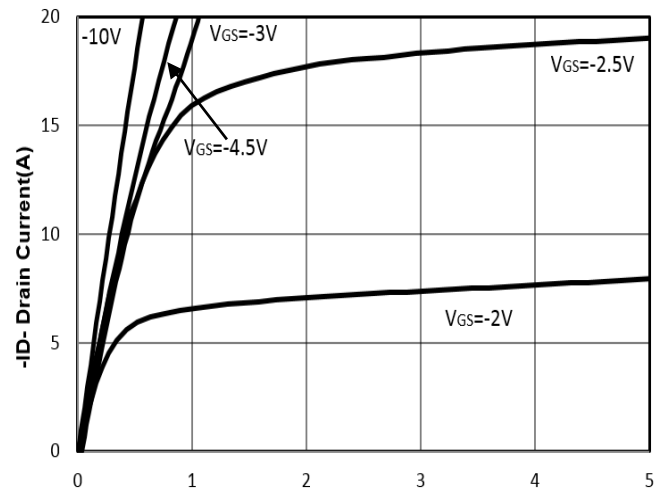


Figure4: -Vds Drain-Source Voltage (V)

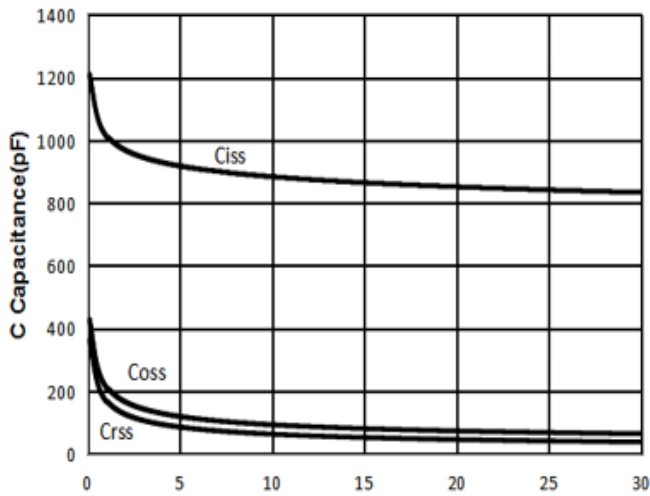


Figure5: -Vds Drain-Source Voltage (V)

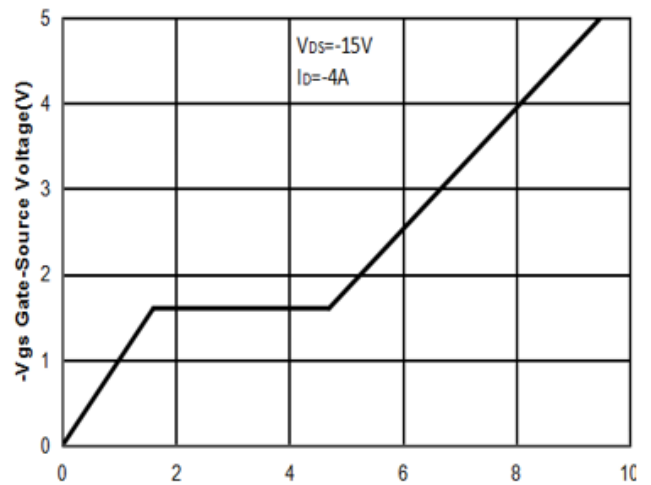


Figure6: Qg Gate Charge (nC)



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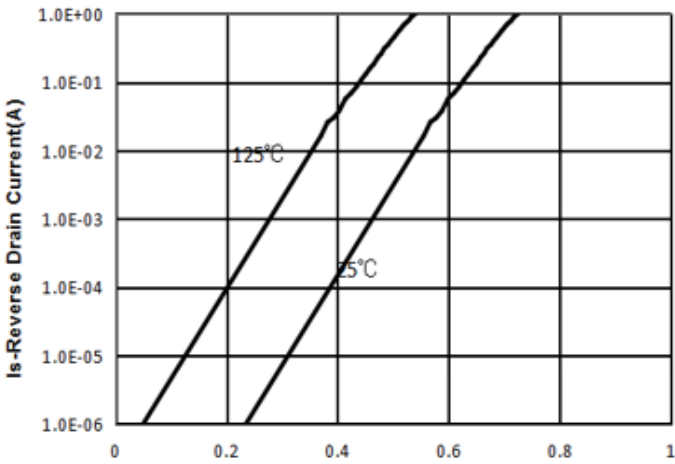


Figure7: -Vsd Source-Drain Voltage (V)

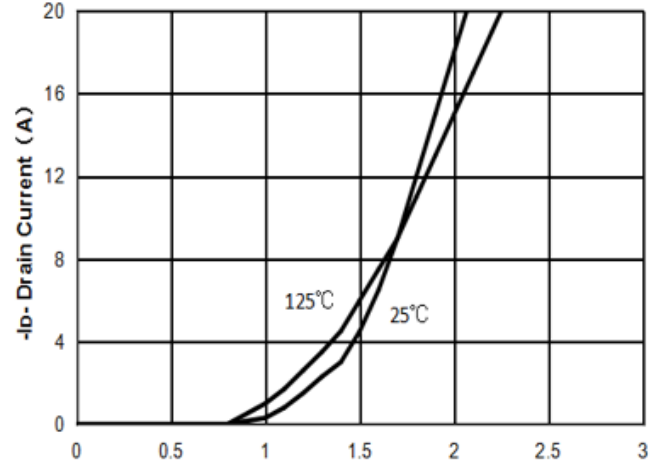


Figure8: -Vgs Gate-Source Voltage (V)

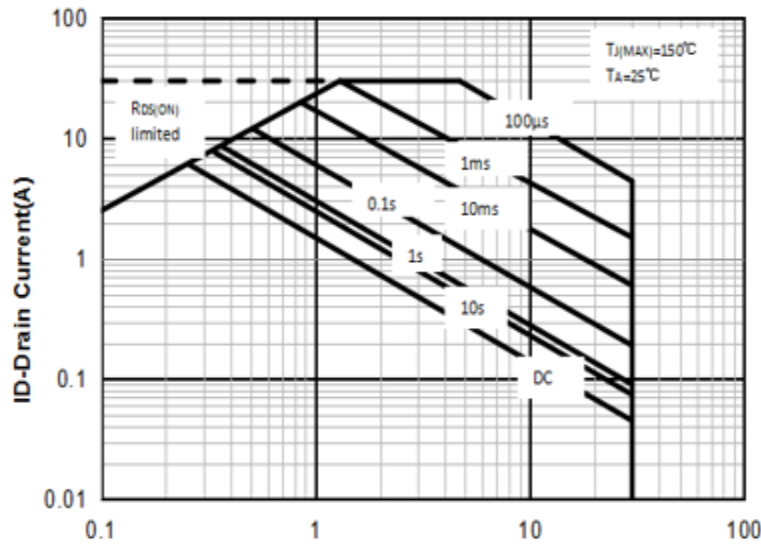


Figure9: -Vds Drain-Source Voltage (V)

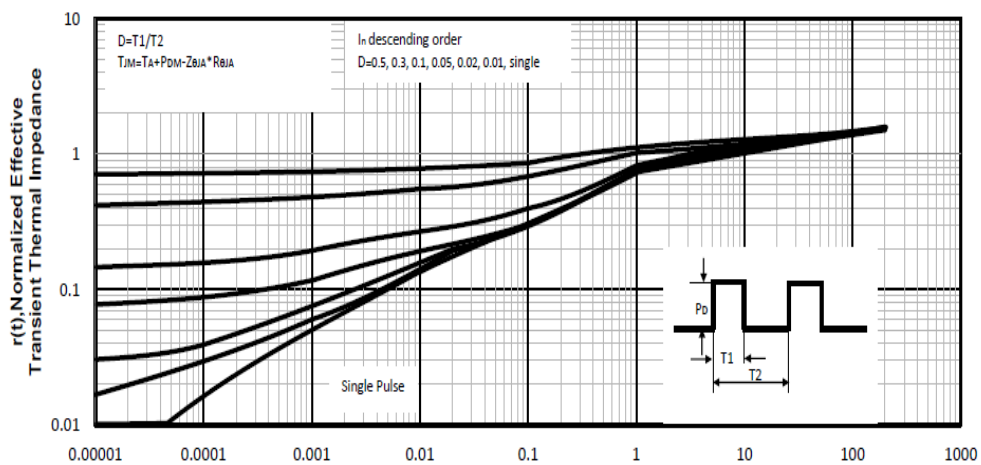


Figure10: Square Wave Pulse Duration (sec)

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Test Circuit and Waveform:

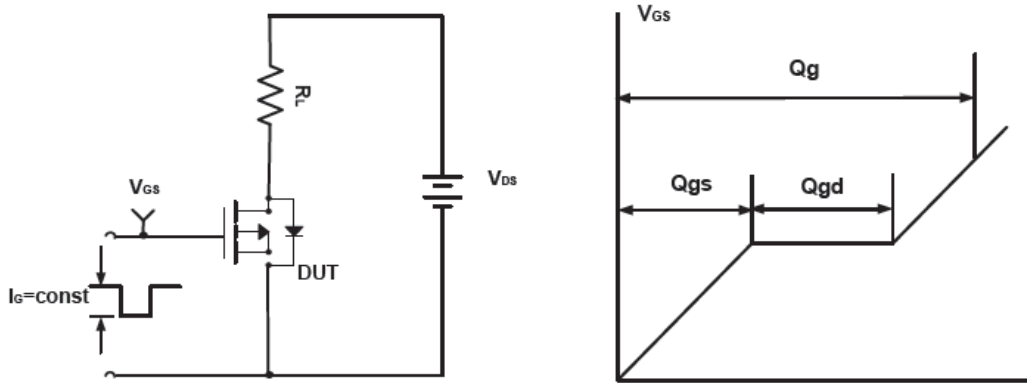


Figure A Gate Charge Test Circuit & Waveforms

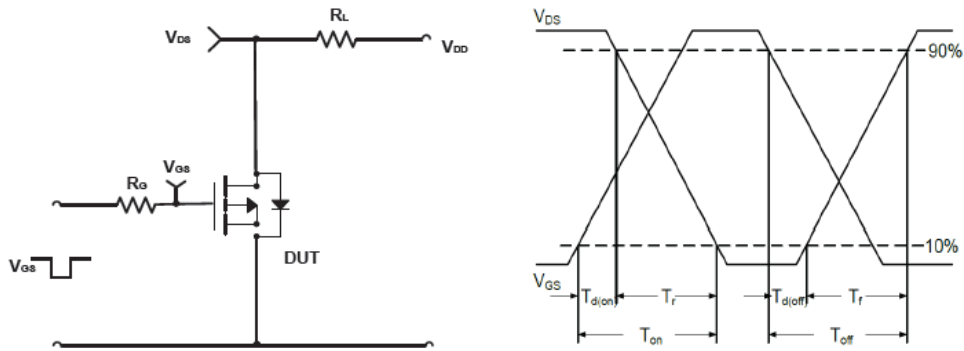


Figure B Switching Test Circuit & Waveforms

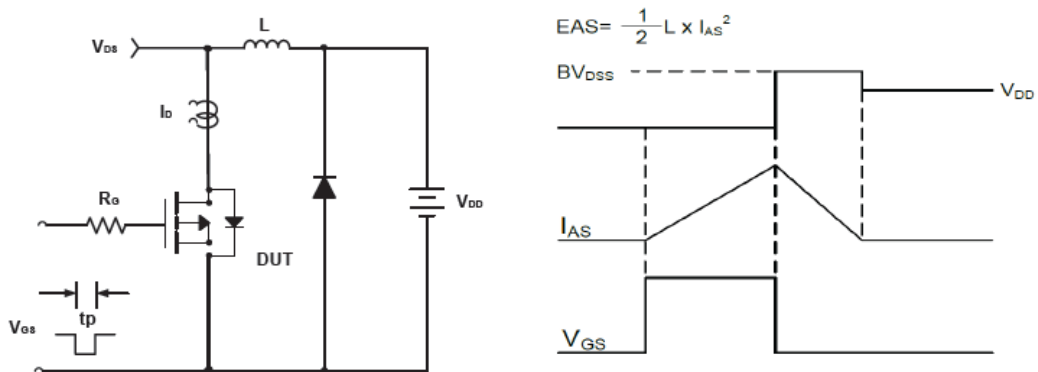
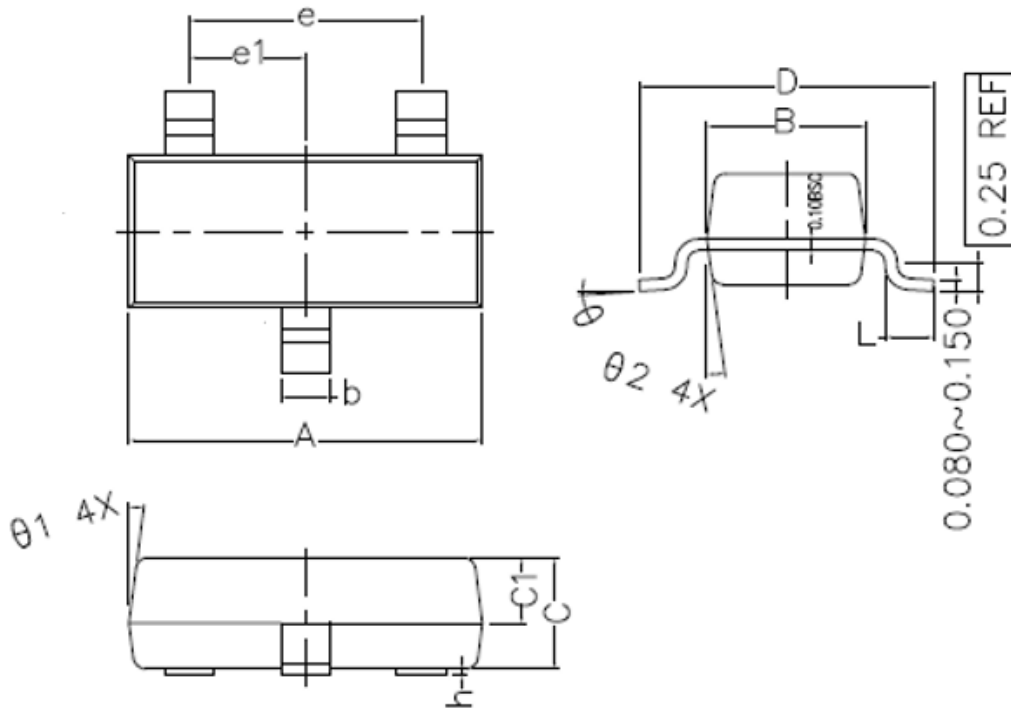


Figure C Unclamped Inductive Switching Circuit & Waveforms



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SOT-23 Package Outline Dimensions (Units: mm)



| COMMON DIMENSIONS (UNITS OF MEASURE IS mm) | | | |
|---|-----------|--------|-------|
| | MIN | NORMAL | MAX |
| A | 2.800 | 2.900 | 3.000 |
| B | 1.200 | 1.300 | 1.400 |
| C | 0.900 | 1.000 | 1.100 |
| C1 | 0.500 | 0.550 | 0.600 |
| D | 2.250 | 2.400 | 2.550 |
| L | 0.300 | 0.400 | 0.500 |
| h | 0.010 | 0.050 | 0.100 |
| b | 0.300 | 0.400 | 0.500 |
| e | 1.90 TYPE | | |
| e1 | 0.95 TYPE | | |
| θ_1 | 7° TYPE | | |
| θ_2 | 7° TYPE | | |
| θ | 0° ~ 7° | | |