



Description

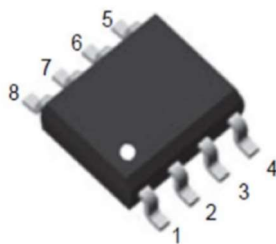
JMT P-channel Enhancement Mode Power MOSFET

Features

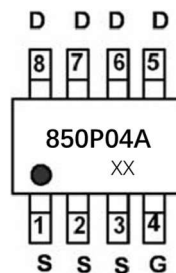
- $V_{DS} = -40V$, $I_D = -5A$
 $R_{DS(ON)} < 85m\Omega @ V_{GS} = -10V$
 $R_{DS(ON)} < 112m\Omega @ V_{GS} = -4.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired

Application

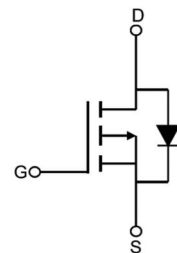
- PWM Applications
- Load Switch
- Power Management



SOP-8 top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

| Device Marking | Device | OUTLINE | Device Package | Reel Size | Reel (PCS) | Per Carton (PCS) |
|----------------|-------------|---------|----------------|-----------|------------|------------------|
| 850P04A | JMTP850P04A | TAPING | SOP-8 | 13inch | 4000 | 48000 |

Absolute Maximum Ratings ($T_A = 25^\circ C$ unless otherwise specified)

| Symbol | Parameter | Max. | Units |
|-----------------|---|---------------------|--------------|
| V_{DSS} | Drain-Source Voltage | -40 | V |
| V_{GSS} | Gate-Source Voltage | ± 20 | V |
| I_D | Continuous Drain Current | $T_A = 25^\circ C$ | -5 |
| | | $T_A = 100^\circ C$ | -3.3 |
| I_{DM} | Pulsed Drain Current ^{note1} | -20 | A |
| P_D | Power Dissipation | $T_A = 25^\circ C$ | 3.7 |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 33.8 | $^\circ C/W$ |
| T_J, T_{STG} | Operating and Storage Temperature Range | -55 to +150 | $^\circ C$ |



Electrical Characteristics (T_J=25°C unless otherwise specified)

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|------|------|------|-------|
| Off Characteristic | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D = -250μA | -40 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} = -40V, V _{GS} =0V | - | - | -1 | μA |
| I _{GSS} | Gate to Body Leakage Current | V _{DS} =0V, V _{GS} = ±20V | - | - | ±100 | nA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D = -250μA | -1.0 | -1.6 | -2.5 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance <small>note3</small> | V _{GS} = -10V, I _D = -3A | - | 65 | 85 | mΩ |
| | | V _{GS} = -4.5V, I _D = -2A | - | 80 | 112 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} = -20V, V _{GS} =0V, f=1.0MHz | - | 573 | - | pF |
| C _{oss} | Output Capacitance | | - | 53 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 42 | - | pF |
| Q _g | Total Gate Charge | V _{DS} = -20V, I _D = -3A, V _{GS} = -10V | - | 7.1 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 1.5 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 1.8 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DD} = -20V, I _D = -5A, V _{GS} = -10V, R _{GEN} =2.5Ω | - | 6.5 | - | ns |
| t _r | Turn-on Rise Time | | - | 14 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 34 | - | ns |
| t _f | Turn-off Fall Time | | - | 18 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | -5 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | -20 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S = -5A | - | -0.8 | -1.2 | V |
| t _{rr} | Reverse Recovery Time | V _{GS} =0V, I _S = -5A, di/dt=100A/μs | - | 23 | - | ns |
| Q _{rr} | Reverse Recovery Charge | | - | 25.2 | - | nC |

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%



Typical Performance Characteristics

Figure 1: Output Characteristics

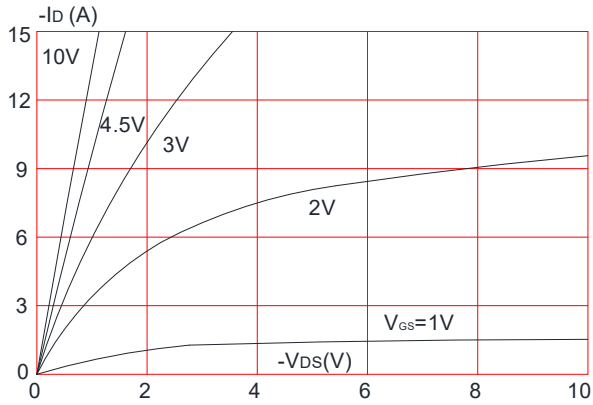


Figure 2: Typical Transfer Characteristics

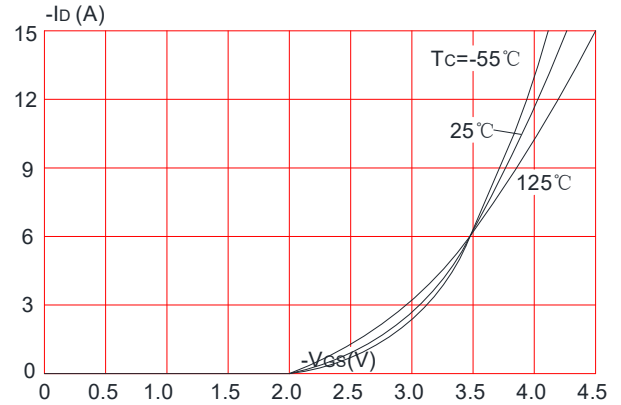


Figure 3: On-resistance vs. Drain Current

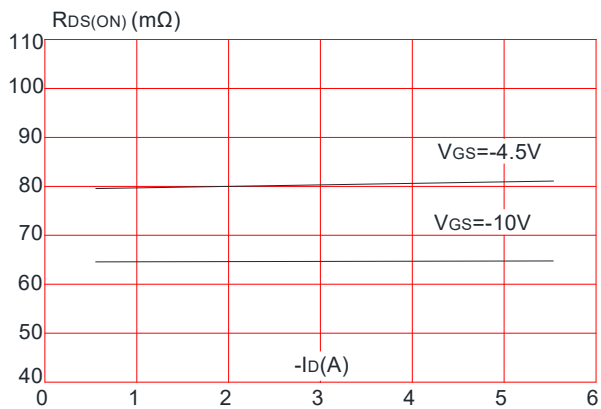


Figure 4: Body Diode Characteristics

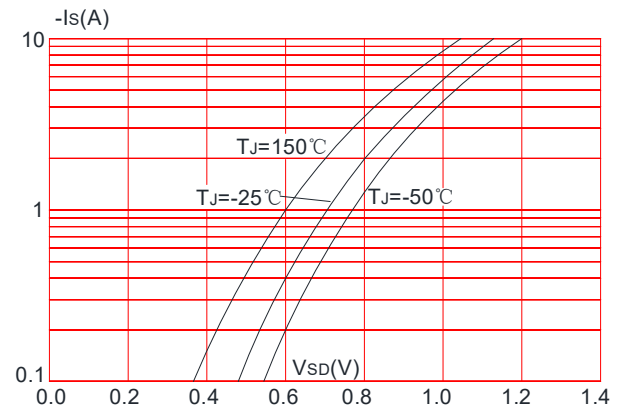


Figure 5: Gate Charge Characteristics

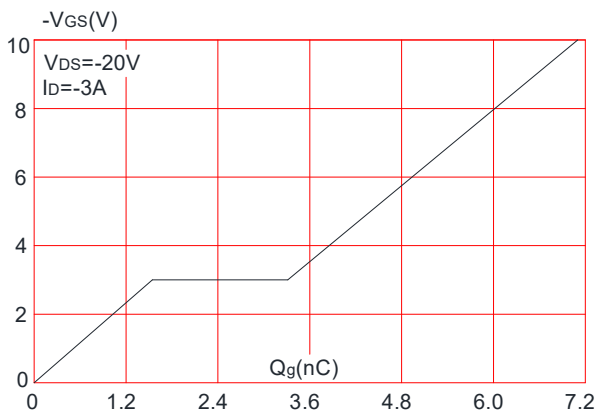


Figure 6: Capacitance Characteristics

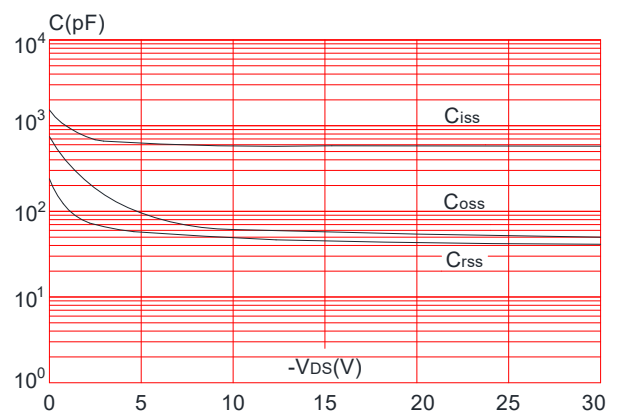




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

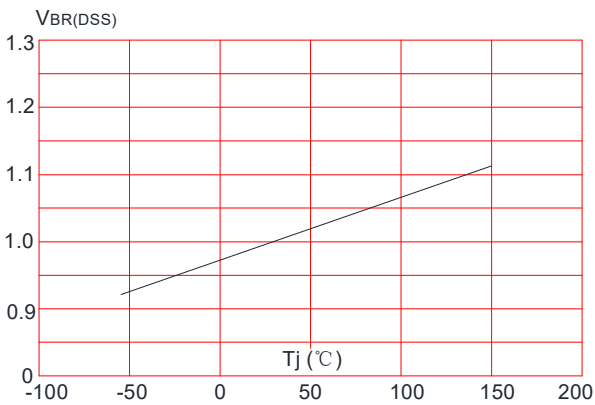


Figure 8: Normalized on Resistance vs. Junction Temperature

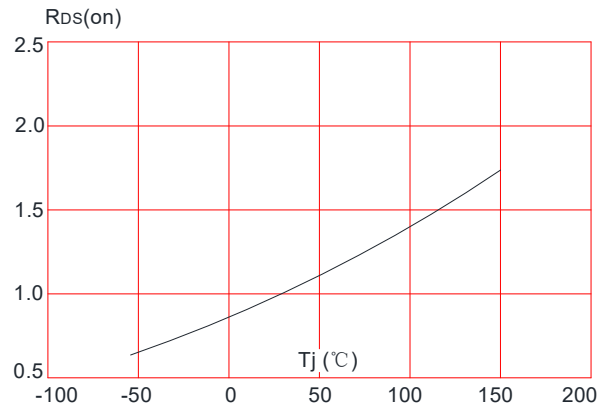


Figure 9: Maximum Safe Operating Area

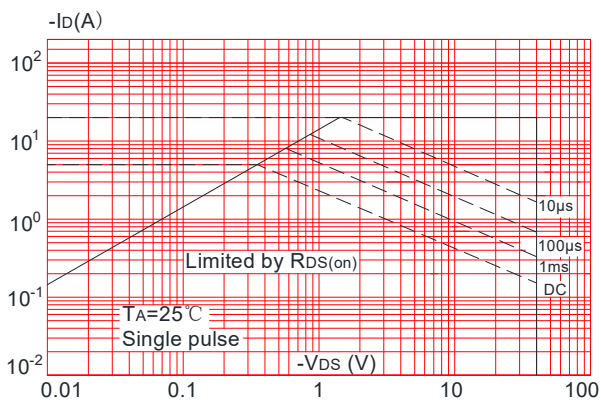


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

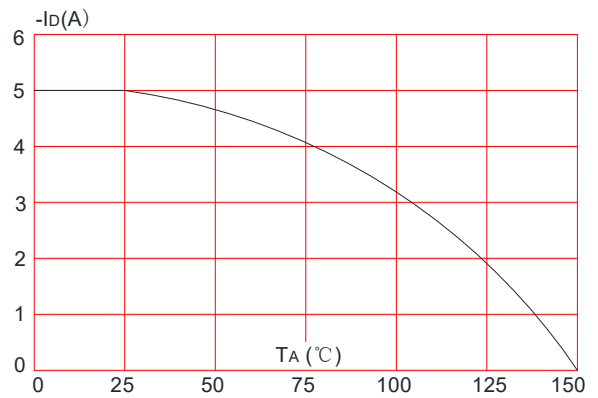
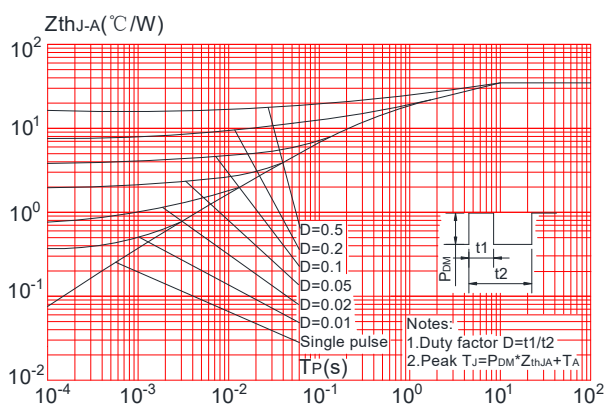


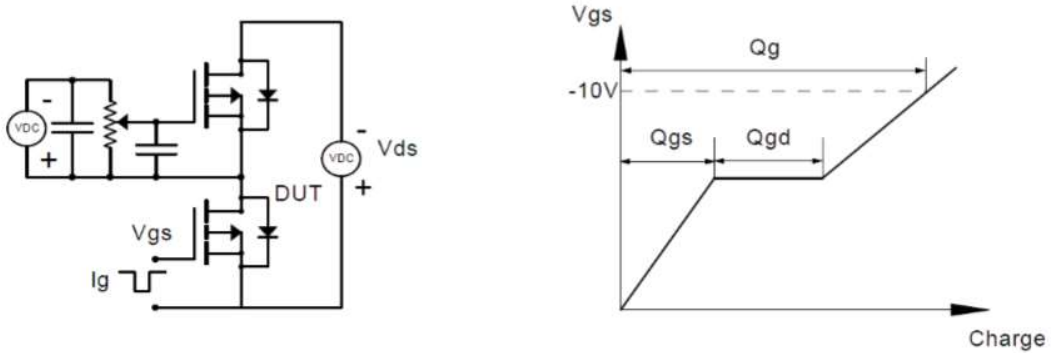
Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



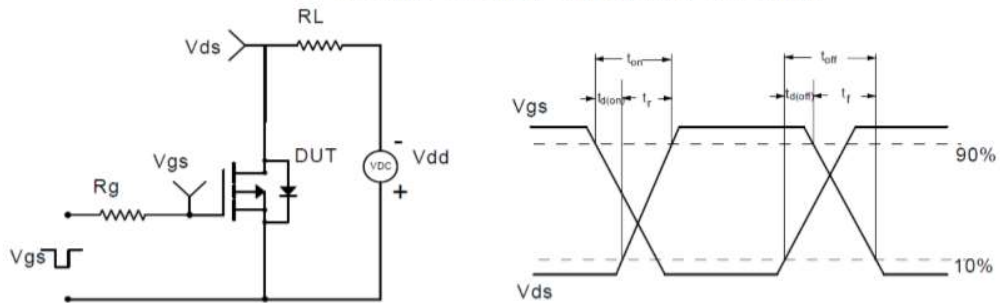


Test Circuit

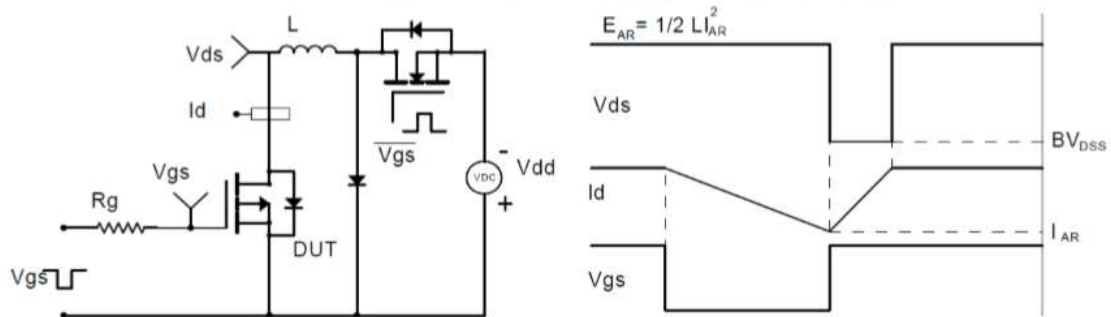
Gate Charge Test Circuit & Waveform



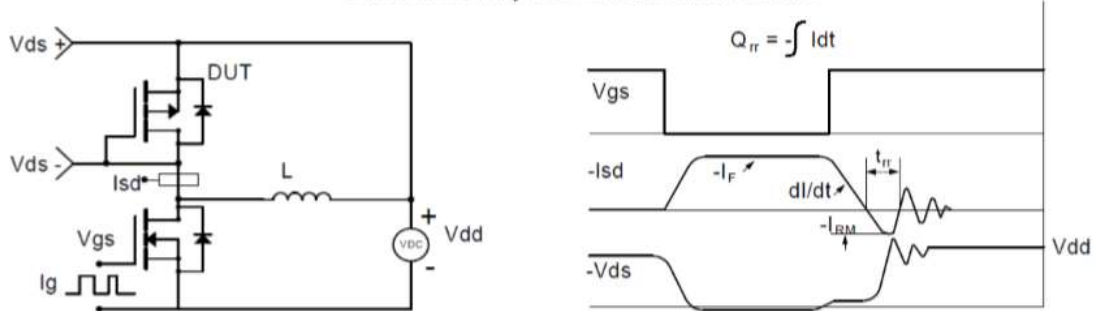
Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

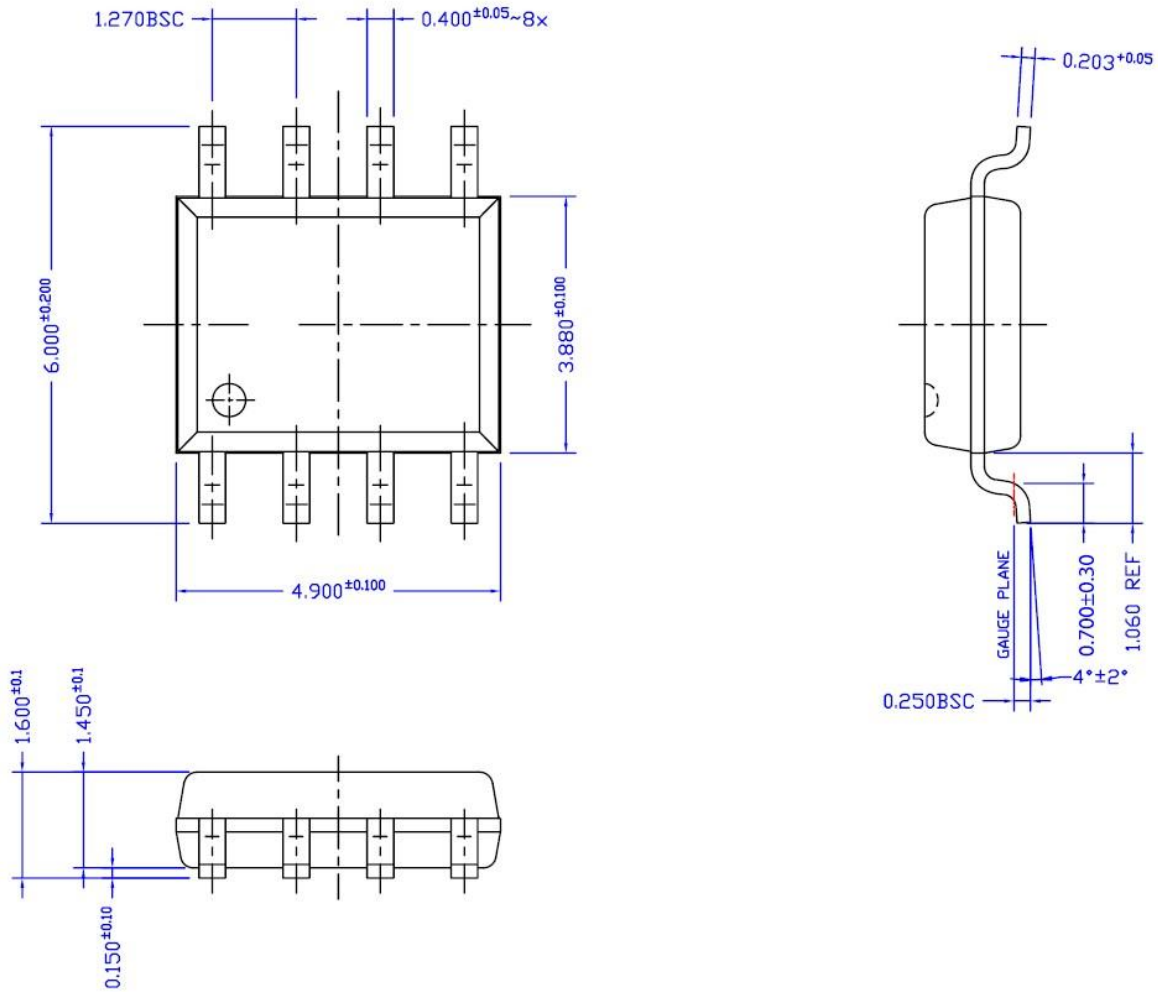


Diode Recovery Test Circuit & Waveforms





Package Mechanical Data-SOP-8



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