



Description

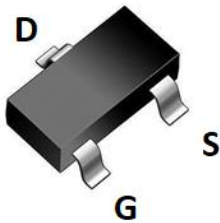
JMT N-channel Enhancement Mode Power MOSFET

Features

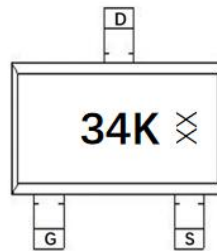
- 20V, 0.9A
 $R_{DS(ON)} < 175m\Omega @ V_{GS} = 4.5V$
 $R_{DS(ON)} < 275m\Omega @ V_{GS} = 2.5V$
- Advanced Trench Technology
- Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead free product is acquired
- ESD Protected: 2KV

Application

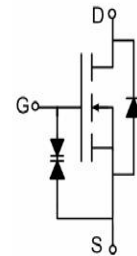
- Load Switch
- PWM Application
- Power management



SOT-323-3L 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) |
|----------------|------------|---------|----------------|-----------|------------|------------------|
| 34K | JMTLA3134K | TAPING | SOT-323-3L | 7inch | 3000 | 120000 |

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

| Symbol | Parameter | Max. | Units | |
|-----------------|---|---------------------|--------------|---|
| V_{DSS} | Drain-Source Voltage | 20 | V | |
| V_{GSS} | Gate-Source Voltage | ± 10 | V | |
| I_D | Continuous Drain Current | $T_A = 25^\circ C$ | 0.9 | A |
| | | $T_A = 100^\circ C$ | 0.6 | A |
| I_{DM} | Pulsed Drain Current <small>note1</small> | 3.6 | A | |
| P_D | Power Dissipation | $T_A = 25^\circ C$ | 0.23 | W |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Case | 543 | $^\circ C/W$ | |
| 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 | 20 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =20V, V _{GS} =0V, | - | - | 1 | μA |
| I _{GSS} | Gate to Body Leakage Current | V _{DS} =0V, V _{GS} = ±10V | - | - | ±10 | uA |
| On Characteristics | | | | | | |
| V _{GS(th)} | Gate Threshold Voltage | V _{DS} =V _{GS} , I _D =250μA | 0.4 | 0.7 | 1.0 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance <small>note2</small> | V _{GS} =4.5V, I _D =0.5A | - | 135 | 175 | mΩ |
| | | V _{GS} =2.5V, I _D =0.4A | - | 195 | 275 | |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =10V, V _{GS} =0V, f=1.0MHz | - | 60 | - | pF |
| C _{oss} | Output Capacitance | | - | 22 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 12 | - | pF |
| Q _g | Total Gate Charge | V _{DS} =10V, I _D =0.9A, V _{GS} =4.5V | - | 1 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 0.28 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 0.22 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DS} =10V, I _D =0.5A, R _{GEN} =10Ω, V _{GS} =4.5V | - | 2 | - | ns |
| t _r | Turn-on Rise Time | | - | 19 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 10 | - | ns |
| t _f | Turn-off Fall Time | | - | 23 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 0.9 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 3.6 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S =0.9A | - | - | 1.2 | V |

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

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤0.5%



Typical Performance Characteristics

Figure 1: Output Characteristics

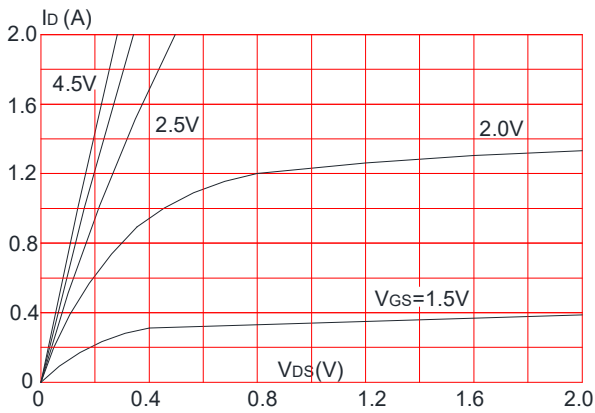


Figure 2: Typical Transfer Characteristics

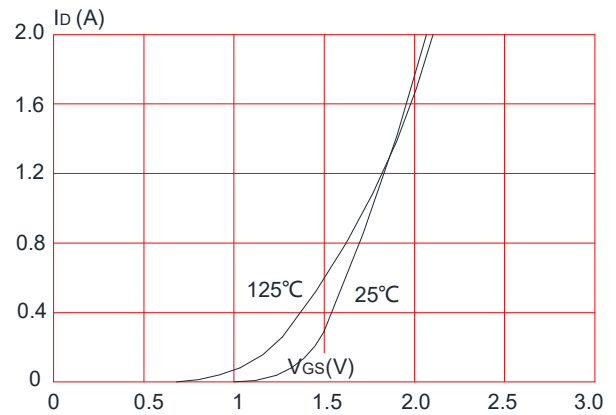


Figure 3: On-resistance vs. Drain Current

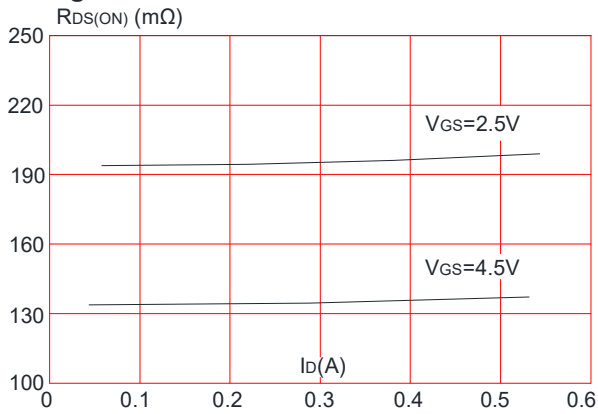


Figure 4: Body Diode Characteristics

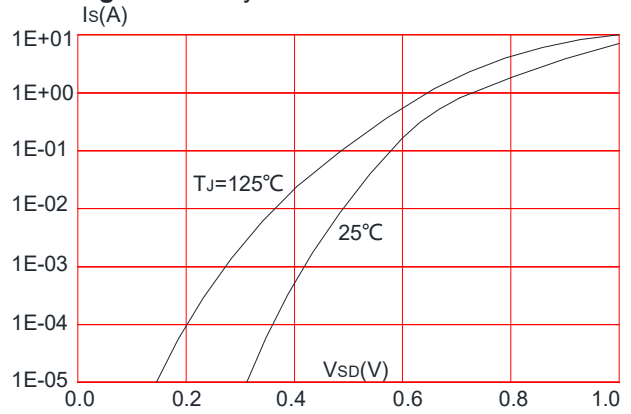


Figure 5: Gate Charge Characteristics

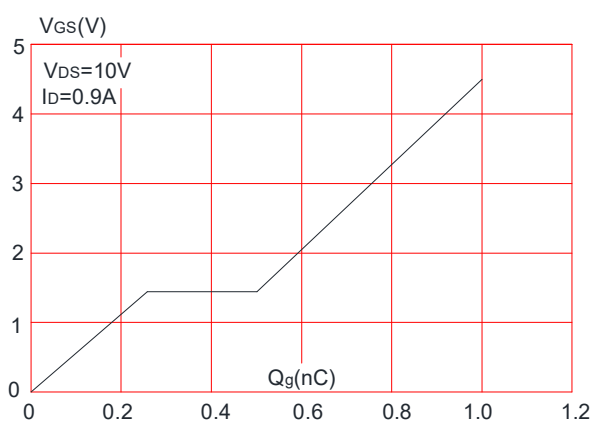


Figure 6: Capacitance Characteristics

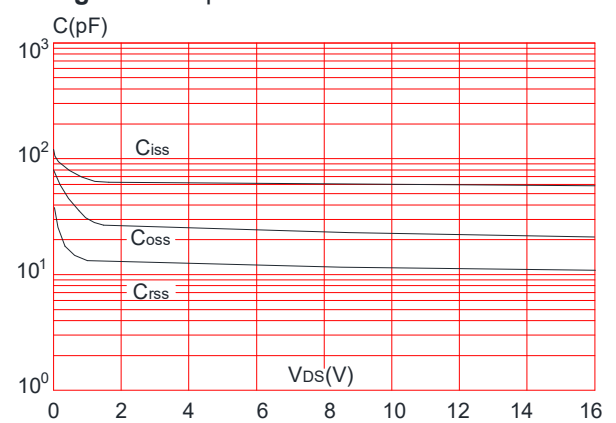




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

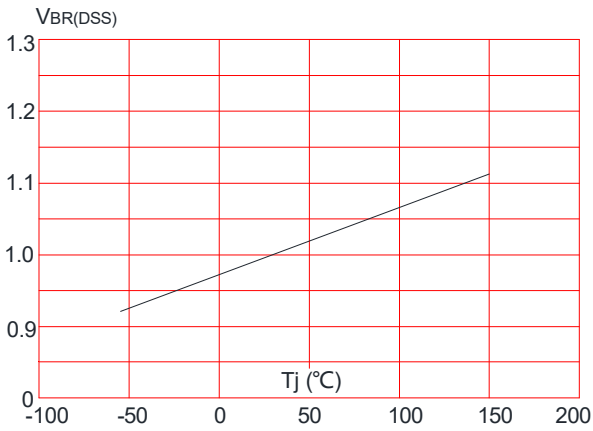


Figure 8: Normalized on Resistance vs. Junction Temperature

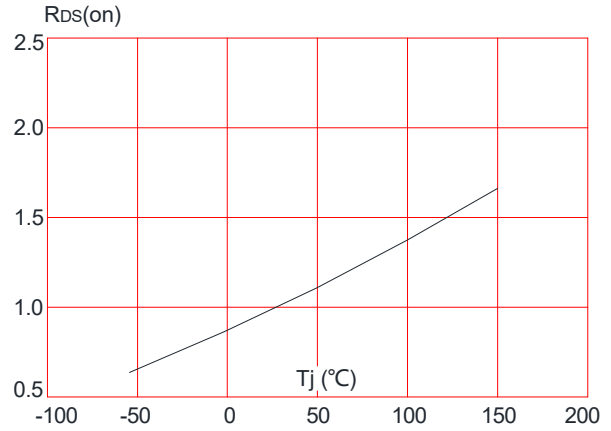


Figure 9: Maximum Safe Operating Area

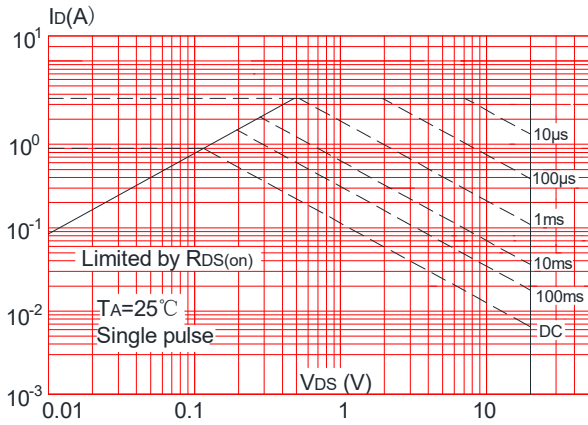


Figure 10: Maximum Continuous Drain Current vs. Ambient Temperature

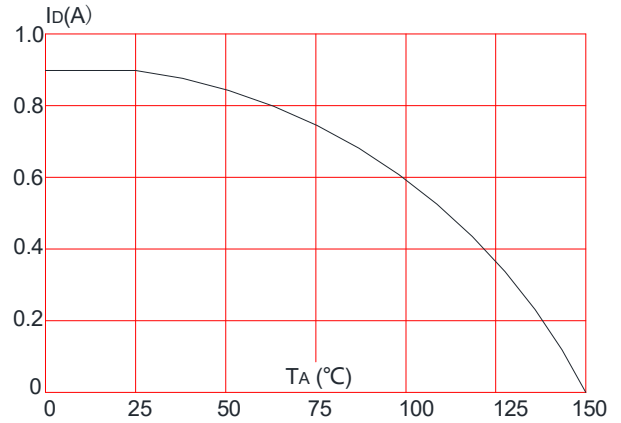
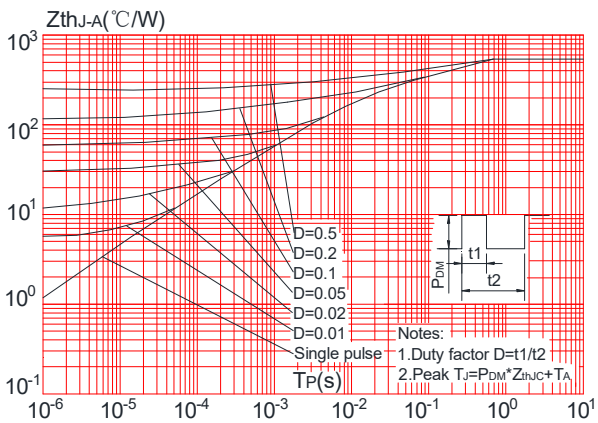


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient



Test Circuit

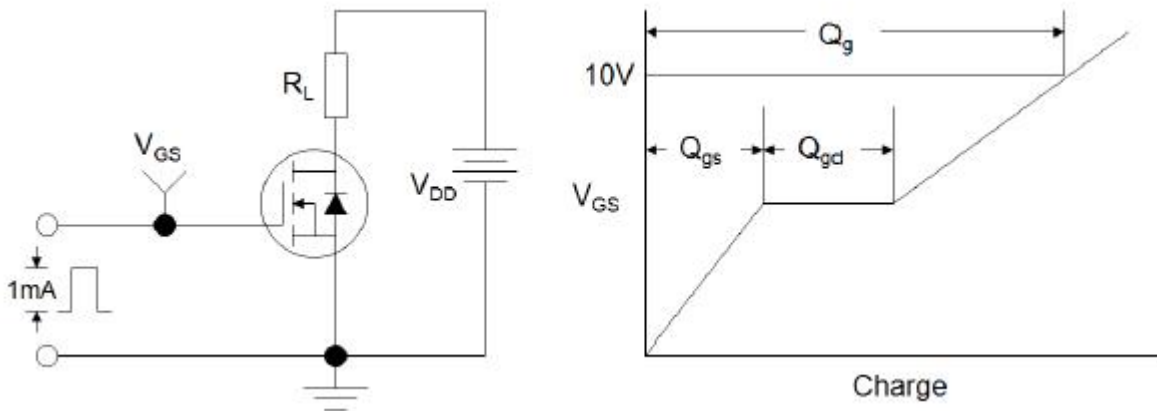


Figure1:Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveforms

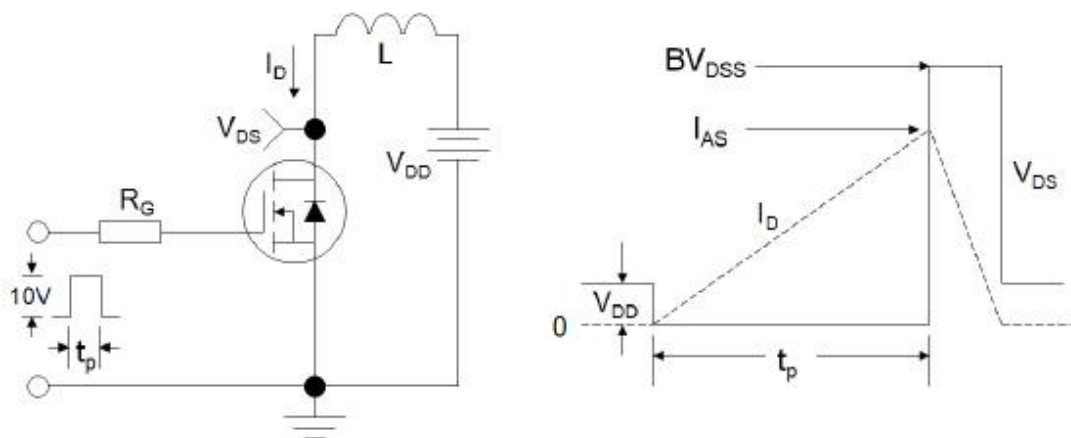
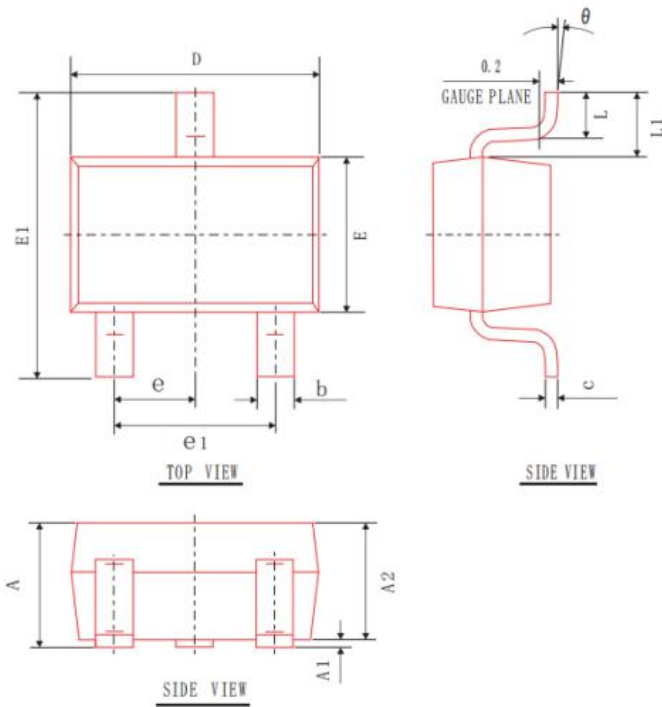


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms



Package Mechanical Data-SOT-323-3L



COMMON DIMENSIONS
(UNITS OF MEASURE=mm)

| SYMBOL | MIN | NOM | MAX |
|----------|-----------|------|------|
| A | 0.90 | 1.00 | 1.10 |
| A1 | 0.00 | 0.05 | 0.10 |
| A2 | 0.90 | 0.95 | 1.00 |
| b | 0.20 | 0.25 | 0.30 |
| c | 0.08 | 0.10 | 0.15 |
| e1 | 1.20 | 1.30 | 1.40 |
| D | 2.00 | 2.10 | 2.20 |
| E | 1.15 | 1.25 | 1.35 |
| E1 | 2.15 | 2.30 | 2.45 |
| L | 0.26 | 0.36 | 0.46 |
| θ | 0° | 4° | 8° |
| L1 | 0.525 REF | | |
| e | 0.65 TYP | | |

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