



Description

JMT N-channel Enhancement Mode Power MOSFET

Features

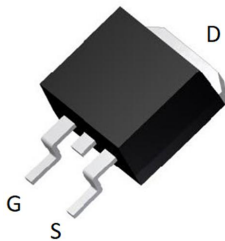
- 60V, 180A
 $R_{DS(ON)} < 3.8m\Omega @ V_{GS} = 10V$
- Advanced Trench Technology
- Provide Excellent $R_{DS(ON)}$ and Low Gate Charge
- Lead Free

Application

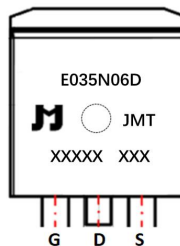
- Load Switch
- PWM Application
- Power Management



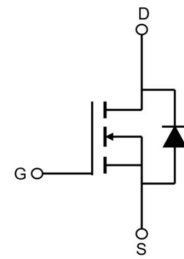
100% UIS TESTED!
100% ΔV_{ds} TESTED!



TO-263-3L top view



Marking and pin Assignment



Schematic Diagram

Package Marking and Ordering Information

| Device Marking | Device | Outline | Package | Reel Size | Reel (pcs) | Per Carton (pcs) |
|----------------|-------------|---------|-----------|-----------|------------|------------------|
| JMTE035N06D | JMTE035N06D | TAPING | TO-263-3L | 13" | 800 | 4000 |

Absolute Maximum Ratings (T_C=25°C unless otherwise specified)

| Symbol | Parameter | Max. | Units |
|-----------------------------------|---|------------------------|-------|
| V _{DSS} | Drain-Source Voltage | 60 | V |
| V _{GSS} | Gate-Source Voltage | ±20 | V |
| I _D | Continuous Drain Current | T _C = 25°C | 180 |
| | | T _C = 100°C | 117 |
| I _{DM} | Pulsed Drain Current ^{note1} | 720 | A |
| EAS | Single Pulsed Avalanche Energy ^{note2} | 324 | mJ |
| P _D | Power Dissipation | T _C = 25°C | 258 |
| R _{θJC} | Thermal Resistance, Junction to Case | 0.58 | °C/W |
| T _J , T _{STG} | Operating and Storage Temperature Range | -55 to +175 | °C |



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

| Symbol | Parameter | Test Condition | Min. | Typ. | Max. | Units |
|---|---|---|------|------|------|-------|
| Off Characteristics | | | | | | |
| V _{(BR)DSS} | Drain-Source Breakdown Voltage | V _{GS} =0V, I _D =250μA | 60 | - | - | V |
| I _{DSS} | Zero Gate Voltage Drain Current | V _{DS} =60V, V _{GS} =0V, | - | - | 1.0 | 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 | 2 | 3 | 4 | V |
| R _{DS(on)} | Static Drain-Source on-Resistance <small>note3</small> | V _{GS} =10V, I _D =30A | - | 2.9 | 3.8 | mΩ |
| Dynamic Characteristics | | | | | | |
| C _{iss} | Input Capacitance | V _{DS} =25V, V _{GS} =0V, f=1.0MHz | - | 7660 | - | pF |
| C _{oss} | Output Capacitance | | - | 642 | - | pF |
| C _{rss} | Reverse Transfer Capacitance | | - | 620 | - | pF |
| Q _g | Total Gate Charge | V _{DD} =30V, I _D =30A, V _{GS} =10V | - | 138 | - | nC |
| Q _{gs} | Gate-Source Charge | | - | 21 | - | nC |
| Q _{gd} | Gate-Drain("Miller") Charge | | - | 33 | - | nC |
| Switching Characteristics | | | | | | |
| t _{d(on)} | Turn-on Delay Time | V _{DD} =30V, I _D =30A, R _L =1Ω, R _{GEN} =3Ω, V _{GS} =10V | - | 14 | - | ns |
| t _r | Turn-on Rise Time | | - | 10 | - | ns |
| t _{d(off)} | Turn-off Delay Time | | - | 65 | - | ns |
| t _f | Turn-off Fall Time | | - | 27 | - | ns |
| Drain-Source Diode Characteristics and Maximum Ratings | | | | | | |
| I _S | Maximum Continuous Drain to Source Diode Forward Current | | - | - | 180 | A |
| I _{SM} | Maximum Pulsed Drain to Source Diode Forward Current | | - | - | 720 | A |
| V _{SD} | Drain to Source Diode Forward Voltage | V _{GS} =0V, I _S =30A | - | - | 1.2 | V |
| t _{rr} | Body Diode Reverse Recovery Time | T _J =25°C, I _F =20A, di/dt=100A/μs | - | 52 | - | ns |
| Q _{rr} | Body Diode Reverse Recovery Charge | | - | 75 | - | nC |

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

2. EAS condition :Starting T_J=25°C, V_{DD}=40V, V_G=10V, L=0.5mH, R_g=25Ω, I_{AS}=36A

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



Typical Performance Characteristics

Figure 1: Output Characteristics

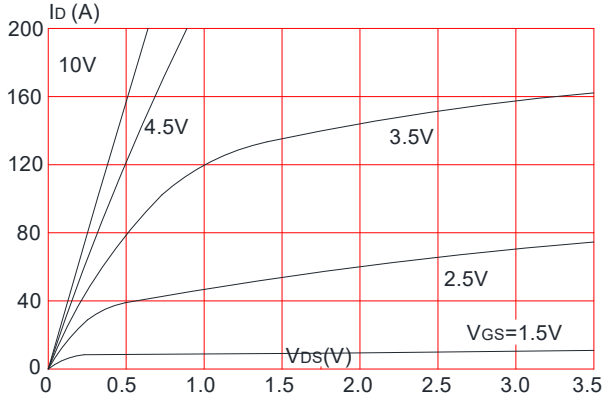


Figure 2: Typical Transfer Characteristics

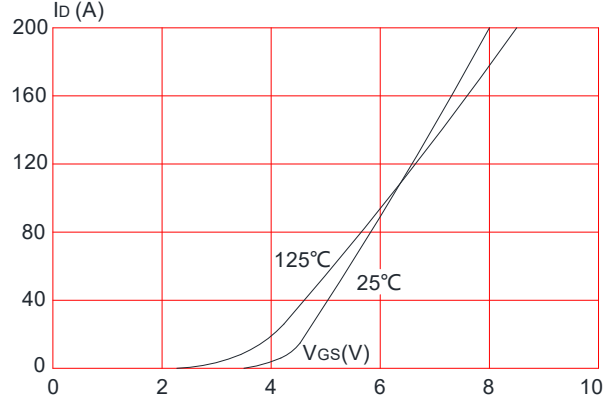


Figure 3: On-resistance vs. Drain Current

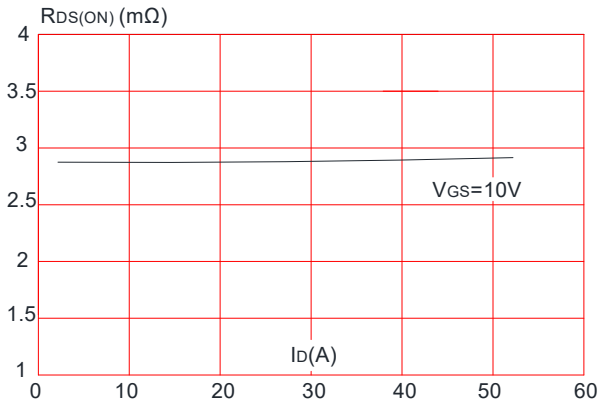


Figure 4: Body Diode Characteristics

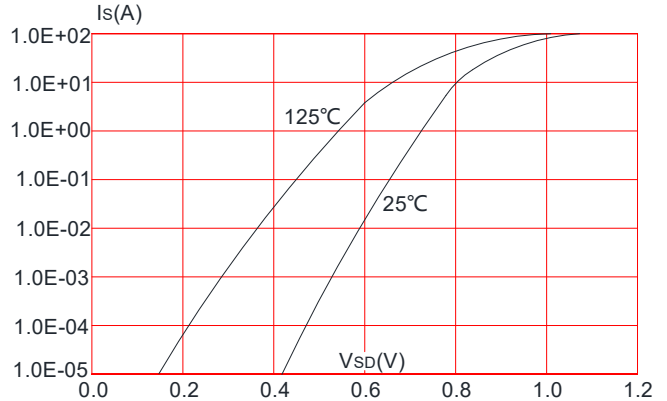


Figure 5: Gate Charge Characteristics

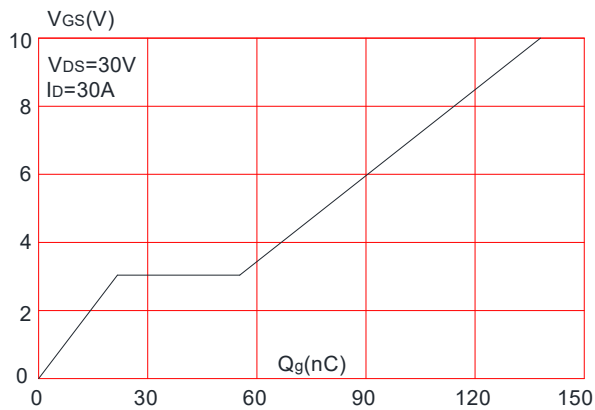


Figure 6: Capacitance Characteristics

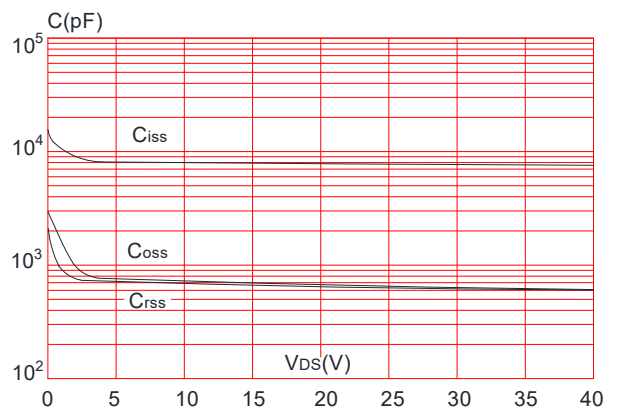




Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

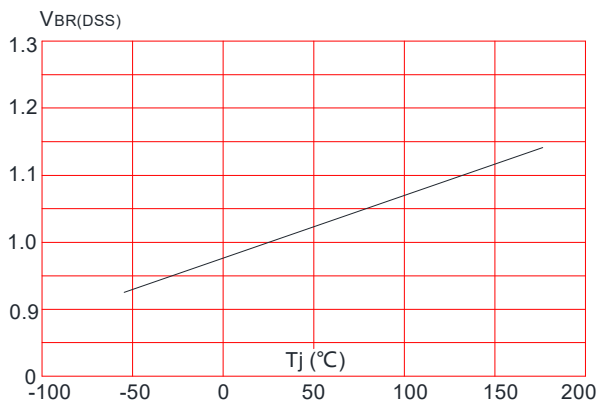


Figure 8: Normalized on Resistance vs. Junction Temperature

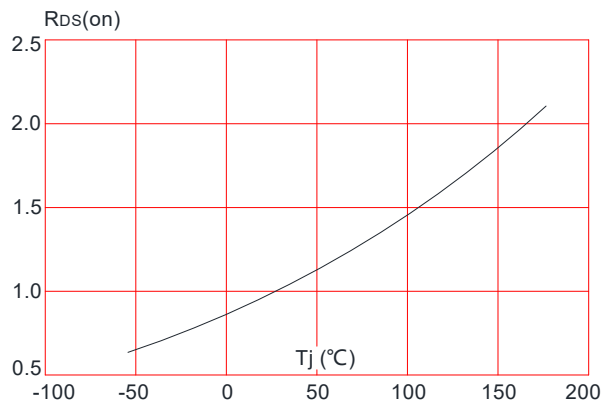


Figure 9: Maximum Safe Operating Area

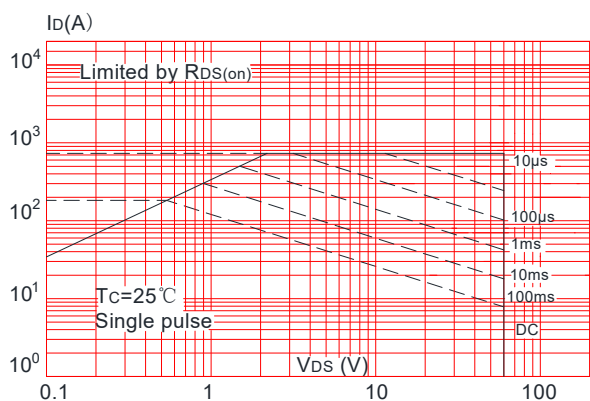


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

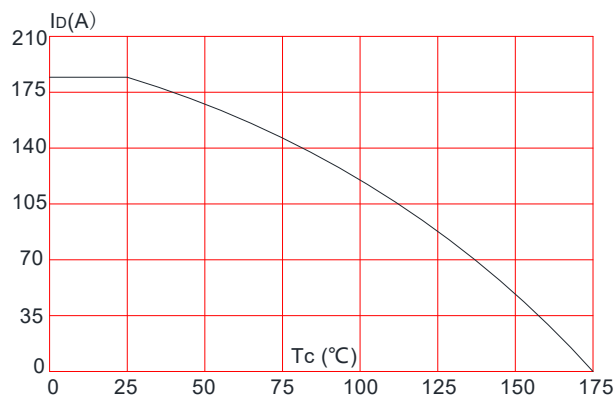
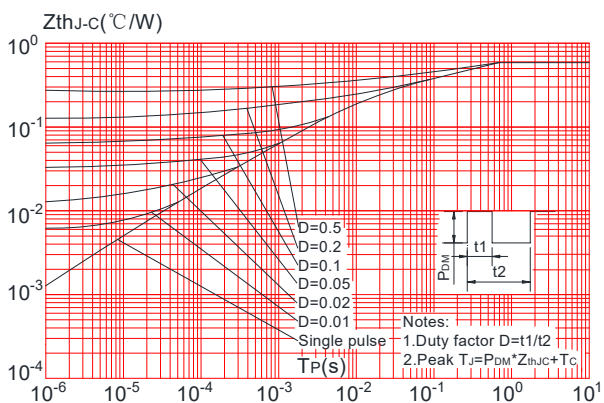


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Case



Test Circuit



Figure1:Gate Charge Test Circuit & Waveform



Figure 2: Resistive Switching Test Circuit & Waveforms

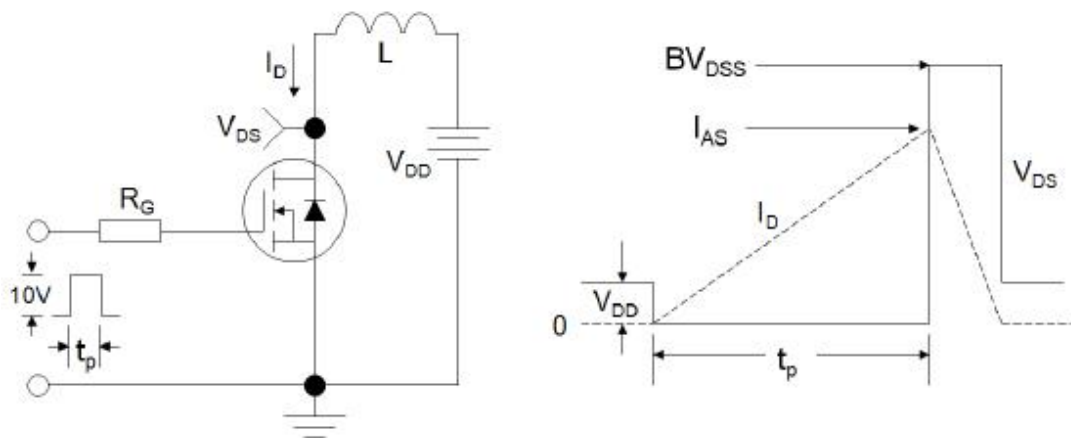
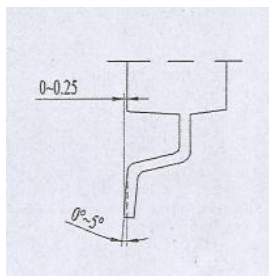
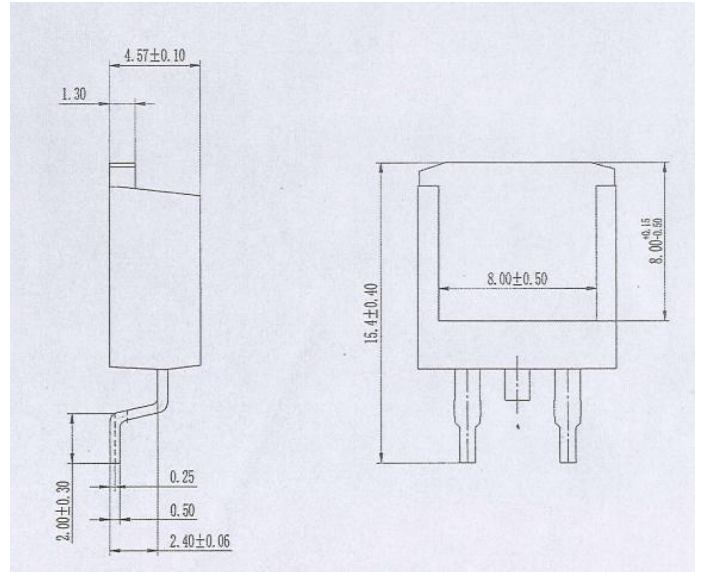
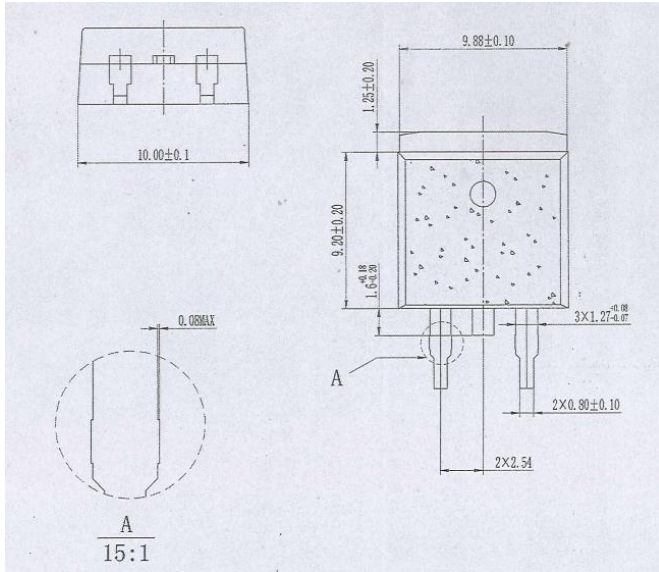


Figure 3:Unclamped Inductive Switching Test Circuit & Waveforms




Package Mechanical Data- TO-263-3L



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