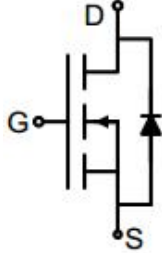
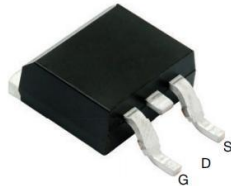


## N-Channel Enhancement Mode Power MOSFET

|   |                |  |                  |
|---|----------------|--|------------------|
| <p><b>Description</b></p> <p>The GT025N06AM-B uses advanced trench technology to provide excellent <math>R_{DS(ON)}</math>, low gate charge. It can be used in a wide variety of applications.</p> <p><b>General Features</b></p> <ul style="list-style-type: none"> <li>● <math>V_{DS}</math> 60V</li> <li>● <math>I_D</math> (at <math>V_{GS} = 10V</math>) 170A</li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 10V</math>) &lt; 3.2m<math>\Omega</math></li> <li>● <math>R_{DS(ON)}</math> (at <math>V_{GS} = 4.5V</math>) &lt; 3.5m<math>\Omega</math></li> <li>● 100% Avalanche Tested</li> <li>● RoHS Compliant</li> </ul> <p><b>Application</b></p> <ul style="list-style-type: none"> <li>● Power switch</li> <li>● DC/DC converters</li> <li>● Synchronous Rectification</li> </ul> |                |  <p>Schematic Diagram</p>  <p>TO-263</p> |                  |
| <b>Device</b>   | <b>Package</b> | <b>Marking</b>   | <b>Packaging</b> |
| GT025N06AM-B  | TO-263         | GT025N06   | 800psc/Reel      |

### Absolute Maximum Ratings $T_C = 25^\circ C$ , unless otherwise noted

| Parameter  | Symbol         | Value      | Unit       |
|--|----------------|------------|------------|
| Drain-Source Voltage                             | $V_{DS}$       | 60         | V          |
| Continuous Drain Current                         | $I_D$          | 170        | A          |
| Pulsed Drain Current (note1)                     | $I_{DM}$       | 300        | A          |
| Gate-Source Voltage                              | $V_{GS}$       | $\pm 20$   | V          |
| Single pulse avalanche energy (note2)            | $E_{AS}$       | 420        | mJ         |
| Power Dissipation                                | $P_D$          | 215        | W          |
| Operating Junction and Storage Temperature Range | $T_J, T_{stg}$ | -55 To 150 | $^\circ C$ |

### Thermal Resistance

| Parameter                            | Symbol     | Value | Unit         |
|--------------------------------------|------------|-------|--------------|
| Thermal Resistance, Junction-to-Case | $R_{thJA}$ | 50    | $^\circ C/W$ |
| Maximum Junction-to-Case             | $R_{thJC}$ | 0.58  | $^\circ C/W$ |

| Specifications $T_J = 25^\circ\text{C}$ , unless otherwise noted |               |  |       |      |           |            |
|--|---------------|--|-------|------|-----------|------------|
| Parameter  | Symbol        | Test Conditions  | Value |      |           | Unit       |
|  |               |  | Min.  | Typ. | Max.      |            |
| <b>Static Parameters</b>   |               |  |       |      |           |            |
| Drain-Source Breakdown Voltage                                   | $V_{(BR)DSS}$ | $V_{GS} = 0V, I_D = 250\mu A$                            | 60    | --   | --        | V          |
| Zero Gate Voltage Drain Current                                  | $I_{DSS}$     | $V_{DS} = 60V, V_{GS} = 0V$                              | --    | --   | 1         | $\mu A$    |
| Gate-Source Leakage  | $I_{GSS}$     | $V_{GS} = \pm 20V$                                       | --    | --   | $\pm 100$ | nA         |
| Gate-Source Threshold Voltage                                    | $V_{GS(th)}$  | $V_{DS} = V_{GS}, I_D = 250\mu A$                        | 1.2   | 1.6  | 2.5       | V          |
| Drain-Source On-Resistance                                       | $R_{DS(on)}$  | $V_{GS} = 10V, I_D = 20A$                                | --    | 3    | 3.2       | m $\Omega$ |
|  |               | $V_{GS} = 4.5V, I_D = 15A$                               | --    | 3.2  | 3.5       |            |
| Forward Transconductance   | $g_{FS}$      | $V_{DS} = 5V, I_D = 20A$                                 | --    | 60   | --        | S          |
| <b>Dynamic Parameters</b>  |               |  |       |      |           |            |
| Input Capacitance  | $C_{iss}$     | $V_{GS} = 0V,$<br>$V_{DS} = 30V,$<br>$f = 1.0\text{MHz}$ | --    | 5119 | --        | pF         |
| Output Capacitance   | $C_{oss}$     |  | --    | 1347 | --        |            |
| Reverse Transfer Capacitance                                     | $C_{rss}$     |  | --    | 78   | --        |            |
| Total Gate Charge  | $Q_g$         | $V_{DD} = 30V,$<br>$I_D = 20A,$<br>$V_{GS} = 10V$        | --    | 70   | --        | nC         |
| Gate-Source Charge   | $Q_{gs}$      |  | --    | 21   | --        |            |
| Gate-Drain Charge  | $Q_{gd}$      |  | --    | 16   | --        |            |
| Turn-on Delay Time   | $t_{d(on)}$   | $V_{DD} = 30V,$<br>$I_D = 50A,$<br>$R_G = 3\Omega$       | --    | 16   | --        | ns         |
| Turn-on Rise Time  | $t_r$         |  | --    | 9    | --        |            |
| Turn-off Delay Time  | $t_{d(off)}$  |  | --    | 36   | --        |            |
| Turn-off Fall Time   | $t_f$         |  | --    | 11   | --        |            |
| <b>Drain-Source Body Diode Characteristics</b>                   |               |  |       |      |           |            |
| Continuous Body Diode Current                                    | $I_S$         | $T_C = 25^\circ\text{C}$                                 | --    | --   | 170       | A          |
| Body Diode Voltage   | $V_{SD}$      | $T_J = 25^\circ\text{C}, I_{SD} = 20A, V_{GS} = 0V$      | --    | --   | 1.2       | V          |
| Reverse Recovery Charge  | $Q_{rr}$      | $I_F = 20A, di/dt = 500A/\mu s$                          |       | 150  | --        | nC         |
| Reverse Recovery Time  | $T_{rr}$      |  |       |      | 30        | --         |

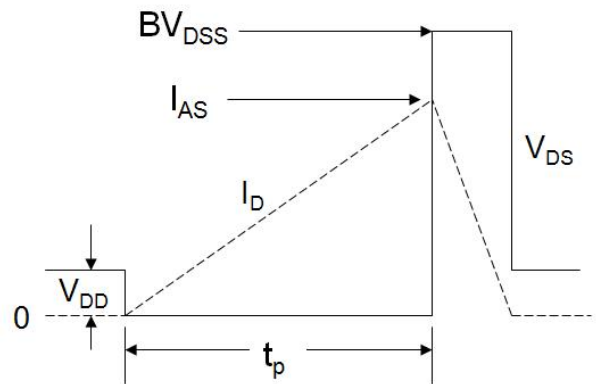
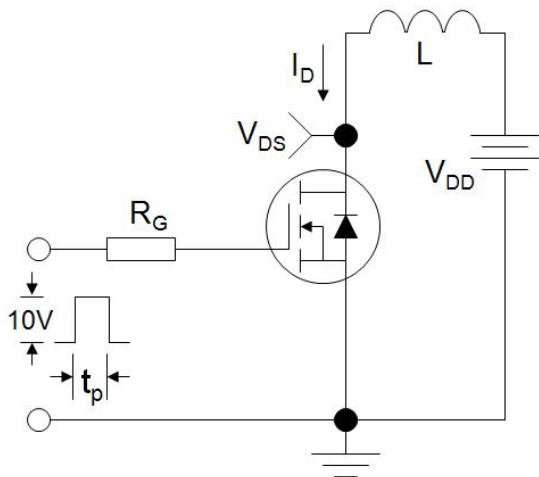
### Notes

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. Identical low side and high side switch with identical  $R_G$
3. EAS condition :  $T_J = 25^\circ\text{C}, V_{DD} = 50V, V_{GS} = 10V, L = 0.5\text{mH}, R_g = 25\Omega$

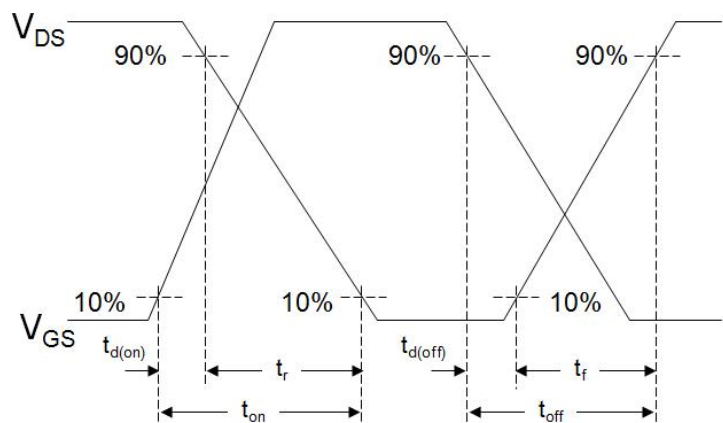
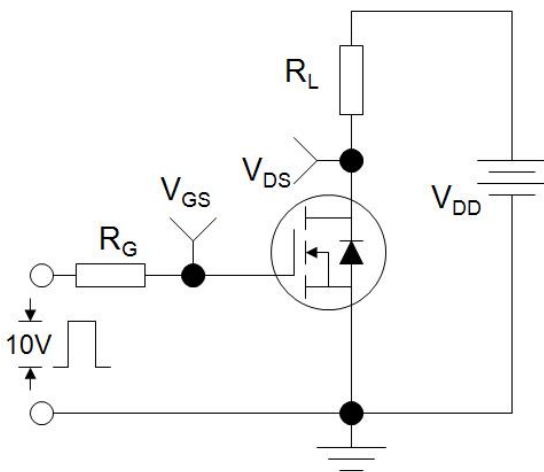
### Gate Charge Test Circuit



### EAS Test Circuit

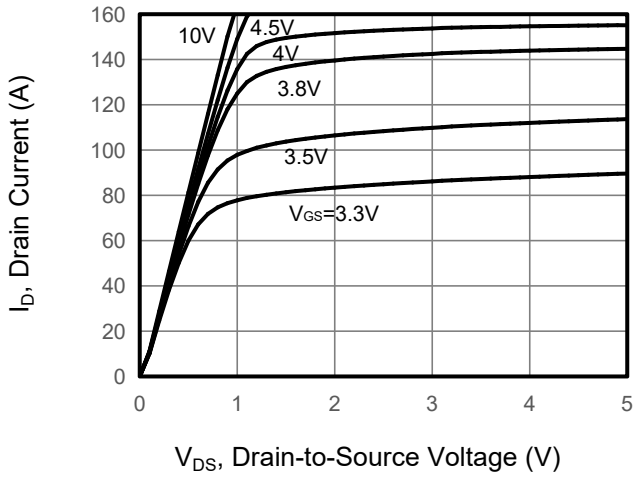


### Switch Time Test Circuit

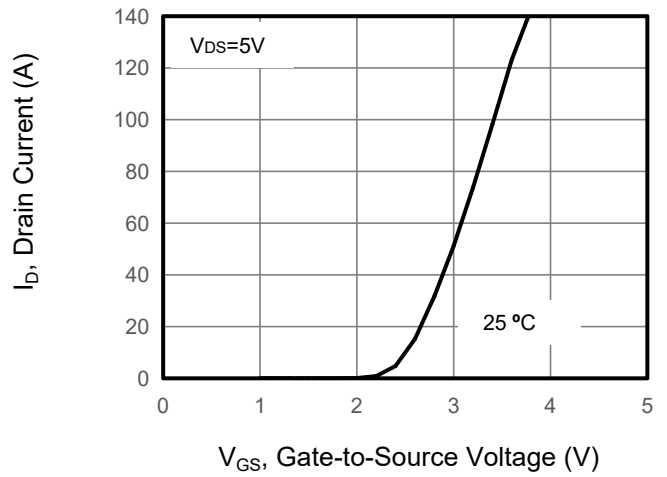


Typical Characteristics  $T_J = 25^\circ\text{C}$ , unless otherwise noted

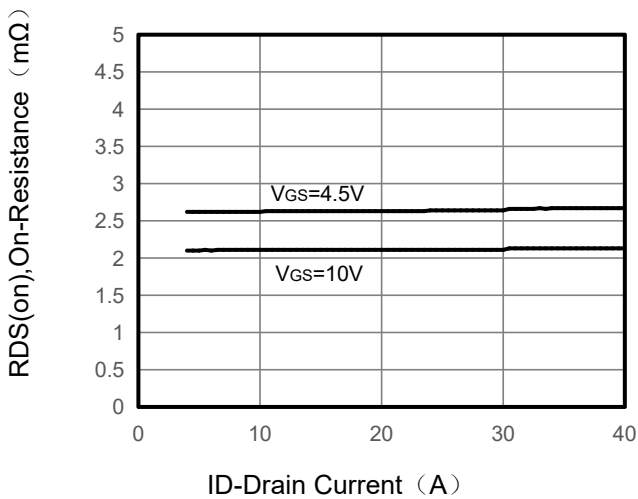
**Figure 1. Output Characteristics**



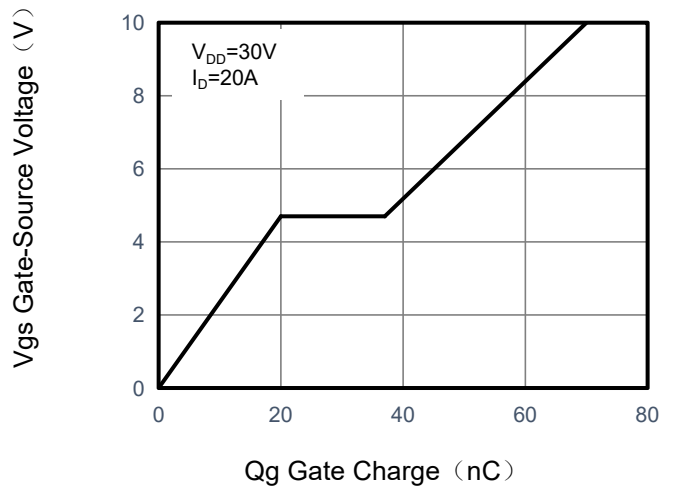
**Figure 2. Transfer Characteristics**



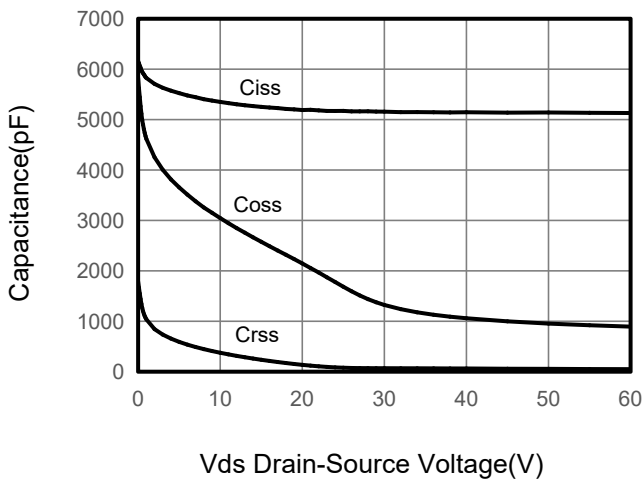
**Figure 3. Drain Source On Resistance**



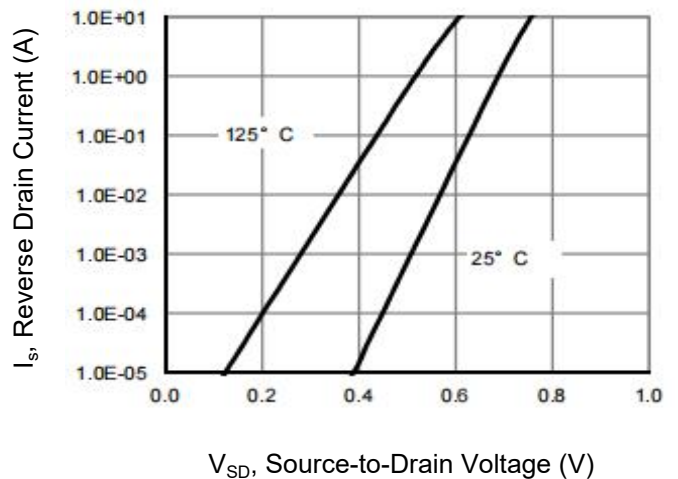
**Figure 4. Gate Charge**



**Figure 5. Capacitance vs Vds**



**Figure 6. Source-Drain Diode Forward**



## Typical Characteristics $T_J = 25^\circ\text{C}$ , unless otherwise noted

Figure 7. Drain-Source On-Resistance

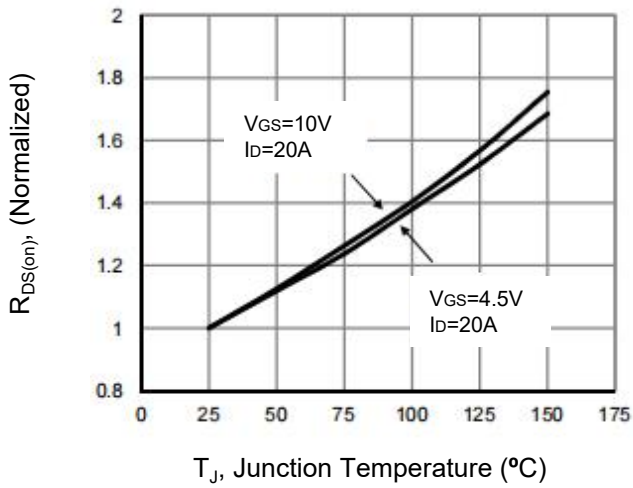


Figure 8. Safe Operation Area

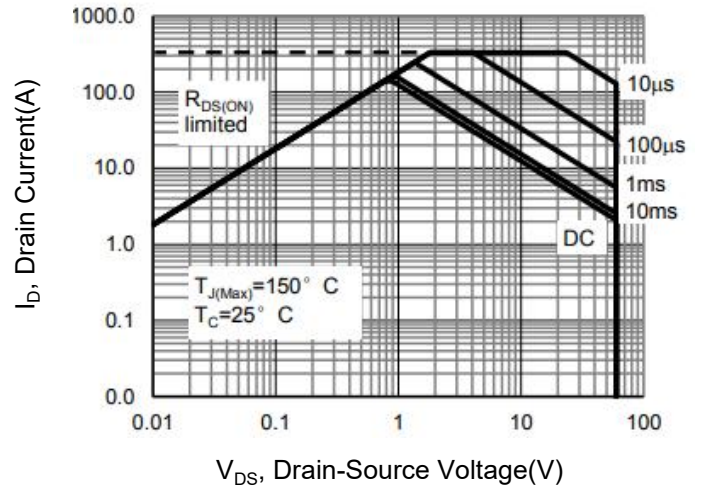
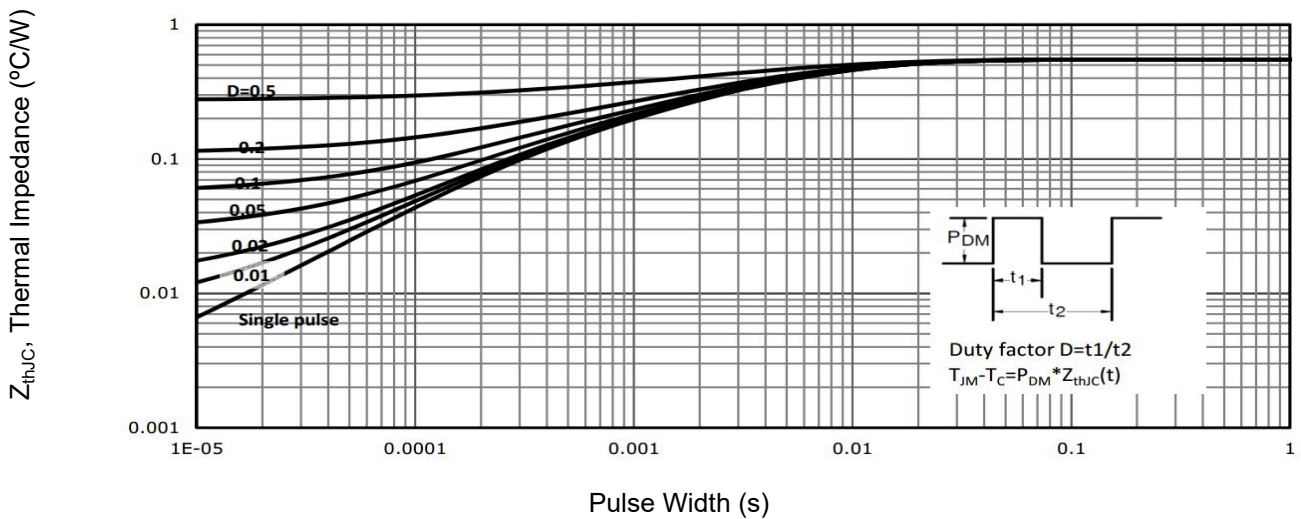
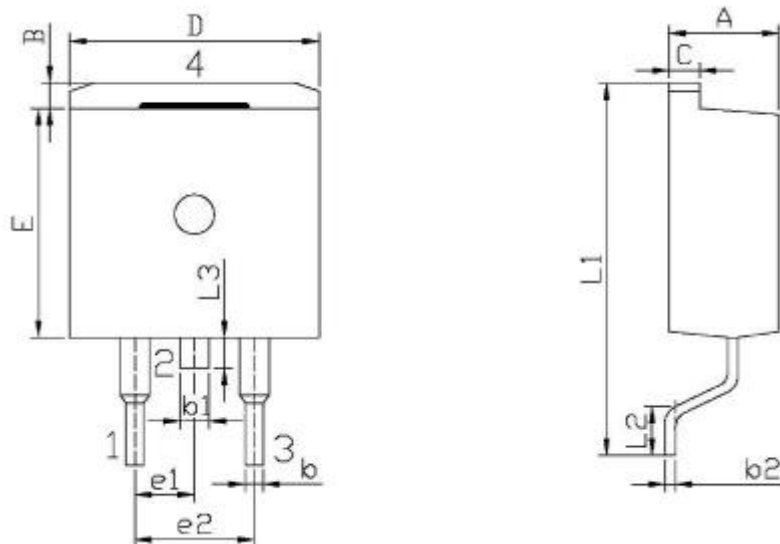


Figure 9. Normalized Maximum Transient Thermal Impedance



## TO-263 Package Mechanical Data



UNIT:mm

|    | MIN   | MAX   |
|----|-------|-------|
| A  | 4.30  | 4.70  |
| B  | 1.00  | 1.40  |
| b  | 0.70  | 0.90  |
| b1 | 1.15  | 1.35  |
| b2 | 0.40  | 0.60  |
| C  | 1.20  | 1.40  |
| D  | 9.80  | 10.20 |
| E  | 9.00  | 9.40  |
| e1 | 2.34  | 2.74  |
| e2 | 4.88  | 5.28  |
| L1 | 15.00 | 16.00 |
| L2 | 2.24  | 2.84  |
| L3 | 1.20  | 1.60  |

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