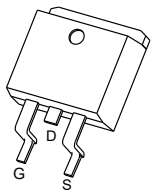
# GPT035N06LTH

## 60V N-Channel MOSFET

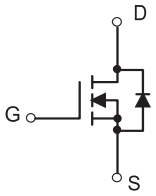
### Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)TYP}$ | $I_D$ |
|---|---|---|
| 60V | 3.0mΩ@10V | 165A |
| | 4.3mΩ@4.5V | |

**TO-263-2L**




**Schematic diagram**



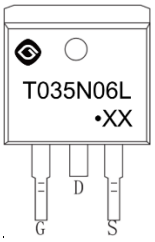

### Feature

- Split Gate Trench Technology
- Low $R_{DS(ON)}$
- Low Gate Charge
- Low Gate Resistance
- 100% UIS Tested
- 100% $\Delta V_{DS}$ Tested

### Application

- DC/DC Converter
- Synchronous Rectification
- High-Frequency Switch
-

### MARKING:




T035N06L = Device Code

XX = Date Code

Solid Dot = Green Indicater

### ABSOLUTE MAXIMUM RATINGS ($T_A$ = 25℃ unless otherwise noted)

| Parameter | | Symbol | Value | Unit |
|---|---|---|---|---|
| Drain - Source Voltage | | $V_{DS}$ | 60 | V |
| Gate - Source Voltage | | $V_{GS}$ | ±20 | V |
| Continuous Drain Current[1] | $T_C$ = 25℃ | $I_D$ | 165 | A |
| Pulsed Drain Current[2] | | $I_{DM}$ | 660 | A |
| Single Pulsed Avalanche Current[3] | | $I_{AS}$ | 35 | A |
| Single Pulsed Avalanche Energy[3] | | $E_{AS}$ | 306 | mJ |
| Power Dissipation[5] | $T_C$ = 25℃ | $P_D$ | 223 | W |
| Thermal Resistance from Junction to Ambient[6] | | $R_{\theta JA}$ | 60 | ℃/W |
| Thermal Resistance from Junction to Case | | $R_{\theta JC}$ | 0.56 | ℃/W |
| Junction Temperature | | $T_J$ | 150 | ℃ |
| Storage Temperature | | $T_{STG}$ | -55~ +150 | ℃ |

## MOSFET ELECTRICAL CHARACTERISTICS ($T_J$ = 25℃ unless otherwise noted)

| Parameter | Symbol | Test Condition | Min | Type | Max | Unit |
|---|---|---|---|---|---|---|
| **Off Characteristics** | | | | | | |
| Drain - Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 60 | | | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 48V, $V_{GS}$ = 0V | | | 1 | μA |
| Gate - Body Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±20V, $V_{DS}$ = 0V | | | ±100 | nA |
| **On Characteristics[4]** | | | | | | |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1.0 | 2.2 | 3.0 | V |
| Drain-source On-resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 12A | | 3.0 | 3.5 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 12A | | 4.3 | 5.5 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$ = 5V, $I_D$ = 10A | | 40 | | S |
| **Dynamic Characteristics** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ = 30V, $V_{GS}$ = 0V, f = 1MHz | | 3788 | | pF |
| Output Capacitance | $C_{oss}$ | | | 1075 | | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 46 | | |
| Gate Resistance | $R_g$ | $V_{DS}$ = 0V, $V_{GS}$ = 0V, f = 1MHz | | 2 | | Ω |
| **Switching Characteristics** | | | | | | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = 30V, $V_{GS}$ = 10V, $I_D$ = 20A | | 50 | | nC |
| Gate-source Charge | $Q_{gs}$ | | | 12 | | |
| Gate-drain Charge | $Q_{gd}$ | | | 14 | | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 30V, $V_{GS}$ = 10V, $R_L$ = 1.5Ω $R_G$ = 3Ω | | 20 | | ns |
| Turn-on Rise Time | $t_r$ | | | 6.5 | | |
| Turn-off Delay Ttime | $t_{d(off)}$ | | | 62 | | |
| Turn-off Fall Time | $t_f$ | | | 24 | | |
| **Source - Drain Diode Characteristics** | | | | | | |
| Diode Forward Voltage[4] | $V_{SD}$ | $V_{GS}$ = 0V, $I_S$ = 12A | | | 1.2 | V |

Notes :

1.The maximum current rating is limited by package.And device mounted on a large heatsink

2.Pulse Test : Pulse Width ≤ 10μs, duty cycle ≤ 1%.

3.$E_{AS}$ condition: $V_{DD}$ = 30V,$V_{GS}$ = 10V, L = 0.5mH, $R_G$ = 25Ω Starting $T_J$ = 25°℃.

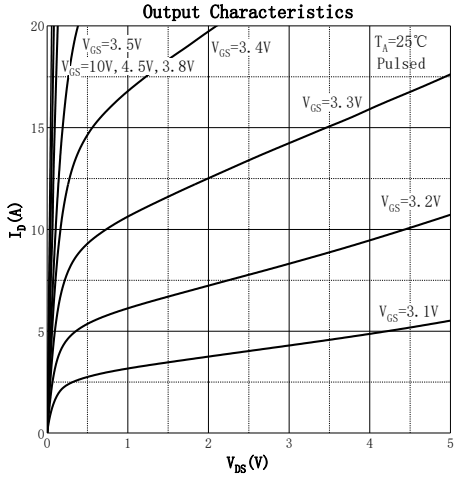
4.Pulse Test : Pulse Width ≤ 300μs, duty cycle ≤ 2%.

5.The power dissipation $P_D$ is limited by $T_{J(MAX)}$ = 150°C.And device mounted on a large heatsink

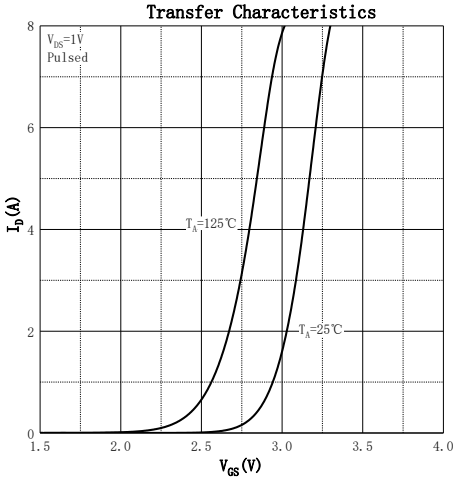
6.Device mounted on 1in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25°C.

## Typical Characteristics

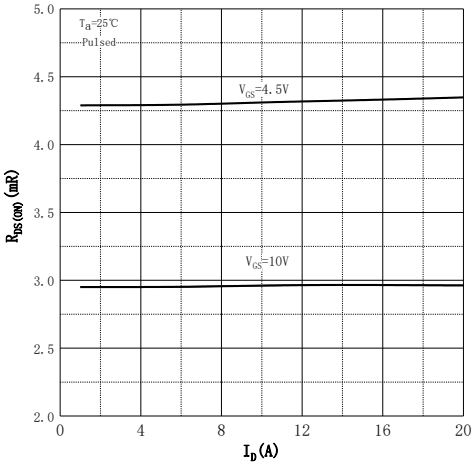
Output Characteristics



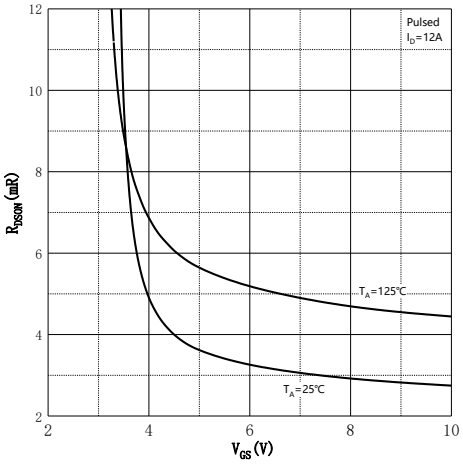

Transfer Characteristics



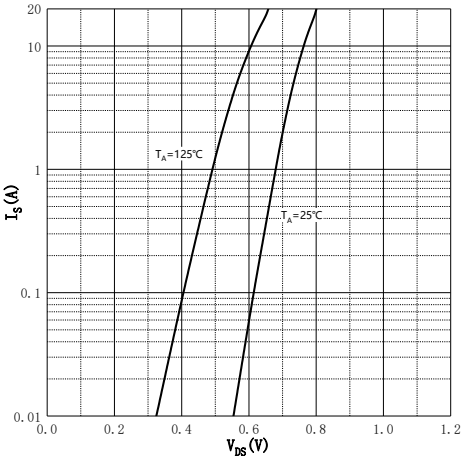

$R_{DS(ON)}$ vs $I_D$



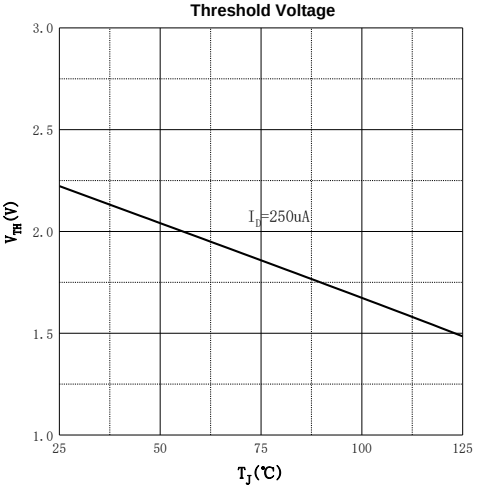

$R_{DS(ON)}$ vs $V_{GS}$

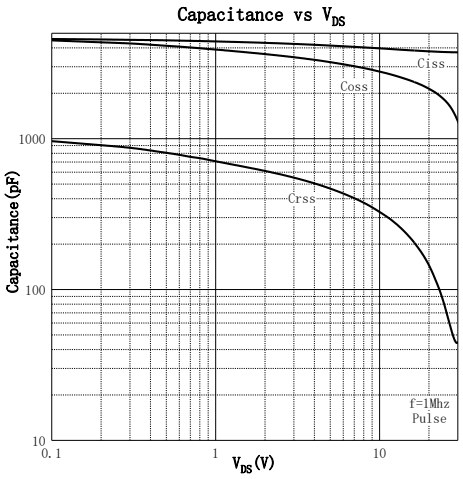


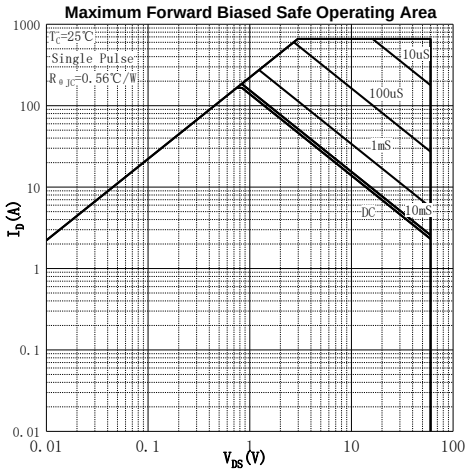

$I_S$ vs $V_{SD}$

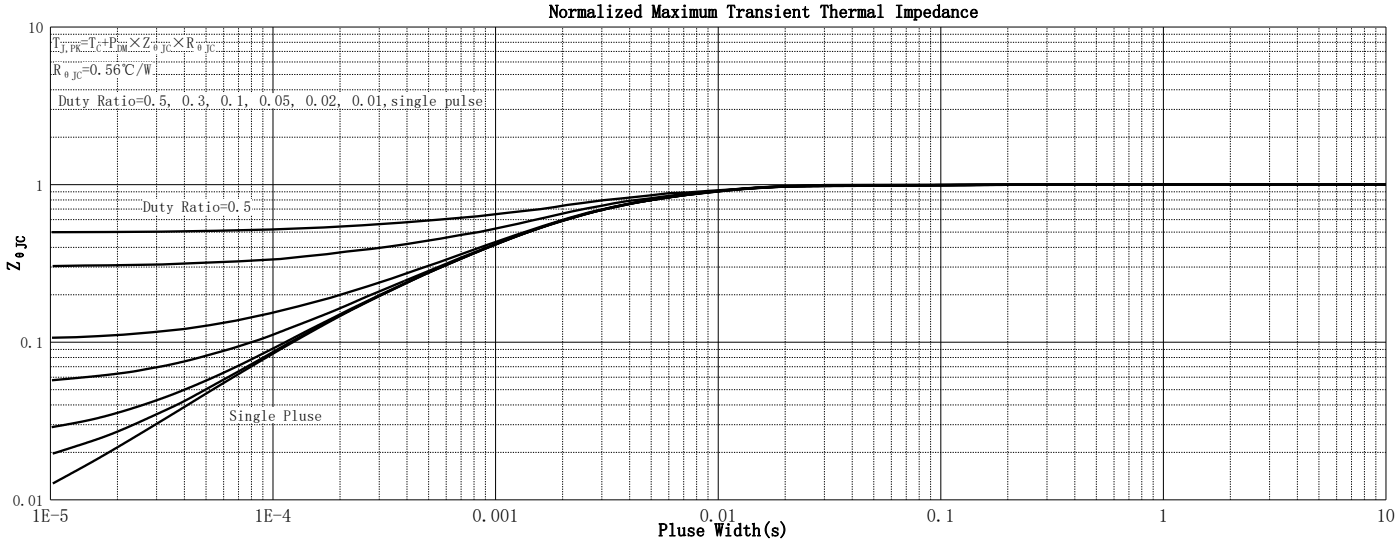



Threshold Voltage

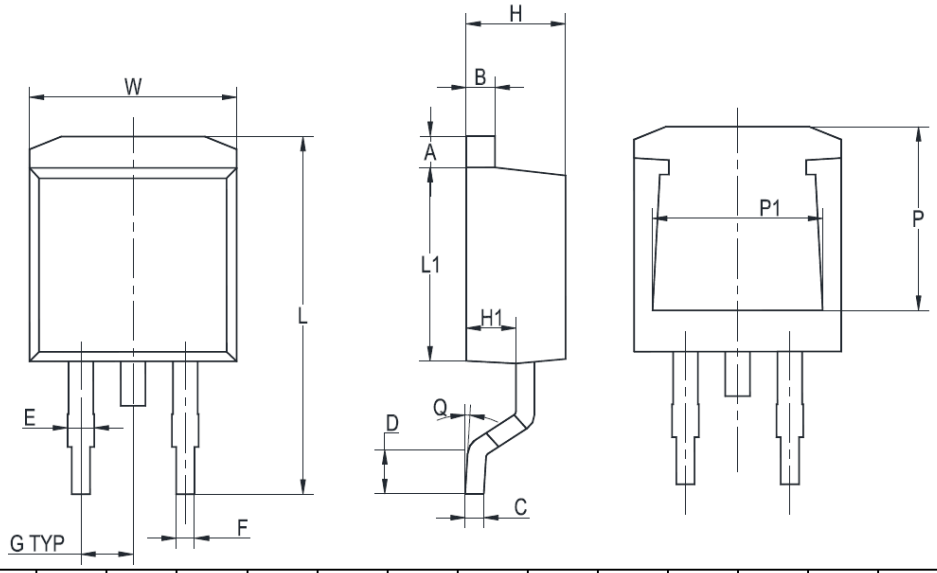



Capacitance vs $V_{DS}$
Ciss
Coss
Crss
f=1Mhz
Pulse
Capacitance(pF)
1000
100
10
0.1
1
10
$V_{DS}$(V)


Maximum Forward Biased Safe Operating Area
$T_C$=25℃
Single Pulse
$R_{\theta JC}$=0.56℃/W
10uS
100uS
1mS
10mS
DC
$I_D$(A)
1000
100
10
1
0.1
0.01
0.01
0.1
1
10
100
$V_{DS}$(V)


Normalized Maximum Transient Thermal Impedance
$T_{J,PK}=T_C+P_{DM}\times Z_{\theta JC}\times R_{\theta JC}$
$R_{\theta JC}$=0.56℃/W
Duty Ratio=0.5, 0.3, 0.1, 0.05, 0.02, 0.01,single pulse
Duty Ratio=0.5
Single Pluse
$Z_{\theta JC}$
10
1
0.1
0.01
1E-5
1E-4
0.001
0.01
0.1
1
10
Pluse Width(s)

## TO-263-2L Package Information




| UNIT | A | B | C | D | E | F | G | W | H | H1 | L | L1 | Q | P | P1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| mm | 1.5 | 1.5 | 0.5 | 2.60 | 1.6 | 0.94 | 2.54 | 10.5 | 4.8 | 2.9 | 16.5 | 8.7 | 8° | 7.6 | 8.2 |
| | 1.1 | 1.1 | 0.3 | 2.15 | 1.1 | 0.68 | TYP | 9.6 | 4.4 | 2.5 | 14.5 | 8.2 | MAX | 7.1 | 7.4 |