## General Description

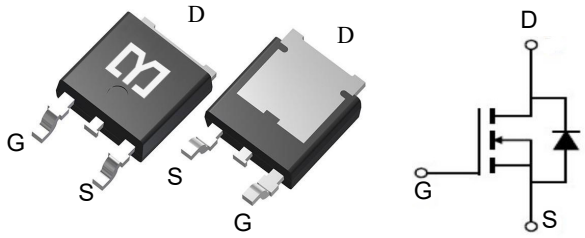
The MY10N10D use advanced trench technology and design to provide excellent $R_{DS(ON)}$ with low gate charge. It can be used in a wide variety of applications.

## Features

| | | |
|---|---|---|
| $V_{DSS}$ | 100 | V |
| $I_D$ | 10 | A |
| $R_{DS(ON)}$(at$V_{GS}$=10V) | <160 | mΩ |
| $R_{DS(ON)}$(at$V_{GS}$=4.5V) | <170 | mΩ |

## Application

- Uninterruptible power supply
- Power switching application
- Hard switched
- high frequency circuits




### Package Marking and Ordering Information

| Product ID | Pack | Marking | Qty(PCS) |
|---|---|---|---|
| MY10N10D | TO-252-2L | MY10N10D | 2500 |

### Absolute Maximum Ratings ($T_C$=25℃unless otherwise noted)

| Parameter | Symbol | Limit | Unit |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 100 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Drain Current-Continuous | $I_D$ | 10 | A |
| Drain Current-Pulsed (Note 1) | $I_{DM}$ | 20 | A |
| Maximum Power Dissipation | $P_D$ | 40 | W |
| Operating Junction and Storage Temperature Range | $T_J$,$T_{STG}$ | -55 To 175 | ℃ |
| Thermal Resistance,Junction-to-Case (Note 2) | $R_{\theta JC}$ | 3.75 | ℃/W |

## Electrical Characteristics ($T_A$=25 ℃, unless otherwise noted)

| Parameter | Symbol | Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$=0V $I_D$=250μA | 100 | - | - | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$=100V,$V_{GS}$=0V | - | - | 1 | μA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$=±12V,$V_{DS}$=0V | - | - | ±100 | nA |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$=$V_{GS}$,$I_D$=250μA | 1.0 | | 2.5 | V |
| Drain-Source On-State Resistance | $R_{DS(ON)}$ | $V_{GS}$=10V, $I_D$=3A | - | 140 | 160 | mΩ |
| | | $V_{GS}$=4.5V, $I_D$=3A | - | 160 | 170 | |
| Forward Transconductance | $g_{FS}$ | $V_{DS}$=5V,$I_D$=3A | - | 5 | - | S |
| Input Capacitance | $C_{lss}$ | $V_{DS}$=50V,$V_{GS}$=0V, F=1.0MHz | - | 650 | - | PF |
| Output Capacitance | $C_{oss}$ | | - | 25 | - | PF |
| Reverse Transfer Capacitance | $C_{rss}$ | | - | 20 | - | PF |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$=50V, $R_L$=19Ω $V_{GS}$=10V,$R_G$=3Ω | - | 6 | - | nS |
| Turn-on Rise Time | $t_r$ | | - | 4 | - | nS |
| Turn-Off Delay Time | $t_{d(off)}$ | | - | 20 | - | nS |
| Turn-Off Fall Time | $t_f$ | | - | 4 | - | nS |
| Total Gate Charge | $Q_g$ | $V_{DS}$=50V,$I_D$=3A, $V_{GS}$=10V | - | 20.6 | | nC |
| Gate-Source Charge | $Q_{gs}$ | | - | 2.1 | - | nC |
| Gate-Drain Charge | $Q_{gd}$ | | - | 3.3 | - | nC |
| Diode Forward Voltage (Note 3) | $V_{SD}$ | $V_{GS}$=0V,$I_S$=3A | - | - | 1.2 | V |
| Diode Forward Current (Note 2) | $I_S$ | | - | - | 7 | A |

## Notes:

**1.** Repetitive Rating: Pulse width limited by maximum junction temperature.
**2.** Surface Mounted on FR4 Board, t ≤ 10 sec.
**3.** Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
**4.** Guaranteed by design, not subject to production

## Typical Characteristics

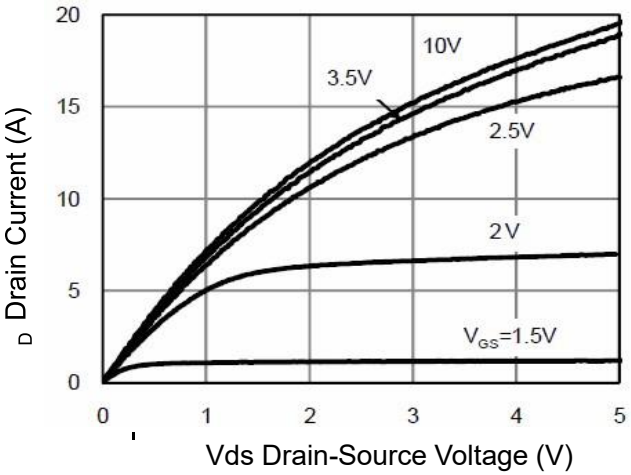



**Figure 1 Output Characteristics**

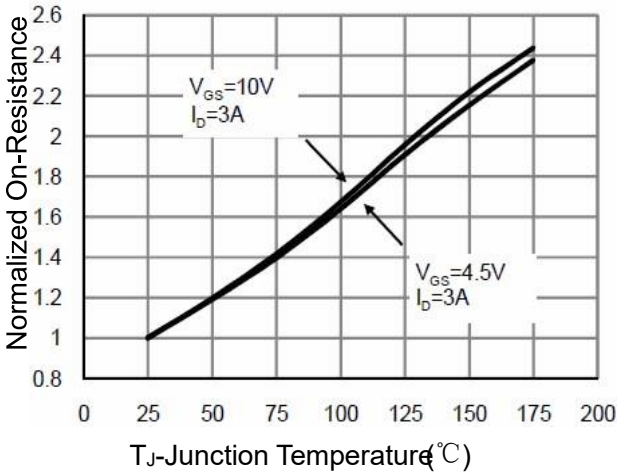



**Figure 4 Rdson-Junction Temperature**

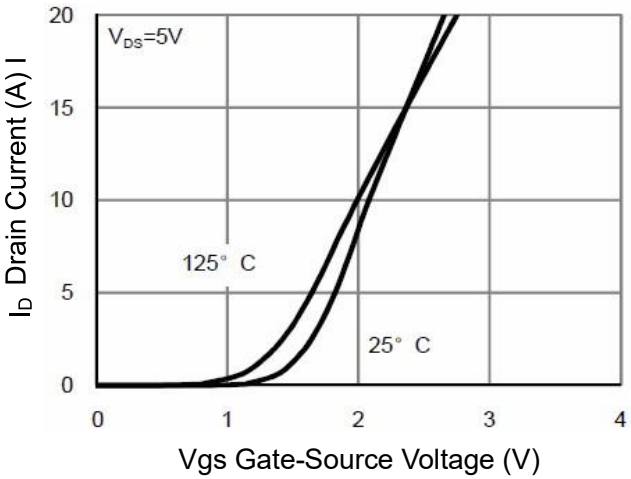



**Figure 2 Transfer Characteristics**

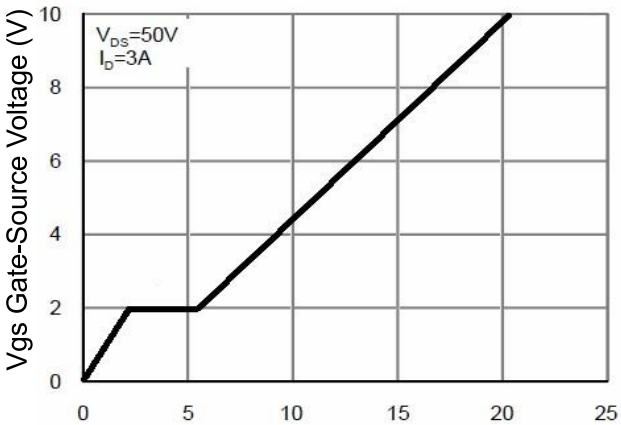



**Figure 5 Gate Charge**

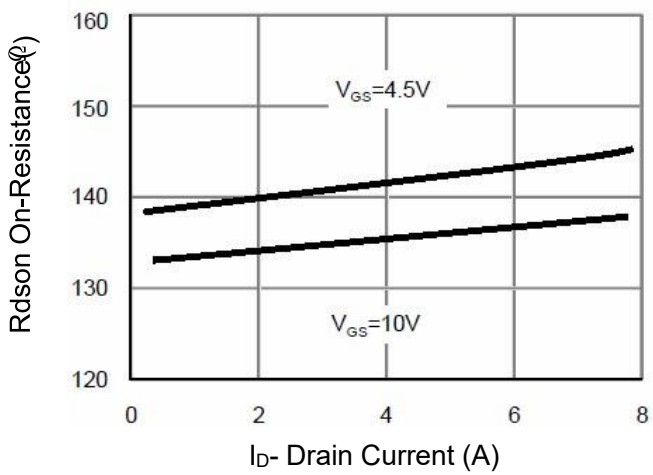



**Figure 3 Rdson-Drain Current**

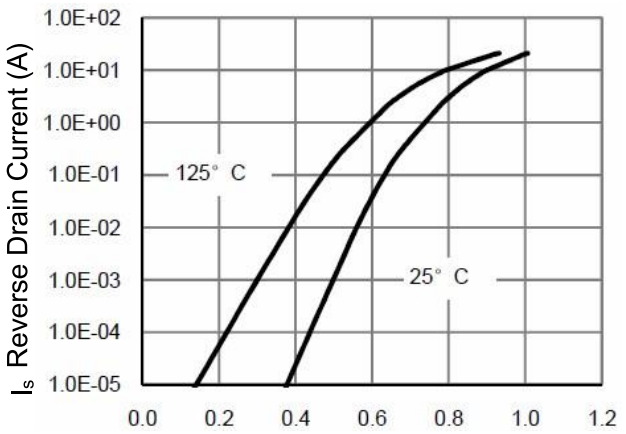



**Figure 6 Source- Drain Diode Forward**

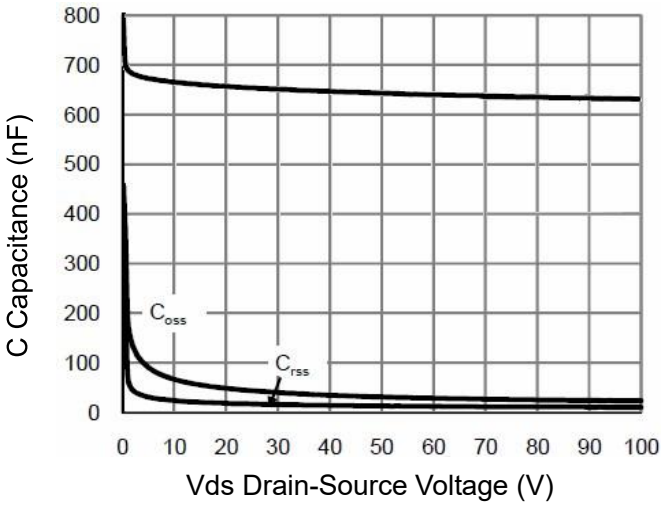



**Figure 7 Capacitance vs Vds**

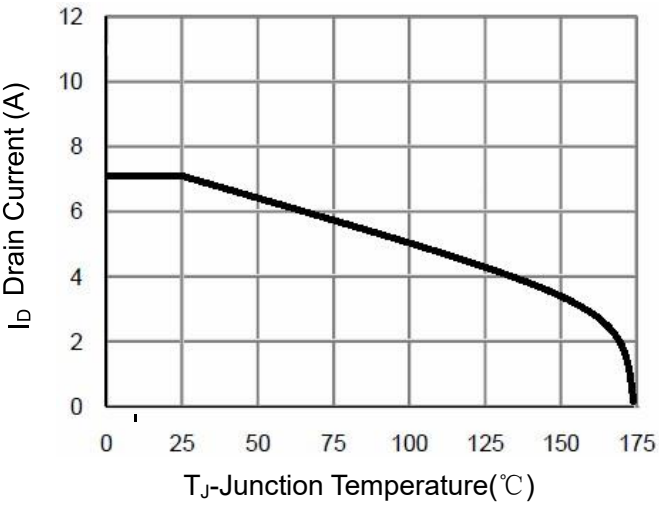



**Figure 9 $BV_{DSS}$ vs Junction Temperature**

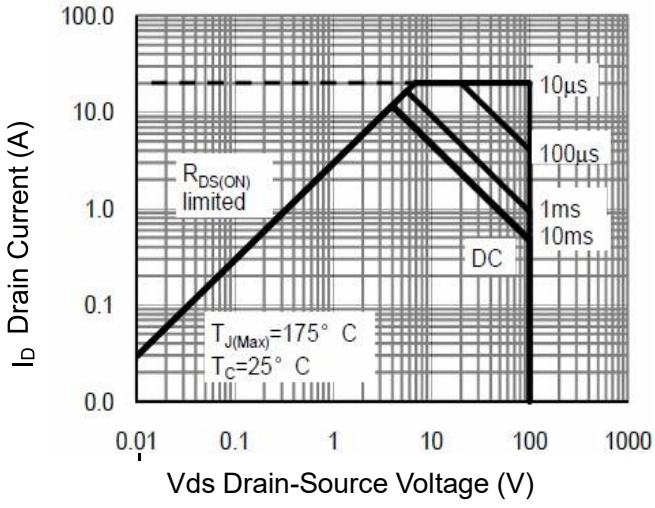



**Figure 8 Safe Operation Area**

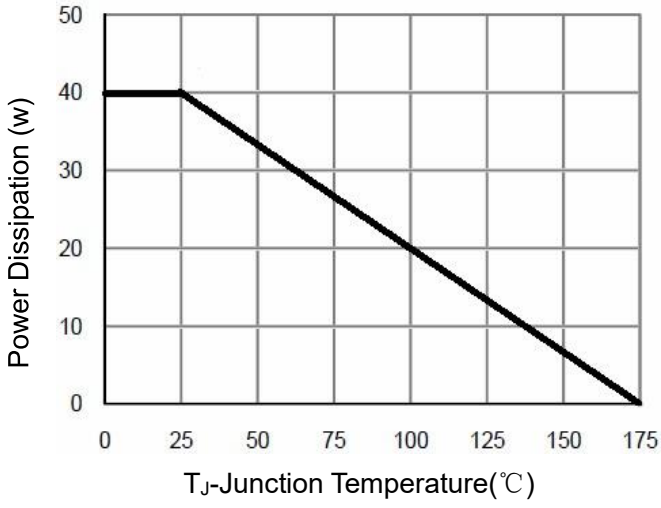



**Figure 10 Power De-rating**

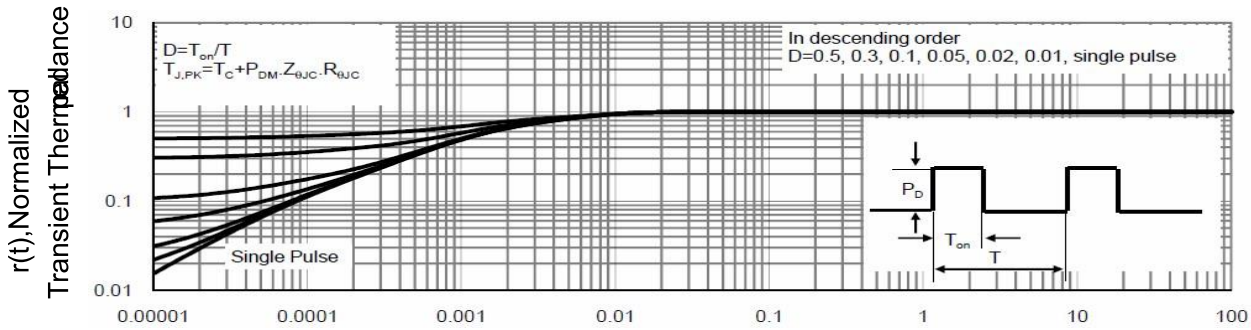
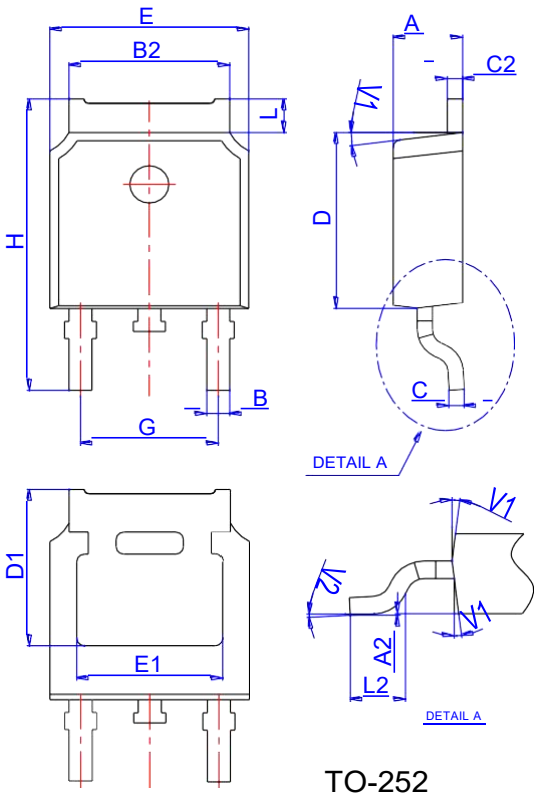



**Figure 11 Normalized Maximum Transient Thermal Impedance**

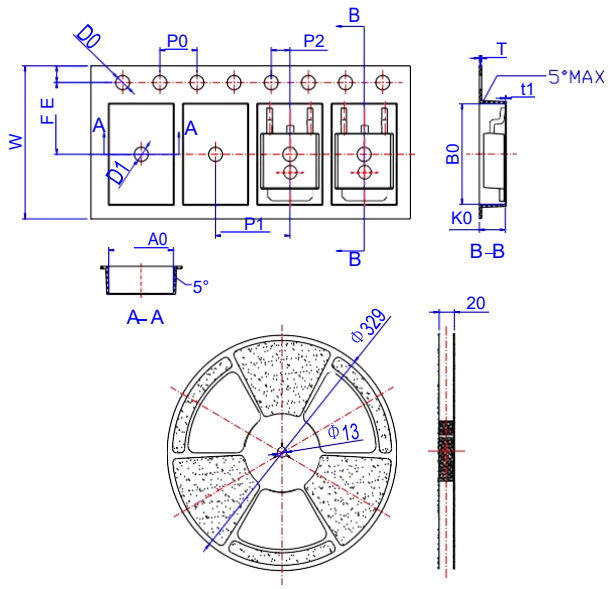
## Package Mechanical Data-TO-252-JQ Single




TO-252

| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| A | 2.10 | | 2.50 | 0.083 | | 0.098 |
| A2 | 0 | | 0.10 | 0 | | 0.004 |
| B | 0.66 | | 0.86 | 0.026 | | 0.034 |
| B2 | 5.18 | | 5.48 | 0.202 | | 0.216 |
| C | 0.40 | | 0.60 | 0.016 | | 0.024 |
| C2 | 0.44 | | 0.58 | 0.017 | | 0.023 |
| D | 5.90 | | 6.30 | 0.232 | | 0.248 |
| D1 | 5.30REF | | | 0.209REF | | |
| E | 6.40 | | 6.80 | 0.252 | | 0.268 |
| E1 | 4.63 | | | 0.182 | | |
| G | 4.47 | | 4.67 | 0.176 | | 0.184 |
| H | 9.50 | | 10.70 | 0.374 | | 0.421 |
| L | 1.09 | | 1.21 | 0.043 | | 0.048 |
| L2 | 1.35 | | 1.65 | 0.053 | | 0.065 |
| V1 | | 7° | | | 7° | |
| V2 | 0° | | 6° | 0° | | 6° |

## Reel Specification-TO-252




| Ref. | Dimensions | | | | | |
|---|---|---|---|---|---|---|
| | Millimeters | | | Inches | | |
| | Min. | Typ. | Max. | Min. | Typ. | Max. |
| W | 15.90 | 16.00 | 16.10 | 0.626 | 0.630 | 0.634 |
| E | 1.65 | 1.75 | 1.85 | 0.065 | 0.069 | 0.073 |
| F | 7.40 | 7.50 | 7.60 | 0.291 | 0.295 | 0.299 |
| D0 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| D1 | 1.40 | 1.50 | 1.60 | 0.055 | 0.059 | 0.063 |
| P0 | 3.90 | 4.00 | 4.10 | 0.154 | 0.157 | 0.161 |
| P1 | 7.90 | 8.00 | 8.10 | 0.311 | 0.315 | 0.319 |
| P2 | 1.90 | 2.00 | 2.10 | 0.075 | 0.079 | 0.083 |
| A0 | 6.85 | 6.90 | 7.00 | 0.270 | 0.271 | 0.276 |
| B0 | 10.45 | 10.50 | 10.60 | 0.411 | 0.413 | 0.417 |
| K0 | 2.68 | 2.78 | 2.88 | 0.105 | 0.109 | 0.113 |
| T | 0.24 | | 0.27 | 0.009 | | 0.011 |
| t1 | 0.10 | | | 0.004 | | |
| 10P0 | 39.80 | 40.00 | 40.20 | 1.567 | 1.575 | 1.583 |