# MY10N15D

## 150V N-Channel Enhancement Mode MOSFET

MAOYUANWEI semiconductor

## General Description

The MY10N15D is silicon N-channel Enhanced VDMOSFETs, is obtained by the self-aligned planar Technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor can be used in various power switching circuit for system miniaturization and higher efficiency. applications.

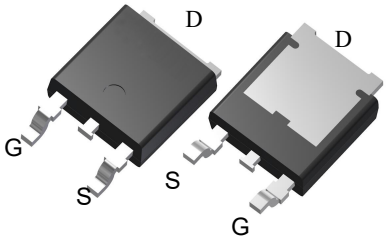
RoHS Compliant

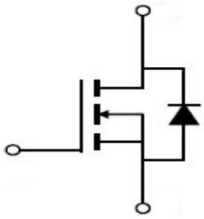
## Features

| | | |
|---|---|---|
| $V_{DSS}$ | 150 | V |
| $I_D$ | 10 | A |
| $P_D(T_C=25℃)$ | 46 | W |
| $R_{DS(ON)}(at V_{GS}=10V)$ | 0.28 | Ω |

## Application

- Battery protection
- Load switch
- Uninterruptible power supply



## Package Marking and Ordering Information

| Product ID | Pack | Marking | Qty(PCS) |
|---|---|---|---|
| MY10N15D | TO-252-2L | 280KNH | 2500 |

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

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage ($V_{GS}$ = 0V) | $V_{DSS}$ | 150 | V |
| Continuous Drain Current | $I_D$ | 10 | A |
| Pulsed Drain Current | $I_{DM}$ | 20 | A |
| Gate-Source Voltage | $V_{GSS}$ | ±20 | V |
| Single Pulse Avalanche Energy | $E_{AS}$ | 45 | mJ |
| Avalanche Current | IAR | 3 | A |
| Repetitive Avalanche Energy | $E_{AR}$ | 3.2 | mJ |
| Power Dissipation ($T_C$ = 25ºC) | $P_D$ | 46 | W |
| Thermal Resistance, Junction-to-Case | RthJC | 2.7 | ºC/W |
| Thermal Resistance, Junction-to-Ambient | RthJA | 60 | |
| Operating Junction and Storage Temperature Range | TJ, Tstg | -55~+150 | ºC |

## Electrical Characteristics at $T_j$=25 ℃ unless otherwise specified

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250μA | 150 | -- | -- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 150V, $V_{GS}$ = 0V, $T_J$ = 25ºC | -- | -- | 5 | μA |
| | | $V_{DS}$ = 120V, $V_{GS}$ = 0V, $T_J$ = 125ºC | -- | -- | 100 | |
| Gate-Source Leakage | $I_{GSS}$ | $V_{GS}$ = ±20V | -- | -- | ±100 | nA |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250μA | 1.2 | 1.5 | 2.5 | V |
| Drain-Source On-Resistance (Note3) | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ =8A | -- | 0.23 | 0.28 | Ω |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 25V, f = 1.0MHz | -- | 228 | -- | pF |
| Output Capacitance | $C_{oss}$ | | -- | 48 | -- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | -- | 17 | -- | |
| Total Gate Charge | $Q_g$ | $V_{DD}$ = 120V, $I_D$ = 5.0A, $V_{GS}$ = 10V | -- | 18 | -- | nC |
| Gate-Source Charge | $Q_{gs}$ | | -- | 1.5 | -- | |
| Gate-Drain Charge | $Q_{gd}$ | | -- | 9.5 | -- | |
| Turn-on Delay Time | $t_{d(on)}$ | $V_{DD}$ = 100V, $I_D$ = 5.0A, $R_G$ = 25 Ω | -- | 10 | -- | ns |
| Turn-on Rise Time | $t_r$ | | -- | 19 | -- | |
| Turn-off Delay Time | $t_{d(off)}$ | | -- | 43 | -- | |
| Turn-off Fall Time | $t_f$ | | -- | 32 | -- | |
| Continuous Body Diode Current | $I_S$ | $T_C$ = 25 ºC | -- | -- | 5 | A |
| Pulsed Diode Forward Current | $I_{SM}$ | | -- | -- | 20 | |
| Body Diode Voltage | $V_{SD}$ | $T_J$ = 25ºC, $I_{SD}$ = 5A, $V_{GS}$ = 0V | -- | -- | 1.4 | V |
| Reverse Recovery Time | $t_{rr}$ | $V_{GS}$ = 0V,$I_S$ = 5A, $di_F/dt$ =100A /μs | -- | 160 | -- | ns |
| Reverse Recovery Charge | $Q_{rr}$ | | -- | 1.5 | -- | μC |

**Notes**

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. $I_{AS}$ = 3A, $V_{DD}$ = 50V, $R_G$ = 25 Ω, Starting $T_J$ = 25 ºC
3. Pulse Test: Pulse width ≤ 300μs, Duty Cycle ≤ 1%

## Typical Characteristics

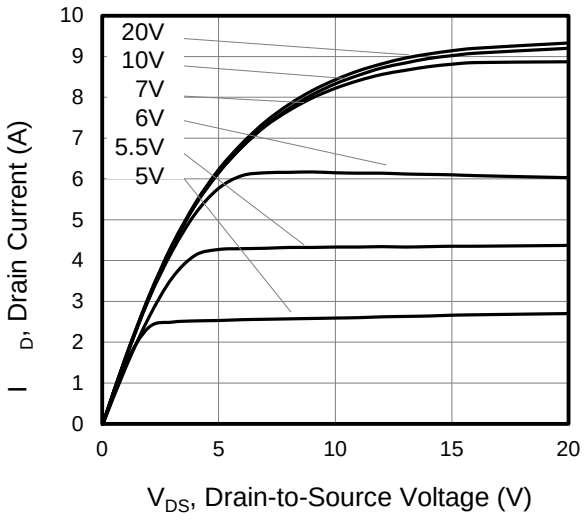



**Figure 1. Output Characteristics ($T_J$ = 25ºC)**

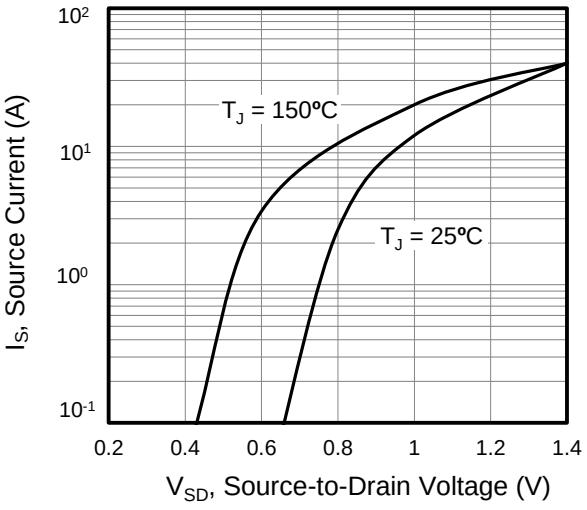



**Figure 2. Body Diode Forward Voltage**

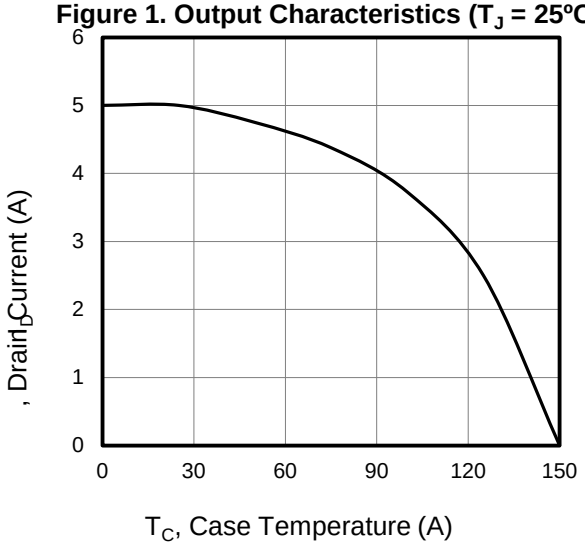



**Figure 3. Drain Current vs. Temperature**

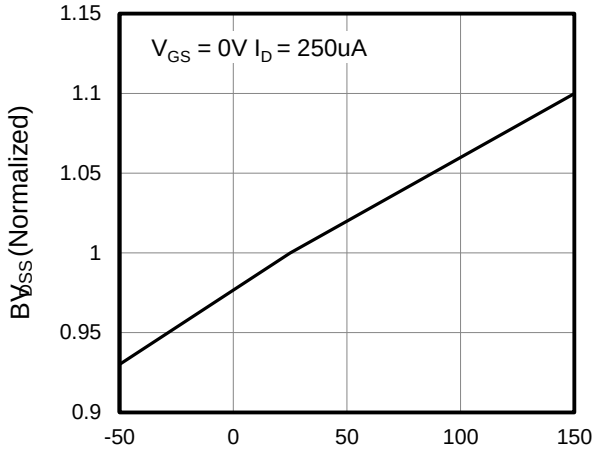



**Figure 4. $BV_{DSS}$ Variation vs. Temperature**

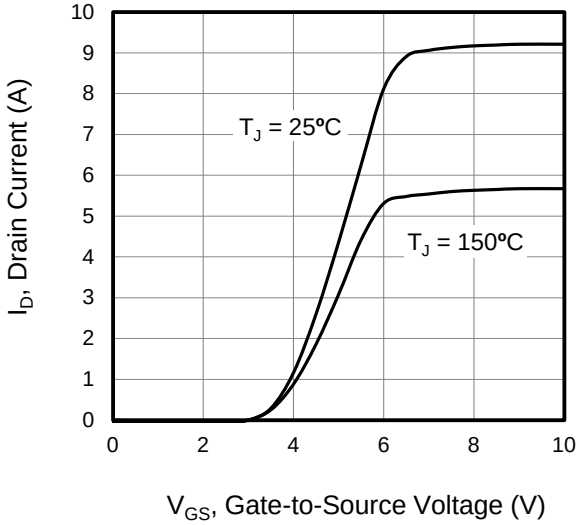



**Figure 5. Transfer Characteristics**

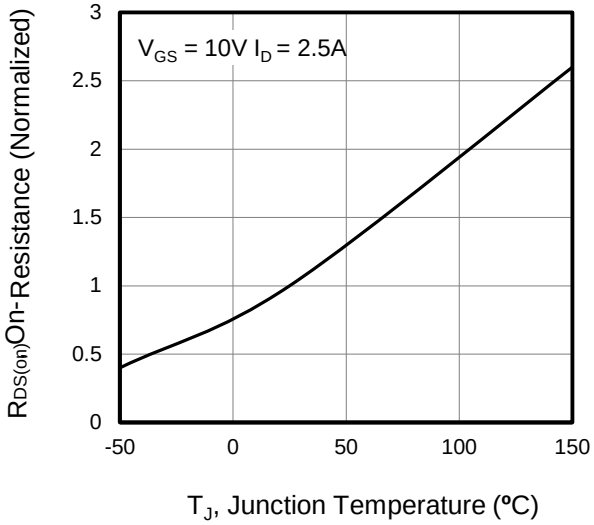



**Figure 6. On-Resistance vs. Temperature**

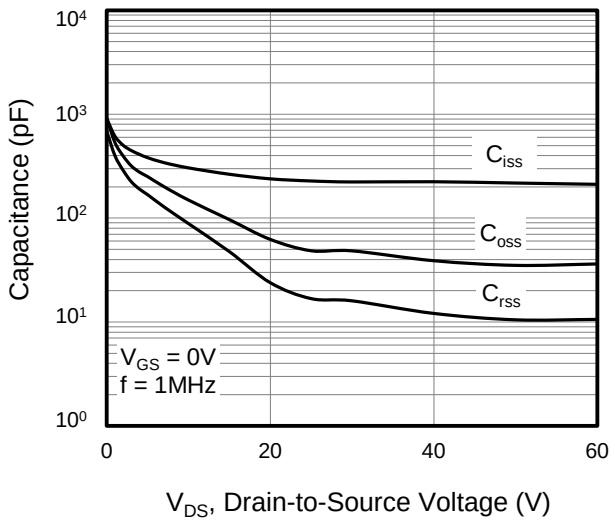



**Figure 7. Capacitance**

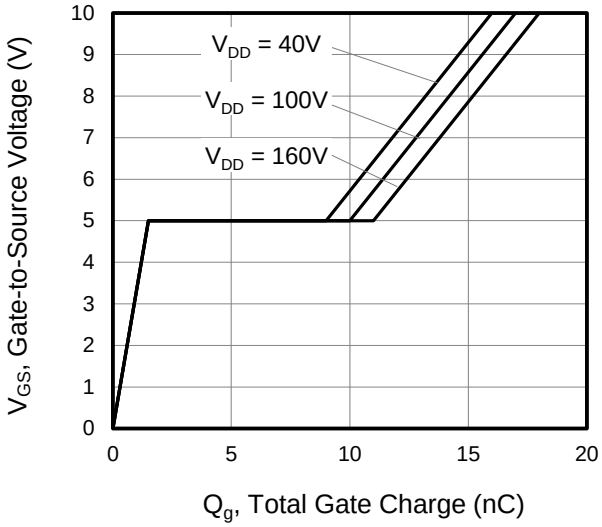



**Figure 8. Gate Charge**

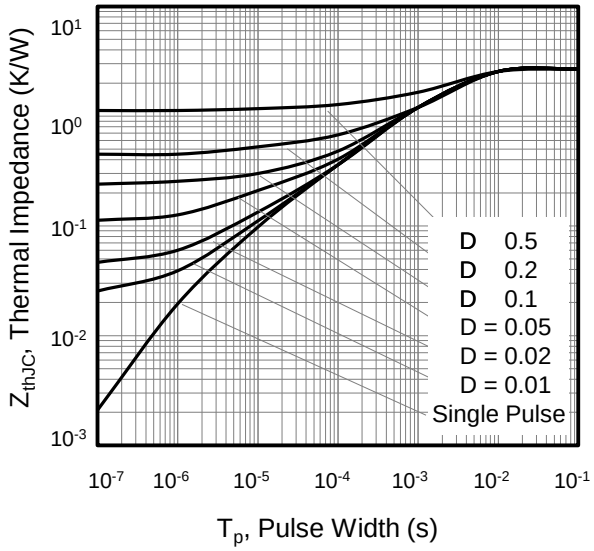



**Figure 10. Transient Thermal Impedance**

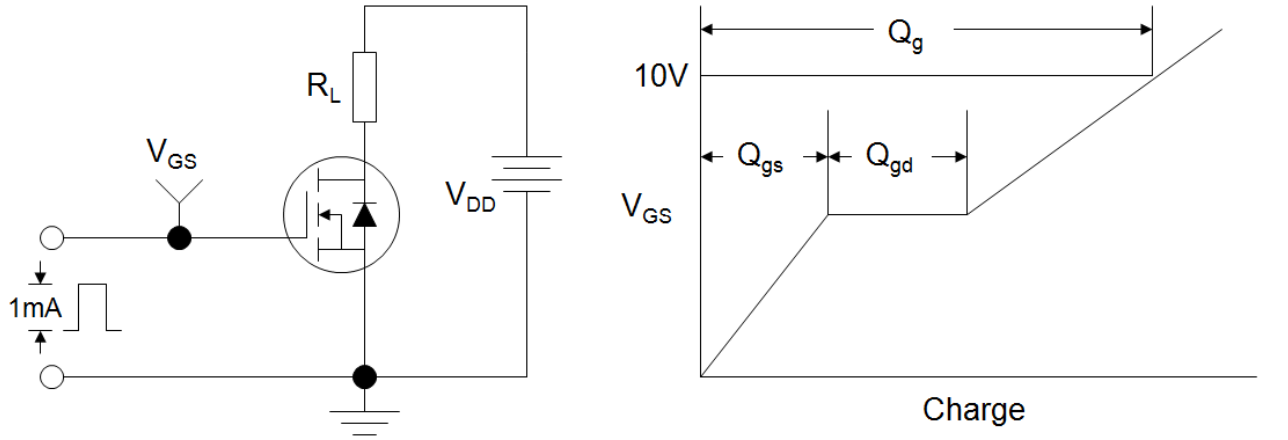



**Figure A：Gate Charge Test Circuit and Waveform**

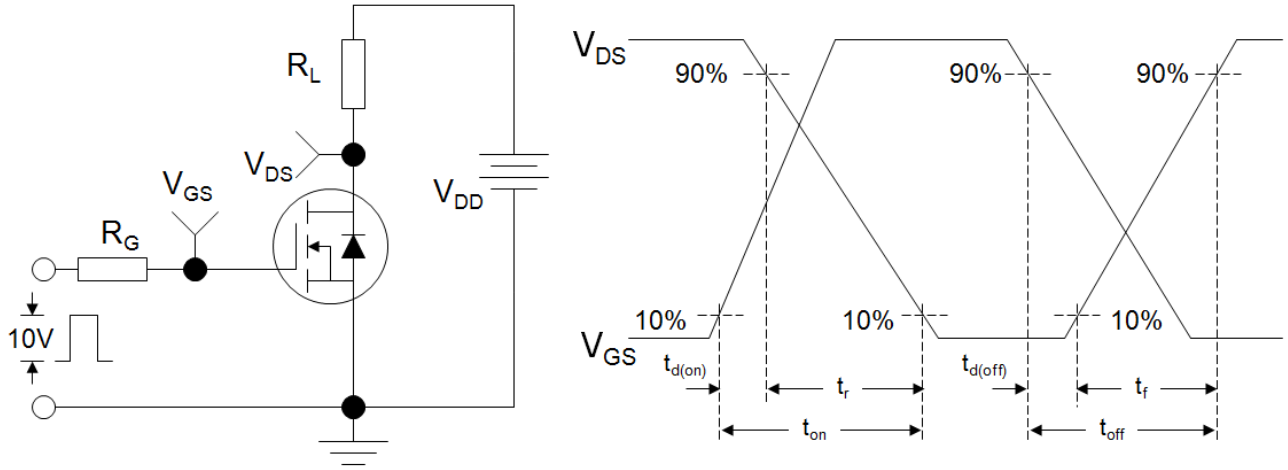



**Figure B：Resistive Switching Test Circuit and Waveform**

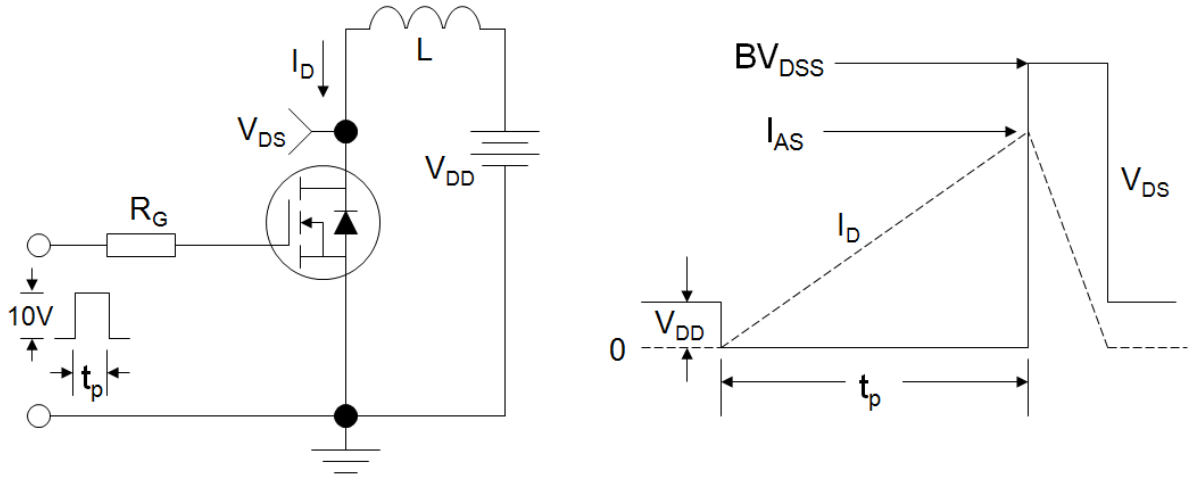
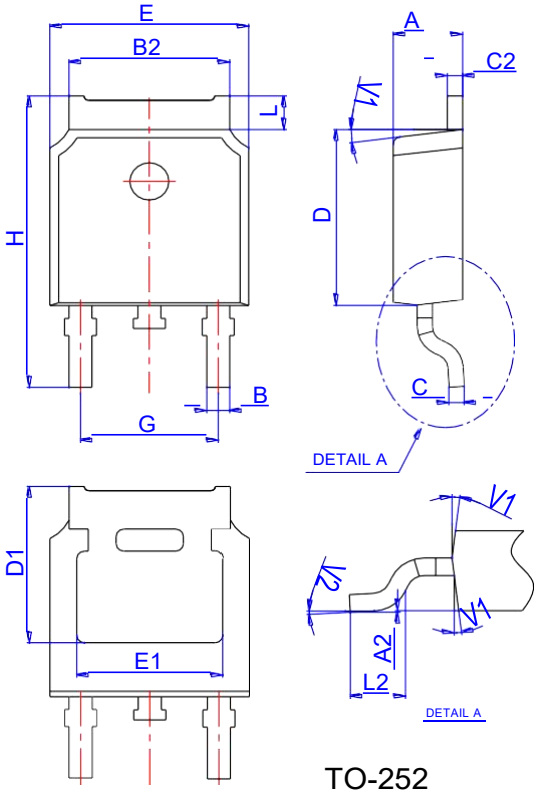



**Figure C：Unclamped Inductive Switching Test Circuit and Waveform**

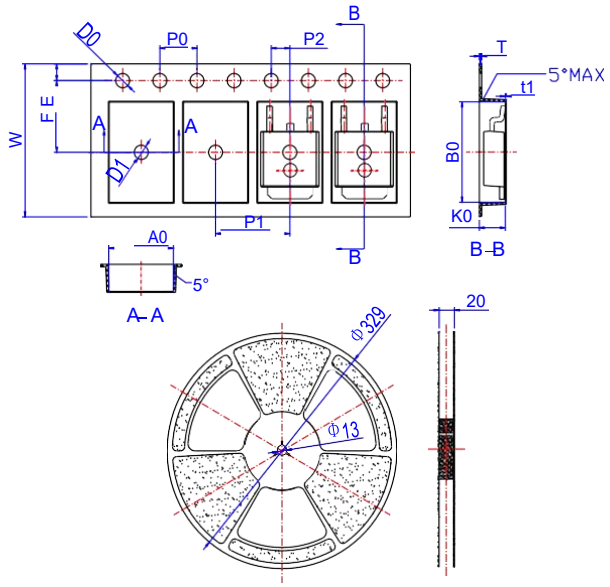
## Package Mechanical Data




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 |