preliminary

# CMY25115NL-252

## 150V N-Channel MOSFET

### Features

- 100% EAS Guaranteed
- Green Device Available
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

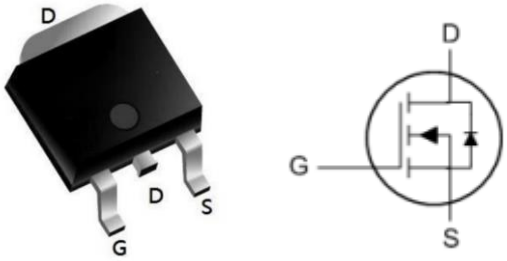
### Product Summary

| Item | Typical Value | Unit |
|---|---|---|
| $V_{DS}$ | 150 | V |
| $R_{DS(on)}$ @ $V_{GS}$ =10V (Max) | 88 | mΩ |
| $I_D$ | 20 | A |

### Applications

- Synchronous Rectification in SMPS
- Hard Switching and High Speed Circuit
- Power Tools
- UPS
- Motor Control

### TO252 Pin Description



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

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Drain-Source Voltage | $V_{DS}$ | 150 | V |
| Gate-Source Voltage | $V_{GS}$ | ±20 | V |
| Continuous Drain Current, $T_C$ = 25°C | $I_D$ | 20 | A |
| Single Pulse Avalanche Energy (L=0.1mH) | EAS | 53 | mJ |
| Total Power Dissipation | $P_D$ | 53 | W |
| Junction Temperature Maximum | $T_{JMAX}$ | 175 | °C |
| Storage Temperature | $T_{Storage}$ | -55 to 175 | °C |

## Thermal Characteristics

| Parameter | Symbol | Value | Units |
|---|---|---|---|
| Thermal Resistance Junction-Ambient | $R_{\theta JA}$ | 60 | °C/W |

## Electrical Characteristics

| **Static** ($T_J$=25℃ unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **Min.** | **Typ.** | **Max.** | **Units** |
| Drain-Source Breakdown Voltage | $BV_{DSS}$ | $V_{GS}$ = 0V, $I_D$ = 250uA | 150 | --- | --- | V |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = 120V, $V_{GS}$ = 0V | --- | --- | 1 | uA |
| Gate-Body Leakage Current | $I_{GSS}$ | $V_{GS}$ = ±20V, $V_{DS}$ = 0V | --- | --- | ±100 | nA |
| Drain-Source On-State Resistance | $R_{DS(on)}$ | $V_{GS}$ = 10V, $I_D$ = 10A | --- | --- | 88 | mΩ |
| | | $V_{GS}$ = 4.5V, $I_D$ = 10A | --- | --- | 100 | |
| Gate-Source Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = 250uA | 1.2 | --- | 2.5 | V |
| Diode Forward Voltage | $V_{SD}$ | $I_S$ = 1A, $V_{GS}$ = 0V | --- | --- | 1.2 | V |

| **Dynamic** ($T_J$=25℃ unless otherwise specified) | | | | | | |
|---|---|---|---|---|---|---|
| **Parameter** | **Symbol** | **Test Conditions** | **Min.** | **Typ.** | **Max.** | **Units** |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = 25V, f = 1MHz | --- | 2285 | --- | pF |
| Output Capacitance | $C_{oss}$ | | --- | 110 | --- | |
| Reverse Transfer Capacitance | $C_{rss}$ | | --- | 83 | --- | |
| Total Gate Charge | $Q_g$ | $V_{DS}$ = 75V, $I_D$ = 10A, $V_{GS}$ = 4.5V | --- | 25.1 | --- | nC |
| Gate-Source Charge | $Q_{gs}$ | | --- | 6.8 | --- | |
| Gate-Drain Charge | $Q_{gd}$ | | --- | 12.6 | --- | |
| Turn-on delay time | $T_{d(on)}$ | $V_{DS}$ = 75V, $I_D$ = 10A, $V_{GS}$ = 10V, $R_G$ = 3.3Ω | --- | 13 | --- | nS |
| Rise time | $T_r$ | | --- | 8.2 | --- | |
| Turn-off delay time | $T_{d(off)}$ | | --- | 25 | --- | |
| Fall time | $T_f$ | | --- | 11 | --- | |

## Typical Characteristics

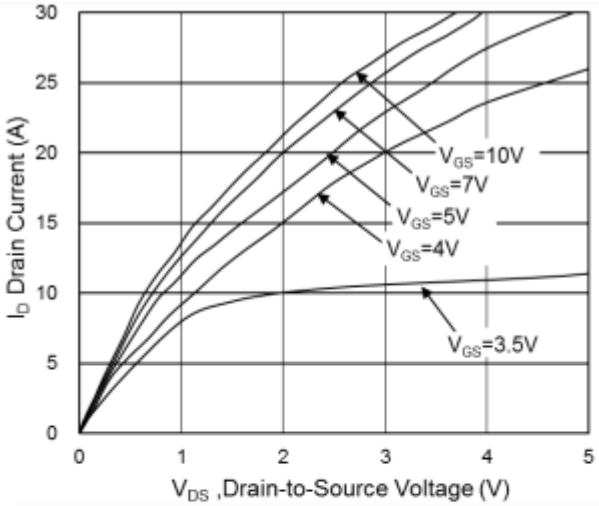



Fig.1 Typical Output Characteristics

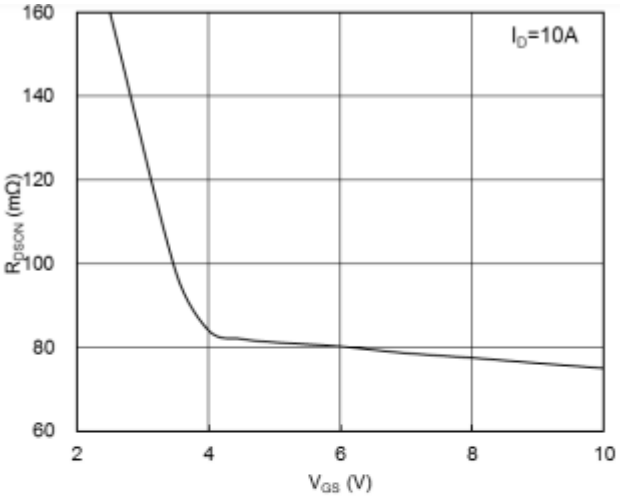



Fig.2 On-Resistance vs. Gate-Source Voltage

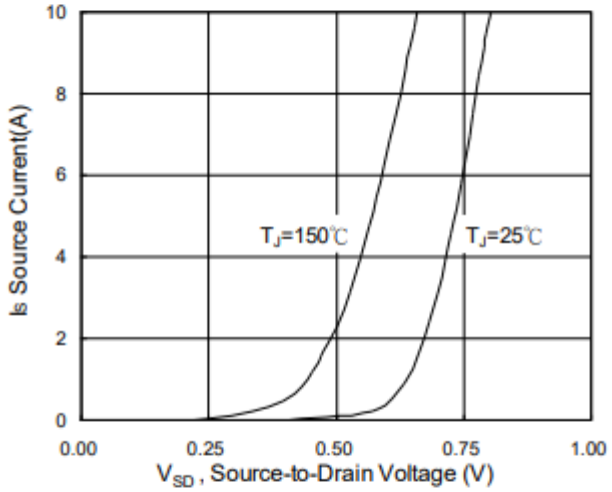



Fig.3 Forward Characteristics of Reverse

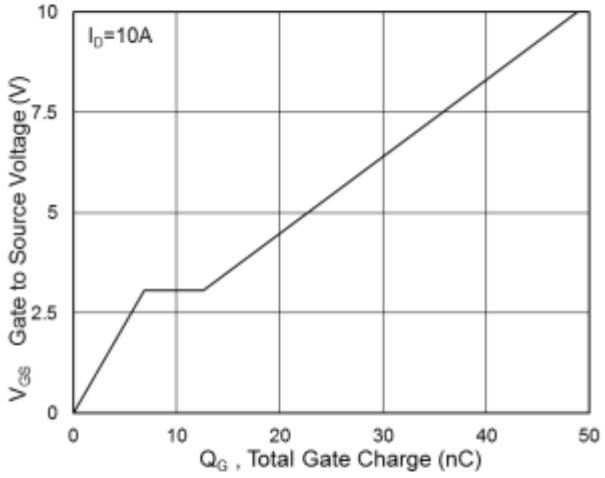



Fig.4 Gate-Charge Characteristics

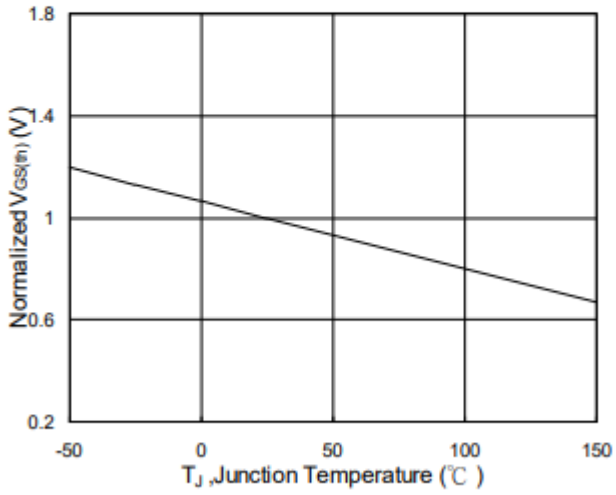



Fig.5 Normalized $V_{GS(th)}$ vs. $T_J$

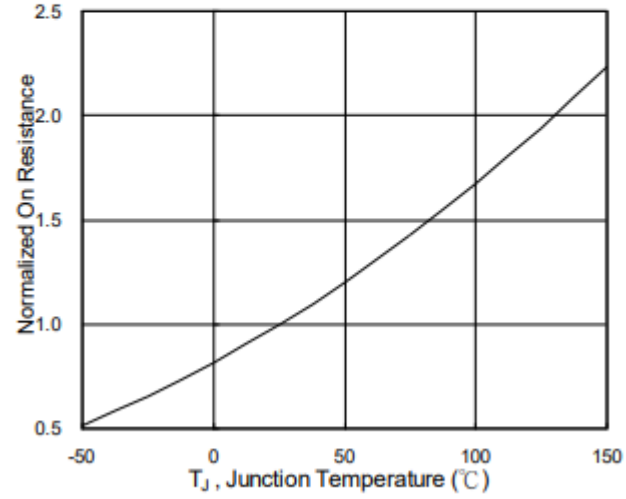



Fig.6 Normalized $R_{DSON}$ vs. $T_J$

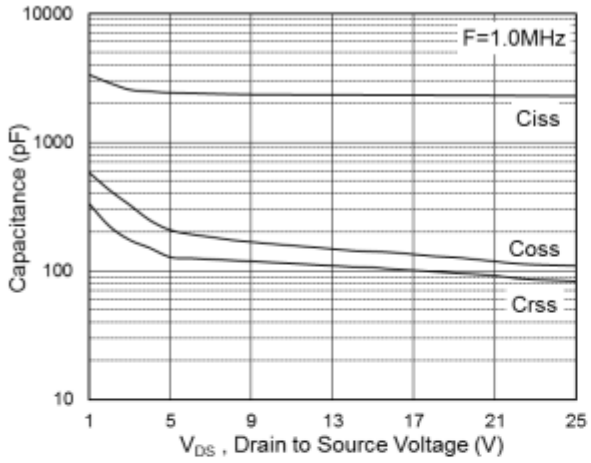



Fig.7 Capacitance

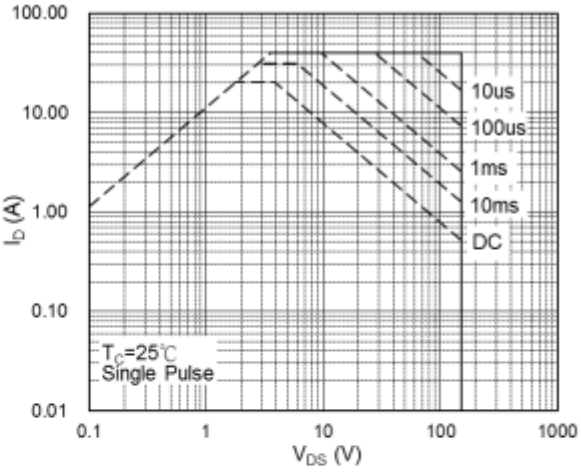



Fig.8 Safe Operating Area

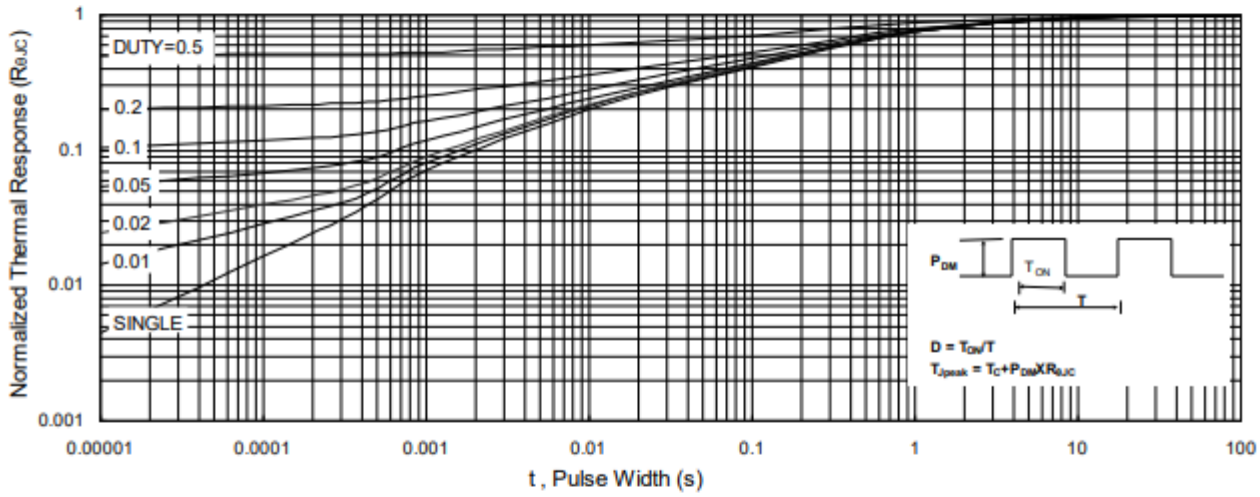



Fig.9 Normalized Maximum Transient Thermal Impedance

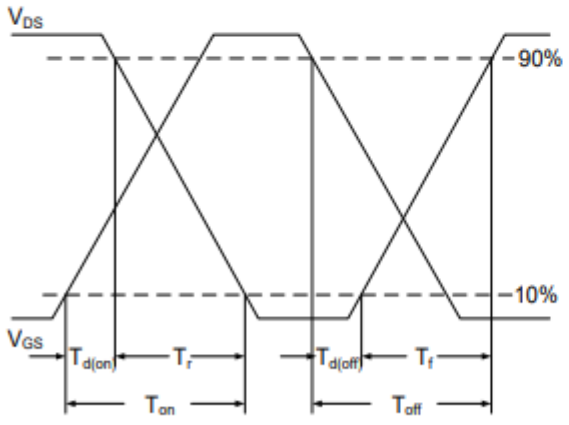



Fig.10 Switching Time Waveform

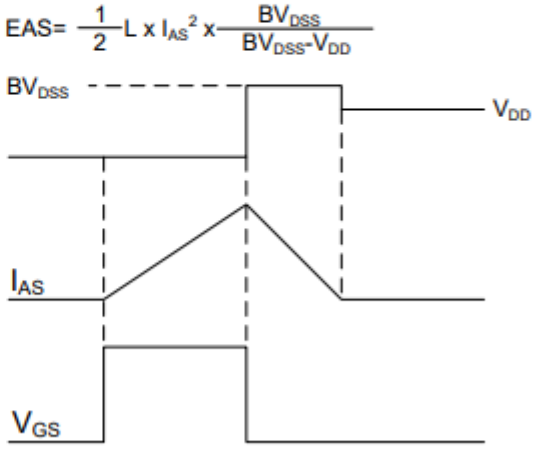
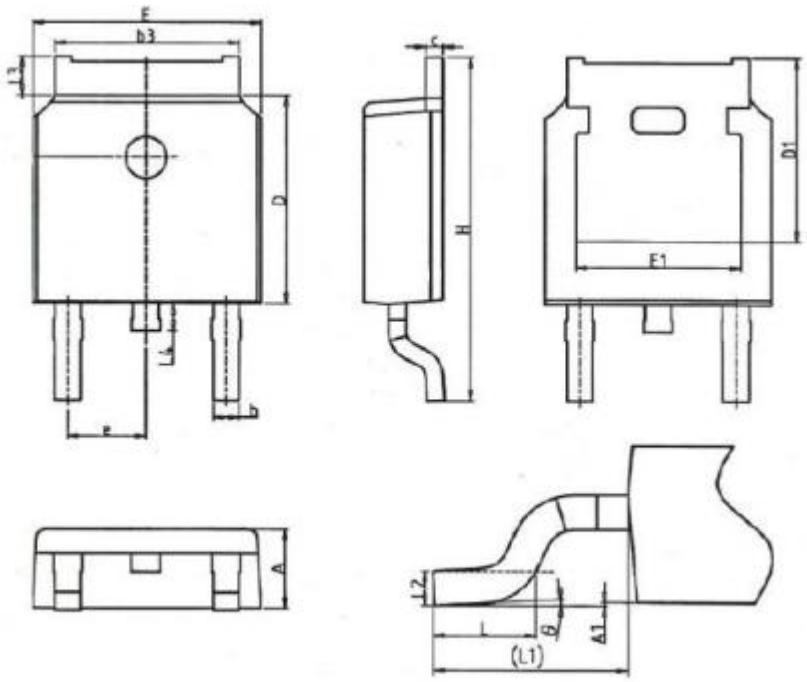



Fig.11 Unclamped Inductive Switching Waveform

# TO252-2L Package Outline




| SYMBOLS | MILLIMETERS | | INCHES | |
|---|---|---|---|---|
| | MIN | MAX | MIN | MAX |
| A | 2.18 | 2.40 | 0.086 | 0.095 |
| A1 | - | 0.2 | - | 0.008 |
| b | 0.68 | 0.9 | 0.026 | 0.036 |
| b3 | 4.95 | 5.46 | 0.194 | 0.215 |
| c | 0.43 | 0.89 | 0.017 | 0.035 |
| D | 5.97 | 6.22 | 0.235 | 0.245 |
| D1 | 5.300REF | | 0.209REF | |
| E | 6.35 | 6.73 | 0.250 | 0.265 |
| E1 | 4.32 | -- | 0.170 | - |
| e | 2.286BSC | | 0.09BSC | |
| H | 9.4 | 10.5 | 0.370 | 0.413 |
| L | 1.38 | 1.78 | 0.054 | 0.070 |
| L1 | 2.90REF | | 0.114REF | |
| L2 | 0.51BSC | | 0.020BSC | |
| L3 | 0.88 | 1.28 | 0.034 | 0.050 |
| L4 | 0.5 | 1 | 0.019 | 0.039 |
| Θ | 0° | 8° | 0° | 8° |