**SHENZHEN MENGKE ELECTRONICS TECHNOLOGY CO.,LTD**

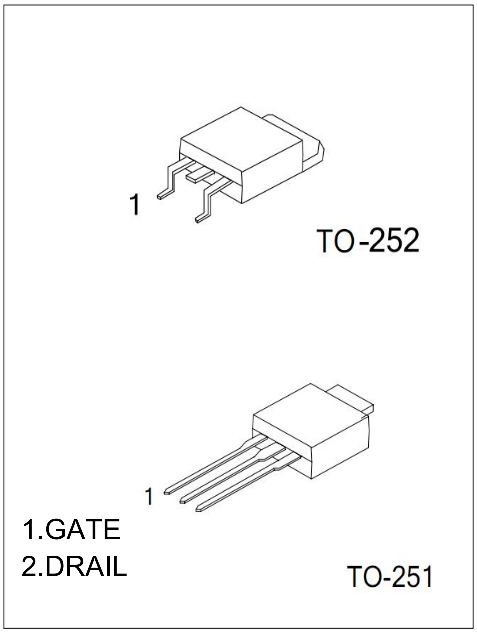
## TO-252/251 Plastic-Encapsulate MOSFETS

**RoHS-compliant Product**

# MK15N10 N-Channel 100-V(D-S) Power MOSFET

| V(BR)DSS | RDS(on)MAX | ID |
|---|---|---|
| 100 V | 100mΩ@ 10 V | 15A |
| | 120mΩ@ 4.5 V | |

## Equivalent Circuit:



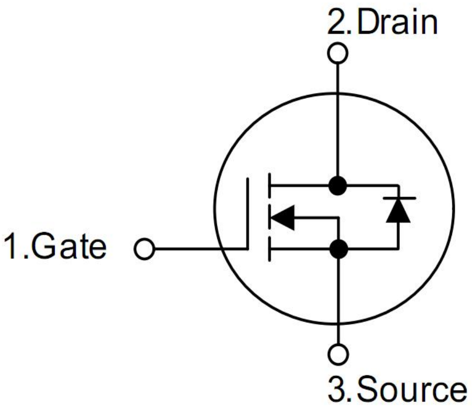
## General Description:

The high voltage MOSFET uses an advanced termination scheme to provide enhanced voltage-blocking capability without degrading performance over time. In addition , this advanced MOSFET is designed to withstand high energy in avalanche and commutation modes . The new energy efficient design also offers a drain-to-source diode with a fast recovery time. Designed for high voltage, high speed switching applications in power suppliers, converters and PWM motor controls , these devices are particularly well suited for bridge circuits where diode speed and commutating safe operating areas are critical and offer additional and safety margin against unexpected voltage transients.

## FEATURE:

※ Power switching application
※ Hard switched and high frequency circuits
※ Uninterruptible power supply
※ Fully characterized avalanche voltage and current
※ Excellent package for good heat dissipation
※ Good stability and uniformity with high EAS

## SYMBOL:



## Maximum ratings ( Ta=25℃ unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Drain-Source Voltage | **VDS** | 100 | V |
| Gate-Source Voltage | **VGS** | ±20 | |
| Continuous Drain Current | **ID** | 15 | A |
| Pulsed Diode Curren | **IDM** | 59 | |
| Power Dissipation | **PD** | 35 | W |
| Thermal Resistance from Junction to Ambient (t≤10s) | **RθJA** | 100 | ℃/W |
| Operating Junction | **TJ** | 150 | ℃ |
| Storage Temperature | **TSTG** | -55~+150 | |

## MOSFET ELECTRICAL CHARACTERISTICS

### Static Electrical Characteristics (Ta = 25 ℃ Unless Otherwise Noted)

| Parameter | Symbol | Test Condition | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| **Static** | | | | | | |
| Drain-source breakdown voltage | **V(BR)DSS** | VGS = 0V, ID = 250μA | 100 | | | V |
| Gate-source threshold voltage | **VGS(th)** | VDS =VGS, ID = 250μA | 1 | | 3 | V |
| Gate-source leakage | **IGSS** | VDS =0V, VGS = ±20V | | | ±100 | nA |
| Zero gate voltage drain current | **IDSS** | VDS = 60V, VGS =0V | | | 1 | μA |
| Drain-source on-state resistancea | **RDS(on)** | VGS = 10V, ID = 8A | | 93 | 100 | mΩ |
| | **RDS(on)** | VGS = 4.5V, ID = 5A | | 96 | 120 | mΩ |
| Diode forward voltage | **VSD** | IS= 8A, VGS=0V | | 0.8 | 1.3 | V |
| **Dynamic** | | | | | | |
| Input capacitance | **Ciss** | VDS = 15V, VGS =0V, f=1MHz | | 710 | | pF |
| Output capacitance | **Coss** | | | 58 | | pF |
| Reverse transfer capacitanceb | **Crss** | | | 23 | | pF |
| Total gate charge | **Qg** | VDS = 80V, VGS = 10V, ID = 10A | | 24 | | nC |
| Gate-source charge | **Qgs** | | | 4.6 | | nC |
| Gate-drain charge | **Qgd** | | | 7.6 | | nC |
| Gate Resistance | **Rg** | f=1MHz | | 1.6 | | |
| **Switchingb** | | | | | | |
| Turn-on delay time | **td(on)** | VDD= 50V<br>RL= 2Ω, ID = 10A,<br>VGEN= 10V,Rg= 1Ω | | 14 | | ns |
| Rise time | **tr** | | | 33 | | ns |
| Turn-off delay time | **td(off)** | | | 39 | | ns |
| Fall time | **tf** | | | 7 | | ns |
| **Drain-Source Diode Characteristics** | | | | | | |
| Continuous Source-Drain Diode Current | **IS** | | | | 15 | A |
| Pulsed Diode forward Curren | **ISM** | | | | 35 | A |

### Note :

1. Repetitive Rating : Pulse width limited by maximum junction temperature.

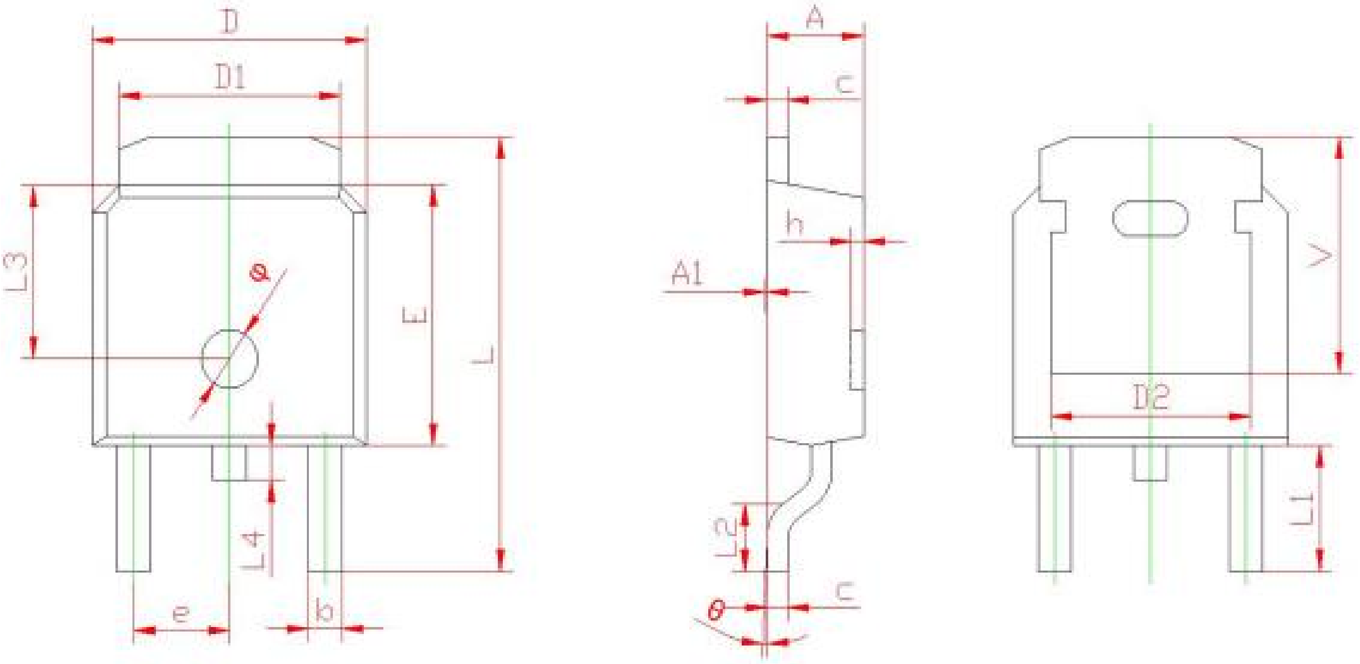
2. Surface Mounted on FR4 Board, t < 10 sec.

3. Pulse Test : Pulse Width≤300μs, Duty Cycle ≤ 2%.

4. Guaranteed by design, not subject to production testing.

## PACKAGE OUTLINE DIMENSIONS :

### TO-252 PACKAGE OUTLINE DIMENSIONS



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| A1 | 0.000 | 0.127 | 0.000 | 0.005 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.800 REF | | 0.189 REF | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 9.800 | 10.400 | 0.386 | 0.409 |
| L1 | 2.900 REF | | 0.114 REF | |
| L2 | 1.400 | 1.700 | 0.055 | 0.067 |
| L3 | 4.00 REF | | 0.157 REF | |
| L4 | 0.600 | 1.000 | 0.024 | 0.039 |
| φ | 1.200 | 1.400 | 0.043 | 0.051 |
| θ | 0° | 8° | 0° | 8° |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.500 REF | | 0.217 REF | |

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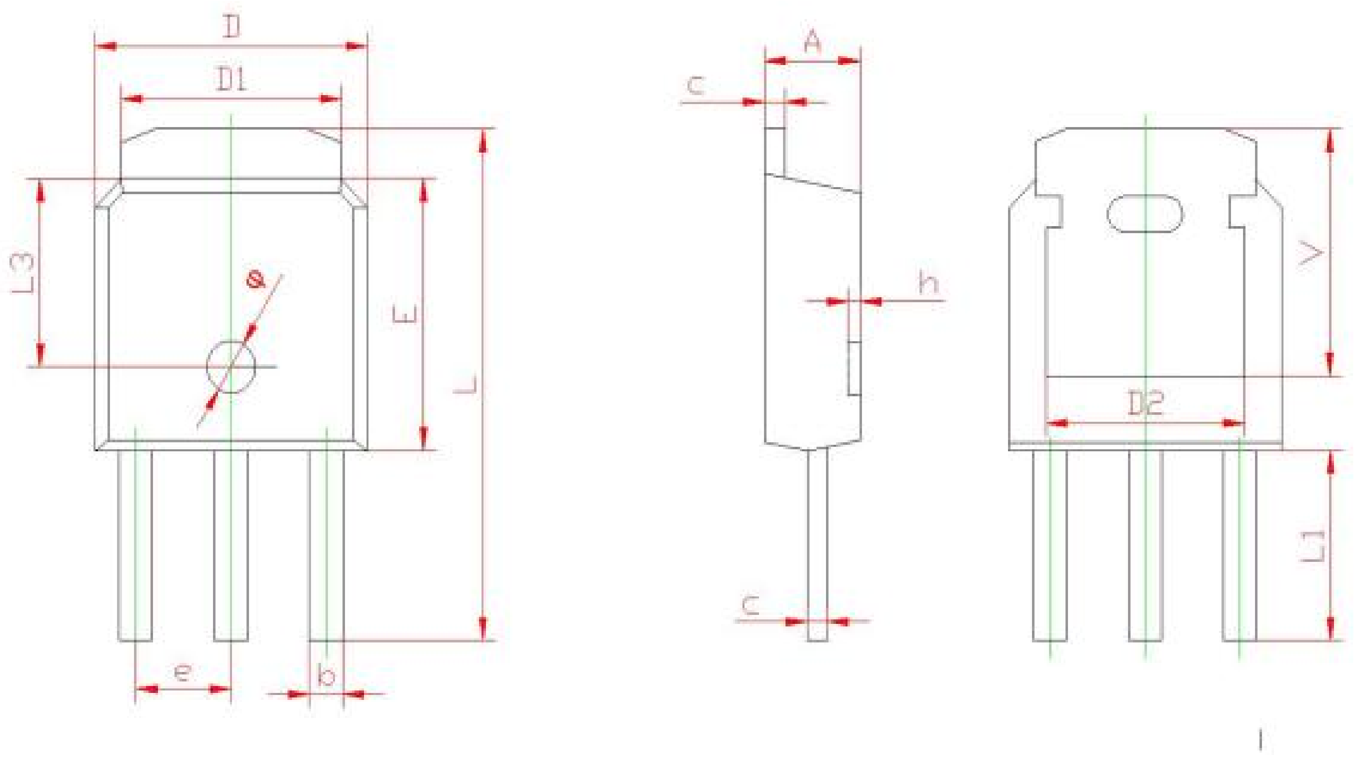

| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 2.200 | 2.400 | 0.087 | 0.094 |
| b | 0.660 | 0.860 | 0.026 | 0.034 |
| c | 0.460 | 0.580 | 0.018 | 0.023 |
| D | 6.500 | 6.700 | 0.256 | 0.264 |
| D1 | 5.100 | 5.460 | 0.201 | 0.215 |
| D2 | 4.800 REF | | 0.189 REF | |
| E | 6.000 | 6.200 | 0.236 | 0.244 |
| e | 2.186 | 2.386 | 0.086 | 0.094 |
| L | 11.100 | 11.700 | 0.437 | 0.461 |
| L1 | 4.300 REF | | 0.170 REF | |
| L3 | 4.00 REF | | 0.16 REF | |
| φ | 1.200 | 1.400 | 0.043 | 0.051 |
| h | 0.000 | 0.300 | 0.000 | 0.012 |
| V | 5.500 REF | | 0.217 REF | |