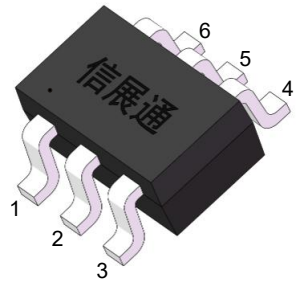
# 2N7002KDW

N-Channel SMD MOSFET

## Product Summary

| $V_{(BR)DSS}$ | $R_{DS(on)MAX}$ | $I_D$ |
|---|---|---|
| 60V | 5.0Ω@10V | 340mA |
| | 5.3Ω@4.5V | |

**SOT-363**



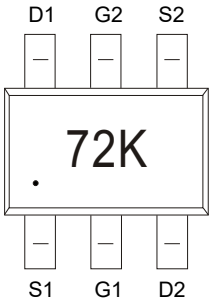

## Feature

- High density cell design for ultra low on-resistance
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

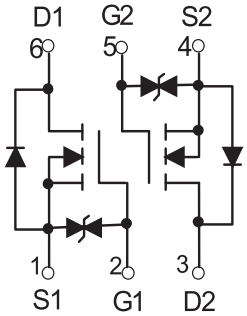
## Application

- Load Switch for Portable Devices
- DC/DC Converter

## Marking




## Circuit diagram



## Absolute maximum ratings (Ta=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 | $I_D$ | 340 | mA |
| Power Dissipation | $P_D$ | 150 | mW |
| Thermal Resistance from Junction to Ambient | $R_{\theta JA}$ | 833 | ℃/W |
| Junction Temperature | $T_J$ | 150 | ℃ |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | ℃ |

## Electrical characteristics ($T_A$=25 °C, unless otherwise noted)

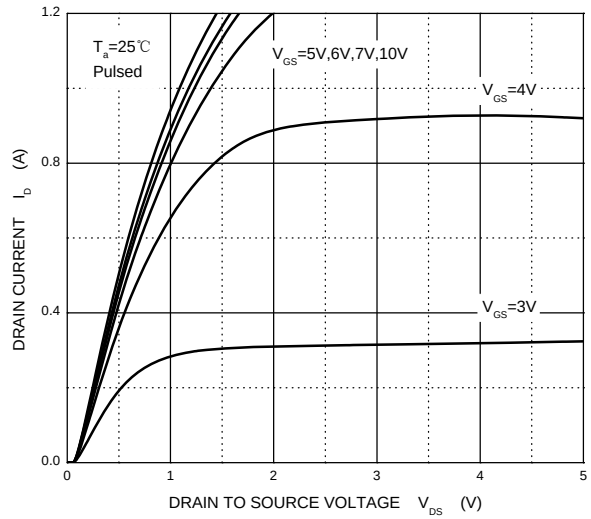
| Parameter | Symbol | Test Condition | Min. | Typ. | Max. | Unit |
|---|---|---|---|---|---|---|
| **Static Characteristics** | | | | | | |
| Drain-source breakdown voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ =250μA | 60 | | | V |
| Zero gate voltage drain current | $I_{DSS}$ | $V_{DS}$ =48V,$V_{GS}$ = 0V | | | 1 | μA |
| Gate-body leakage current | $I_{GSS}$ | $V_{GS}$ =±20V, $V_{DS}$ = 0V | | | ±10 | μA |
| Gate threshold voltage | $V_{GS(th)}$ | $V_{DS}$ =$V_{GS}$, $I_D$ =1mA | 1.0 | | 2.5 | V |
| Drain-source on-resistance[1] | $R_{DS(on)}$ | $V_{GS}$ =10V, $I_D$ =500A | | 0.9 | 5 | Ω |
| | | $V_{GS}$ =4.5V, $I_D$ =200A | | 1.1 | 5.3 | |
| **Dynamic characteristics[2]** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{DS}$ =10V,$V_{GS}$ =0V,f =1MHz | | | 40 | pF |
| Output Capacitance | $C_{oss}$ | | | | 30 | |
| Reverse Transfer Capacitance | $C_{rss}$ | | | | 10 | |
| Turn-on delay time | $t_{d(on)}$ | $V_{DD}$=50V,$V_{GS}$=10V, $R_L$=250Ω,$R_{GEN}$=50Ω | | | 10 | nS |
| Turn-off delay time | $t_{d(off)}$ | | | | 15 | |
| **Source-Drain Diode characteristics** | | | | | | |
| Diode Forward voltage | $V_{SD}$ | $V_{GS}$ =0V, $I_S$=0.3A | | | 1.5 | V |

Notes: 1) Pulse Test: Pulse Width < 300μs, Duty Cycle ≤2%.

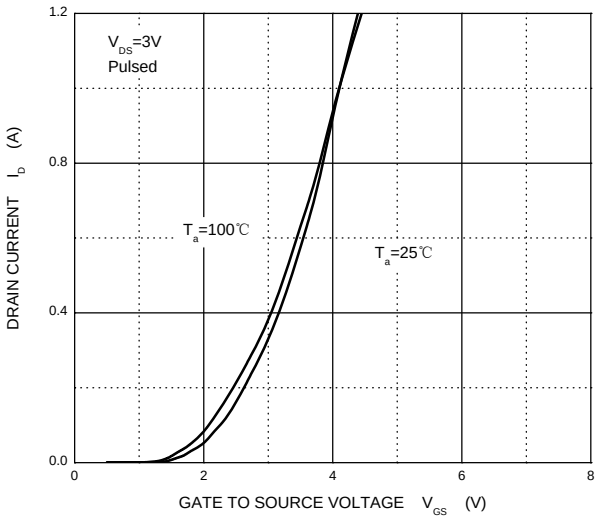
2) Guaranteed by design, not subject to production testing.

## Typical Characteristics

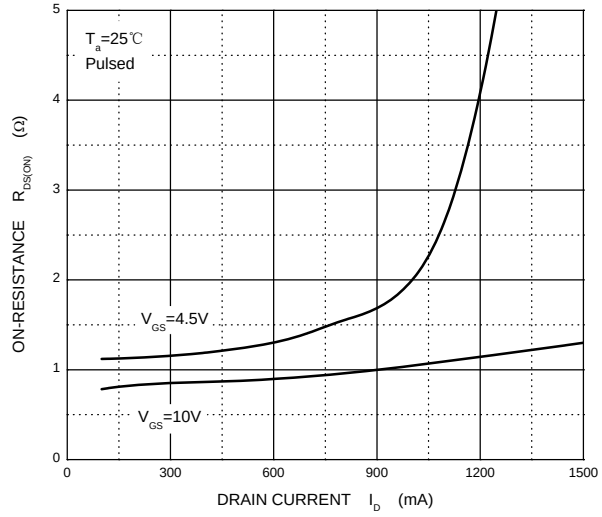
**Output Characteristics**



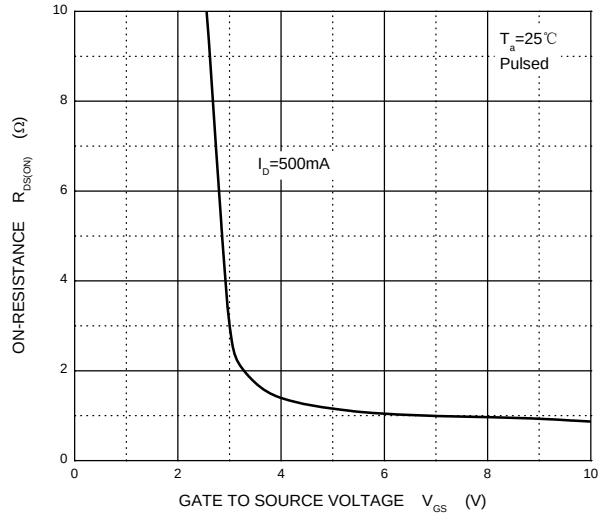

**Transfer Characteristics**



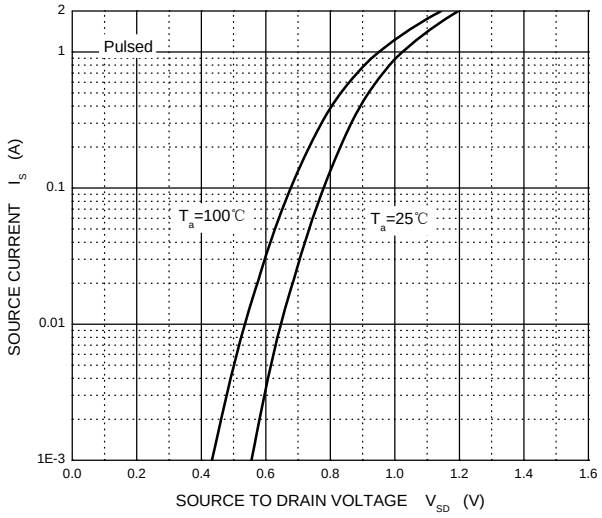

**$R_{DS(ON)}$ —— $I_D$**



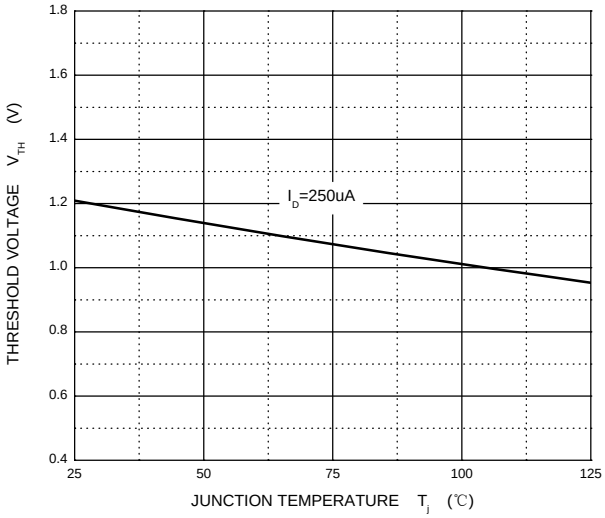

**$R_{DS(ON)}$ —— $V_{GS}$**



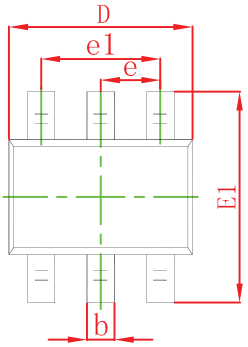

**$I_S$ —— $V_{SD}$**

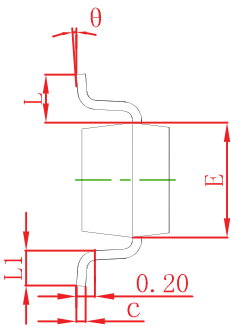


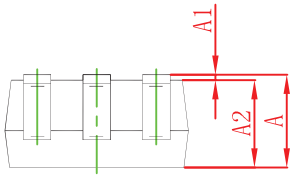

**Threshold Voltage**



## SOT-363 Package Outline Dimensions

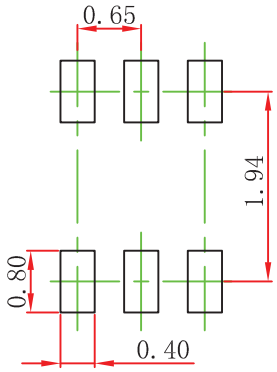



| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min | Max | Min | Max |
| A | 0.900 | 1.100 | 0.035 | 0.043 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 0.900 | 1.000 | 0.035 | 0.039 |
| b | 0.150 | 0.350 | 0.006 | 0.014 |
| c | 0.100 | 0.150 | 0.004 | 0.006 |
| D | 2.000 | 2.200 | 0.079 | 0.087 |
| E | 1.150 | 1.350 | 0.045 | 0.053 |
| E1 | 2.150 | 2.400 | 0.085 | 0.094 |
| e | 0.650 TYP | | 0.026 TYP | |
| e1 | 1.200 | 1.400 | 0.047 | 0.055 |
| L | 0.525 REF | | 0.021 REF | |
| L1 | 0.260 | 0.460 | 0.010 | 0.018 |
| θ | 0° | 8° | 0° | 8° |

## SOT-363 Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.