

FEATURES

- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- ESD Protected Up to 2.5KV(HBM)



| Product Summary | | | |
|-----------------|-----------------------------|---------------------|----------------------|
| V _{DS} | R _{DS(on)} (Ω) Typ | I _D (mA) | Q _g (Typ) |
| 60V | 1.3 @ 10V | 300 | 1.7nc |
| | 1.4 @ 4.5V | 200 | |

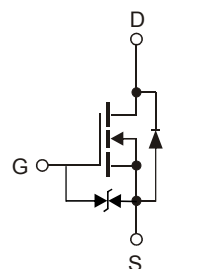
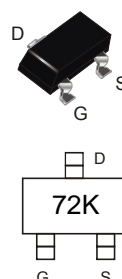
APPLICATIONS

- Battery operated systems
- Solid-state relays
- Direct logic-level interface:TTL/CMOS

MECHANICAL DATA

- Case:SOT-23(TO-236)
- Terminals:Plated solderable per MIL-STD-750,method 2026
- Mounting Position: Any
- Marking : 72K

SOT-23



N-channel MOSFET

Absolute Maximum Ratings (T_A=25°C unless otherwise noted)

| Parameters | | Symbol | Value | Unit |
|---|----------------------|----------------------------------|-------------|------|
| Drain-Source voltage | | V _{DS} | 60 | V |
| Gate-Source Voltage | | V _{GS} | ±20 | V |
| Continuous Drain Current(T _J =150°C) | T _A =25°C | I _D | 340 | mA |
| | T _A =70°C | | 272 | |
| Pulsed Drain Current ¹⁾ | | I _{DM} | 1.5 | A |
| Maximum Power Dissipation @T _A =25°C | | P _D | 350 | mW |
| Junction and Storage Temperature Range | | T _J ,T _{STG} | -55 to +150 | °C |

Thermal Resistance Ratings

| Parameters | Symbol | Typ | Max | Unit |
|---|------------------|-----|-----|------|
| Junction to Ambient, Steady State ²⁾ | R _{θJA} | - | 104 | °C/W |

RATINGS AND CHARACTERISTIC OF 2N7002K

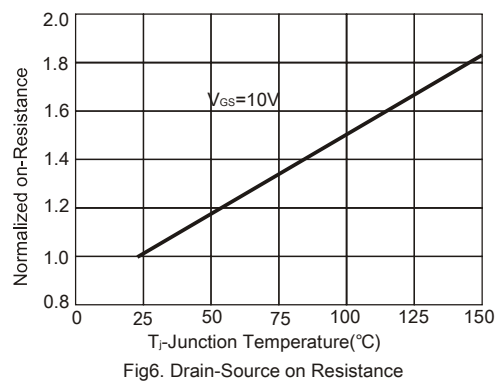
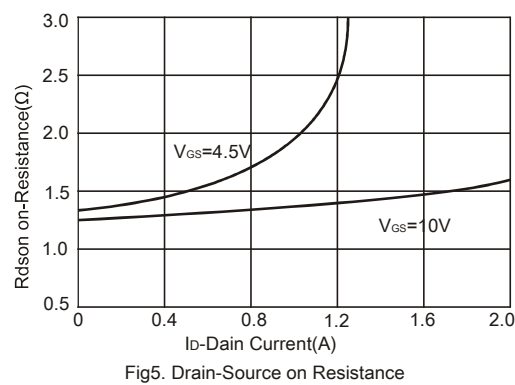
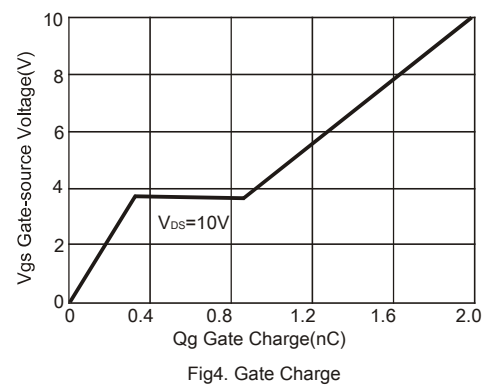
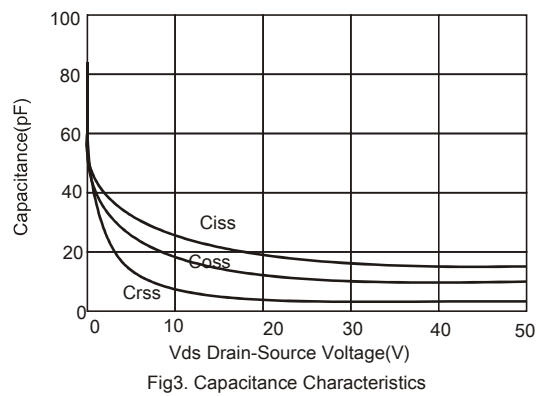
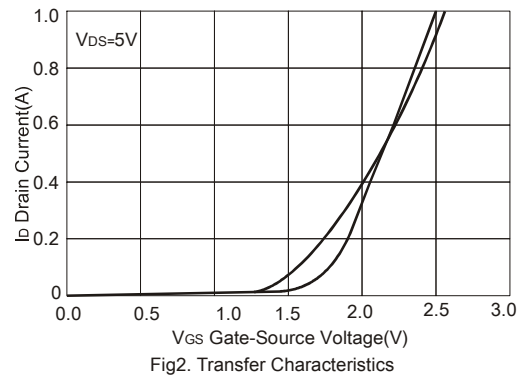
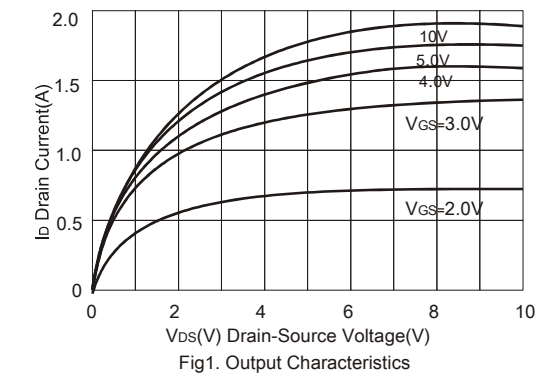
Electrical Characteristics (T_J=25°C unless otherwise noted)

| Parameters | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---------------------|--|-----|-----|-------|------|
| Static | | | | | | |
| Drain-Source Breakdown Voltage | BV _{DSS} | V _{GS} = 0V, I _D =250μA | 60 | - | - | V |
| Zero Gate Voltage Drain Current | I _{DSS} | V _{DS} =60V, V _{GS} =0V, T _C =25°C | - | - | 1 | μA |
| Gate-Source Leakage Current | I _{GSS} | V _{GS} = ±5V, V _{DS} =0V | - | - | ± 100 | nA |
| Gate-Source Threshold Voltage | V _{GS(th)} | V _{DS} = V _{GS} , I _D =250μA | 1 | 1.4 | 2.5 | V |
| Drain-Source On-State Resistance | R _{DS(ON)} | V _{GS} = 10V, I _D =300mA | - | 1.3 | 2.5 | Ω |
| | | V _{GS} = 4.5V, I _D =200mA | - | 1.4 | 3.0 | |
| Dynamic | | | | | | |
| Input Capacitance | C _{iss} | V _{DS} =30V, V _{GS} =0V, f=1MHz | - | 18 | - | pF |
| Output Capacitance | C _{oss} | | - | 12 | - | |
| Reverse Transfer Capacitance | C _{rss} | | - | 7 | - | |
| Total Gate Charge | Q _g | V _{DS} =30V, V _{GS} =10V, I _D =0.3A | - | 1.7 | 2.4 | nc |
| Turn-on Delay Time | t _{D(on)} | V _{GS} =10V, V _{DD} =30V, I _D =300mA, R _{GEN} =6Ω | - | 5 | - | ns |
| Turn-off Delay Time | t _{D(off)} | | - | 17 | - | |
| Drain-Source Body Diode Characteristics | | | | | | |
| Maximum Body-Diode Continuous Current | I _S | | - | - | 340 | mA |
| Diode Forward Voltage | V _{SD} | I _S =300mA, V _{GS} =0V | - | - | 1.2 | V |
| Reverse recovery Time | t _{rr} | V _{GS} =0V, V _R =25V, I _S =300mA, dI _S /dt=100A/μs | - | 30 | - | ns |

Notes: 1. Pulse Test: Pulse Width≤300us, Duty cycle ≤2%.
2. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

RATINGS AND CHARACTERISTIC OF 2N7002K

Typical Performance Characteristics



RATINGS AND CHARACTERISTIC OF 2N7002K

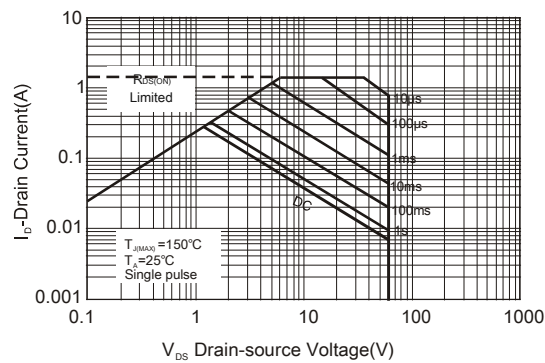


Fig7. Safe Operation Area

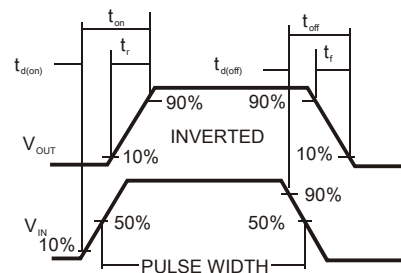
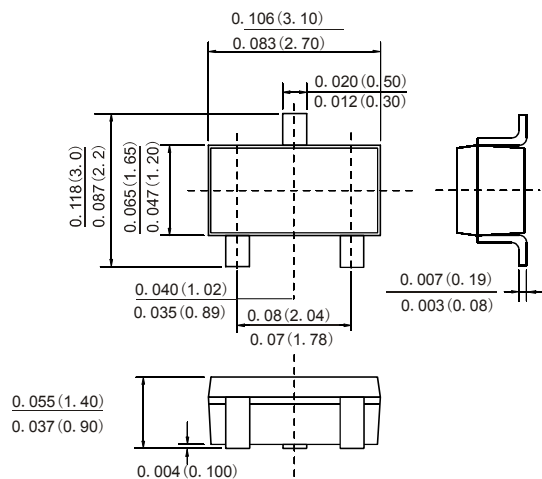


Fig8. Switching wave

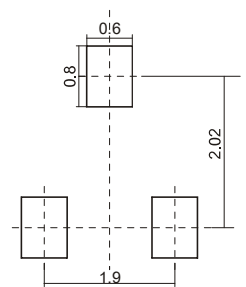
PACKAGE OUTLINE DIMENSIONS

SOT-23



Dimensions in inches and (millimeters)

Suggested Pad Layout



Dimensions in millimeters