

Advanced Small Signal MOSFET 2N7000BU/2N7000TA

FEATURES

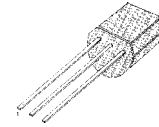
- Fast Switching Times
- Improved Inductive Ruggedness
- Lower Input Capacitance
- Extended Safe Operating Area
- Improved High Temperature Reliability

$$BV_{DSS} = 60 \text{ V}$$

$$R_{DS(on)} = 5.0 \ \Omega$$

$$I_D = 200 \text{ mA}$$

TO-92



1.Source 2. Gate 3. Drain

Absolute Maximum Ratings

| Symbol | Characteristic | Value | Units |
|----------------|---|--------------|----------------------|
| V_{DSS} | Drain-to-Source Voltage | 60 | V |
| I_D | Continuous Drain Current ($T_C=25^\circ\text{C}$) | 200 | mA |
| | Continuous Drain Current ($T_C=100^\circ\text{C}$) | 110 | |
| I_{DM} | Drain Current-Pulsed ^① | 1000 | mA |
| V_{GS} | Gate-to-Source Voltage | ± 30 | V |
| P_D | Total Power Dissipation ($T_C=25^\circ\text{C}$) | 400 | mW |
| | Linear Derating Factor | 3.2 | mW/ $^\circ\text{C}$ |
| T_J, T_{STG} | Operating Junction and Storage Temperature Range | - 55 to +150 | $^\circ\text{C}$ |
| T_L | Maximum Lead Temp. for Soldering Purposes, 1/8" from case for 5-seconds | 300 | |

Thermal Resistance

| Symbol | Characteristic | Typ. | Max. | Units |
|-----------------|---------------------|------|-------|--------------------|
| $R_{\theta JA}$ | Junction-to-Ambient | -- | 312.5 | $^\circ\text{C/W}$ |

Electrical Characteristics ($T_C=25^\circ\text{C}$ unless otherwise specified)

| Symbol | Characteristic | Min. | Typ. | Max. | Units | Test Condition |
|--------------|--|------|------|------|----------|--|
| BV_{DSS} | Drain-Source Breakdown Voltage | 60 | -- | -- | V | $V_{GS}=0V, I_D=250\mu A$ |
| $V_{GS(th)}$ | Gate Threshold Voltage | 0.3 | -- | 3.9 | V | $V_{DS}=V_{GS}, I_D=250\mu A$ |
| | | 0.4 | -- | 2.2 | | $V_{DS}=V_{GS}, I_D=1mA$ |
| I_{GSS} | Gate-Source Leakage, Forward | -- | -- | 100 | nA | $V_{GS}=15V$ |
| | Gate-Source Leakage, Reverse | -- | -- | -100 | | $V_{GS}=-15V$ |
| I_{DSS} | Drain-to-Source Leakage Current | -- | -- | 250 | μA | $V_{DS}=60V$ |
| | | -- | -- | 1000 | | $V_{DS}=45V, T_C=125^\circ\text{C}$ |
| $R_{DS(on)}$ | Static Drain-Source On-State Resistance ^② | -- | -- | 5.0 | Ω | $V_{GS}=10V, I_D=0.5A$ |
| g_{fs} | Forward Transconductance ^② | 0.1 | 0.3 | -- | S | $V_{DS}=15V, I_D=0.5A$ |
| C_{iss} | Input Capacitance | -- | 30 | -- | pF | $V_{GS}=0V, V_{DS}=25V,$ $f=1MHz$ |
| C_{oss} | Output Capacitance | -- | 12 | -- | | |
| C_{rss} | Reverse Transfer Capacitance | -- | 3.0 | -- | | |
| $t_{d(on)}$ | Turn-On Delay Time | -- | -- | 10 | ns | $V_{DD}=30V, I_D=0.5A,$ $R_G=15\Omega$ ^{② ③} |
| t_r | Rise Time | -- | -- | 10 | | |
| $t_{d(off)}$ | Turn-Off Delay Time | -- | -- | 10 | | |
| t_f | Fall Time | -- | -- | 10 | | |

Notes ;

- ① Repetitive Rating : Pulse Width Limited by Maximum Junction Temperature
- ② Pulse Test : Pulse Width = 250 μs , Duty Cycle $\leq 2\%$
- ③ Essentially Independent of Operating Temperature