

# Advanced Small Signal MOSFET 2N7000BU/2N7000TA

## FEATURES

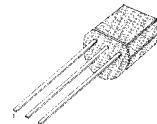
- Fast Switching Times
- Improved Inductive Ruggedness
- Lower Input Capacitance
- Extended Safe Operating Area
- Improved High Temperature Reliability

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

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

$I_D = 200\text{ mA}$

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 <sup>(1)</sup>	1000	mA
$V_{GS}$	Gate-to-Source Voltage	$\pm 30$	V
$P_D$	Total Power Dissipation ( $T_C=25^\circ\text{C}$ )	400	mW
	Linear Derating Factor	3.2	$\text{mW}/^\circ\text{C}$
$T_J, T_{STG}$	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	$^\circ\text{C}/\text{W}$

# 2N7000BU/2N7000TA

N-CHANNEL  
Small Signal MOSFET

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

Symbol	Characteristic	Min.	Typ.	Max.	Units	Test Condition
$\text{BV}_{\text{DSS}}$	Drain-Source Breakdown Voltage	60	--	--	V	$\text{V}_{\text{GS}}=0\text{V}, \text{I}_D=250\mu\text{A}$
$\text{V}_{\text{GS(th)}}$	Gate Threshold Voltage	0.3	--	3.9	V	$\text{V}_{\text{DS}}= \text{V}_{\text{GS}}, \text{I}_D=250\mu\text{A}$
		0.4	--	2.2		$\text{V}_{\text{DS}}= \text{V}_{\text{GS}}, \text{I}_D=1\text{mA}$
$\text{I}_{\text{GSS}}$	Gate-Source Leakage , Forward	--	--	100	nA	$\text{V}_{\text{GS}}=15\text{V}$
	Gate-Source Leakage , Reverse	--	--	-100		$\text{V}_{\text{GS}}=-15\text{V}$
$\text{I}_{\text{DSS}}$	Drain-to-Source Leakage Current	--	--	250	$\mu\text{A}$	$\text{V}_{\text{DS}}=60\text{V}$
		--	--	1000		$\text{V}_{\text{DS}}=45\text{V}, \text{T}_C=125^\circ\text{C}$
$\text{R}_{\text{DS(on)}}$	Static Drain-Source On-State Resistance <sup>(2)</sup>	--	--	5.0	$\Omega$	$\text{V}_{\text{GS}}=10\text{V}, \text{I}_D=0.5\text{A}$
$\text{g}_{\text{fs}}$	Forward Transconductance <sup>(2)</sup>	0.1	0.3	--	S	$\text{V}_{\text{DS}}=15\text{V}, \text{I}_D=0.5\text{A}$
$\text{C}_{\text{iss}}$	Input Capacitance	--	30	--	pF	$\text{V}_{\text{GS}}=0\text{V}, \text{V}_{\text{DS}}=25\text{V}, \text{f}=1\text{MHz}$
$\text{C}_{\text{oss}}$	Output Capacitance	--	12	--		
$\text{C}_{\text{rss}}$	Reverse Transfer Capacitance	--	3.0	--		
$\text{t}_{\text{d(on)}}$	Turn-On Delay Time	--	--	10	ns	$\text{V}_{\text{DD}}=30\text{V}, \text{I}_D=0.5\text{A}, \text{R}_G=15\Omega$ <sup>(2)(3)</sup>
$\text{t}_r$	Rise Time	--	--	10		
$\text{t}_{\text{d(off)}}$	Turn-Off Delay Time	--	--	10		
$\text{t}_f$	Fall Time	--	--	10		

### Notes :

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