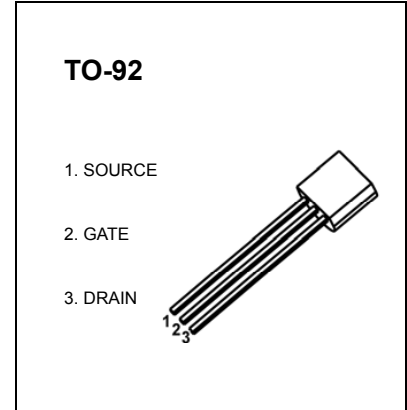




# TO-92 Plastic-Encapsulate MOSFETS

## 2N7000 MOSFET (N-Channel)

$V_{(BR)DSS}$	$R_{DS(on)MAX}$	$I_D$
60V	5Ω@10V	200mA
	6Ω@4.5V	



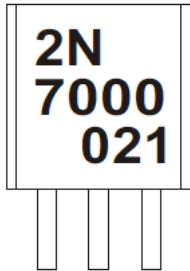
### FEATURE

- High density cell design for low  $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability

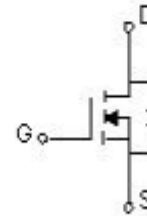
### APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

### MARKING



### Equivalent Circuit



### MAXIMUM RATINGS (Ta=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	$V_{DS}$	60	V
Continuous Drain Current	$I_D$	0.2	A
Power Dissipation	$P_D$	0.625	W
Thermal Resistance from Junction to Ambient	$R_{\theta JA}$	200	°C/W
Junction Temperature	$T_J$	150	°C
Storage Temperature	$T_{stg}$	-55 ~+150	

## MOSFET ELECTRICAL CHARACTERISTICS

$T_a=25\text{ }^\circ\text{C}$  unless otherwise specified

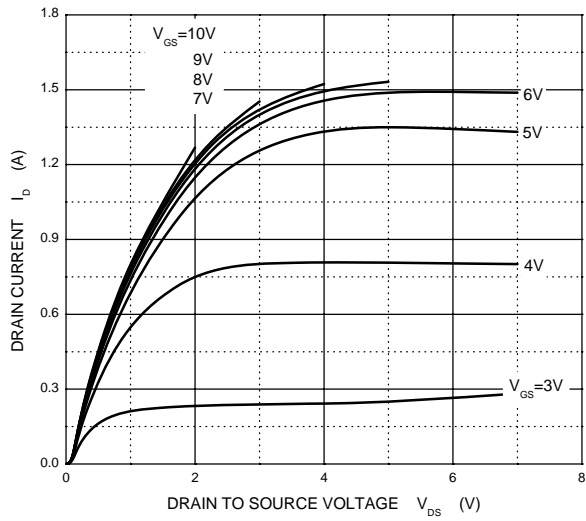
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0\text{ V}, I_D=10\mu\text{A}$	60			V
Gate-Threshold Voltage*	$V_{(GS)th}$	$V_{DS}=V_{GS}, I_D=1\text{mA}$	0.8		3	
Gate-body Leakage	$I_{GSS}$	$V_{DS}=0\text{ V}, V_{GS}=\pm 15\text{ V}$			$\pm 10$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60\text{ V}, V_{GS}=0\text{ V}$			1	$\mu\text{A}$
On-state Drain Current	$I_{D(ON)}$	$V_{GS}=4.5\text{ V}, V_{DS}=10\text{ V}$	75			mA
Drain-Source On-Resistance*	$R_{DS(on)}$	$V_{GS}=4.5\text{V}, I_D=75\text{mA}$			6	$\Omega$
		$V_{GS}=10\text{V}, I_D=500\text{mA}$			5	
Forward Trans conductance*	$g_{fs}$	$V_{DS}=10\text{ V}, I_D=200\text{mA}$	100			ms
Drain-source on-voltage*	$V_{DS(on)}$	$V_{GS}=10\text{V}, I_D=500\text{mA}$			2.5	V
		$V_{GS}=4.5\text{V}, I_D=75\text{mA}$			0.45	V
Input Capacitance **	$C_{iss}$	$V_{DS}=25\text{V}, V_{GS}=0\text{V}, f=1\text{MHz}$			60	pF
Output Capacitance **	$C_{oss}$				25	
Reverse Transfer Capacitance **	$C_{rss}$				5	
Turn-on Time **	$t_{d(on)}$	$V_{DD}=15\text{ V}, R_L=30\Omega$ $I_D=500\text{mA}, V_{GEN}=10\text{ V}$ $R_G=25\Omega$			10	ns
Turn-off Time **	$t_{d(off)}$				10	

\*Pulse test

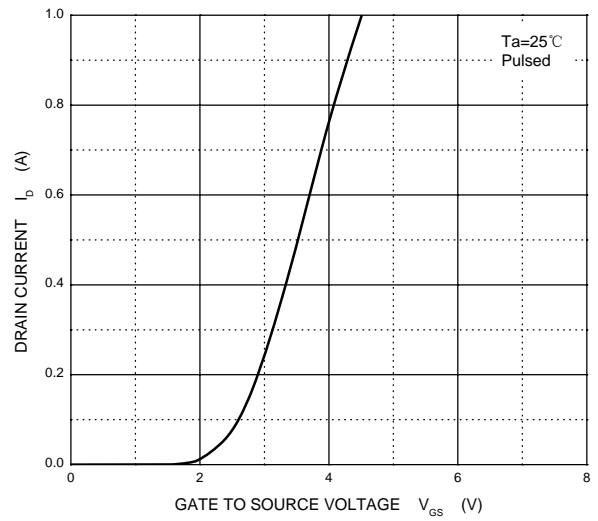
\*\*These parameters have no way to verify.

# Typical Characteristics

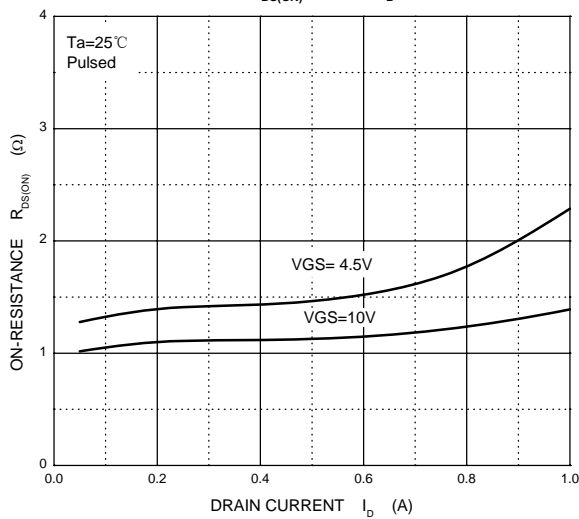
**Output Characteristics**



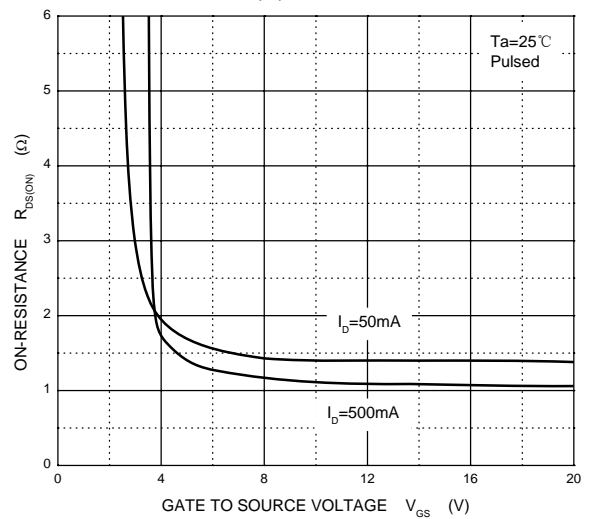
**Transfer Characteristics**



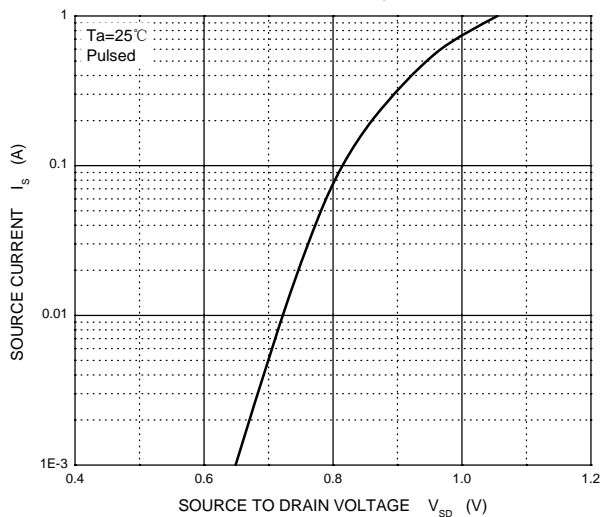
**$R_{DS(ON)}$  —  $I_D$**



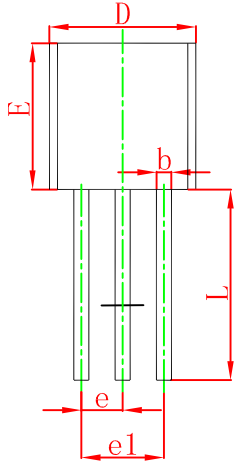
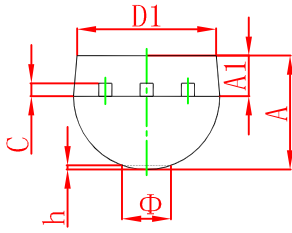
**$R_{DS(ON)}$  —  $V_{GS}$**



**$I_S$  —  $V_{SD}$**

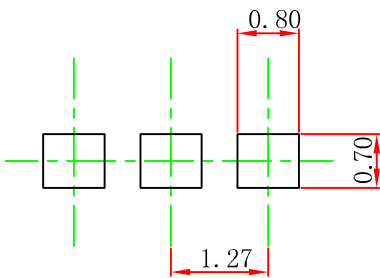


## TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.300	4.700	0.169	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

## TO-92 Suggested Pad Layout



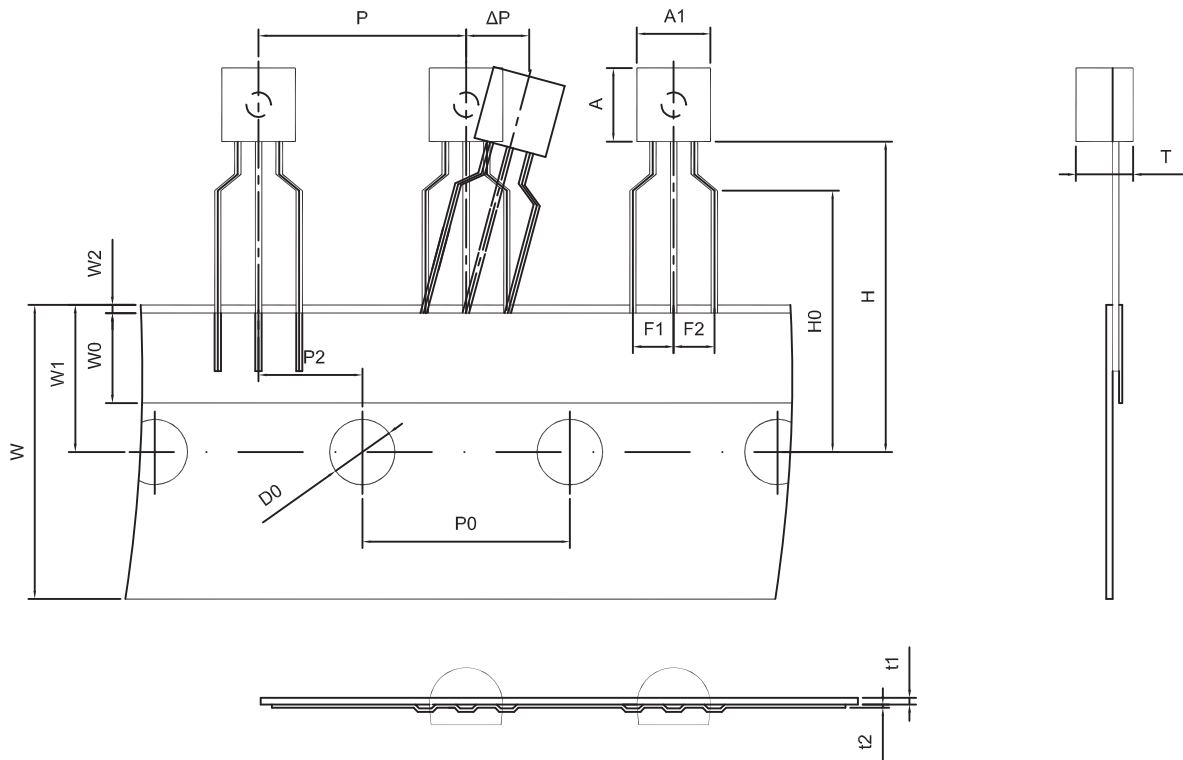
### Note:

1. Controlling dimension: in millimeters.
2. General tolerance:  $\pm 0.05\text{mm}$ .
3. The pad layout is for reference purposes only.

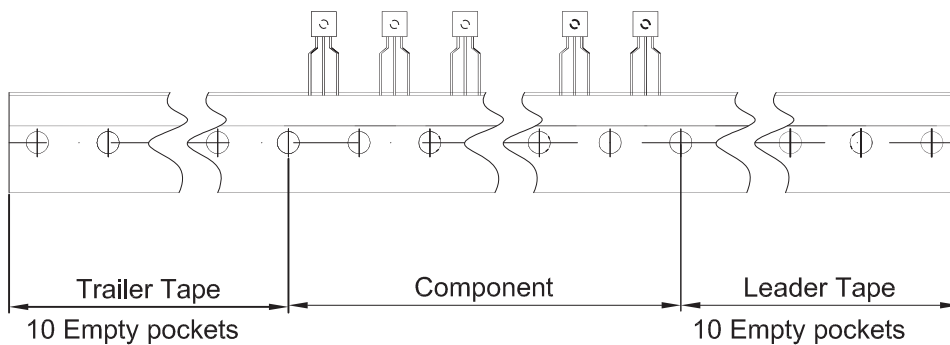
### NOTICE

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TO-92 PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5	4.5	3.5	12.7	12.7	6.35	2.5	2.5	18.0
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0	9.0	1.0 MAX.	19.0	16.0	4.0	0.4	0.2	0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250