

# 2N7002KW

## Features

- High density cell design for Low  $R_{DS(ON)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- Low Input/Output Leakage
- Epoxy meets UL 94 V-0 flammability rating
- Moisture Sensitivity Level 1
- Halogen free available upon request by adding suffix "-HF"

## Mechanical Data

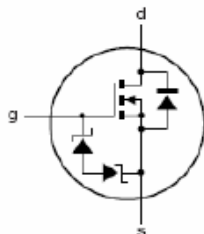
- Case: SOT-323, Molded Plastic
- Terminals: Solderable per MIL-STD-202, Method 208
- Terminal Connections: See Diagram
- Marking: 72K

## Maximum Ratings

- Operating Temperature:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Storage Temperature:  $-55^{\circ}\text{C}$  to  $+150^{\circ}\text{C}$
- Maximum Thermal Resistance; 625K/W Junction To Ambient

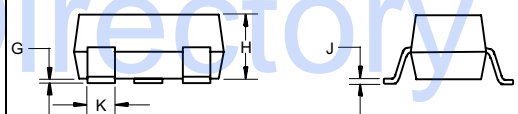
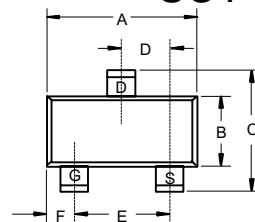
Parameter	Symbol	Value	Unit
Drain-Source-Voltage	$V_{DSS}$	60	V
Drain Current	$I_D$	340	mA
Total Power Dissipation	$P_D$	200	mW

### Equivalent circuit



## N-Channel Enhancement Mode Field Effect Transistor

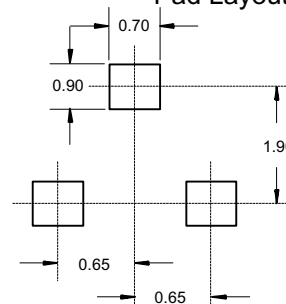
### SOT-323



#### DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	

### Suggested Solder Pad Layout



**MOSFET ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise specified)**

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Static Characteristics</b>						
Drain-Source Breakdown Voltage	V <sub>DS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
Gate Threshold Voltage*	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA	1			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V			1	μA
Gate –Source leakage current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±10	μA
Drain-Source On-Resistance*	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 200mA			5.3	Ω
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 500mA			5	Ω
Diode Forward Voltage	V <sub>SD</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA			1.5	V
Recovered charge	Q <sub>r</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA, V <sub>R</sub> = 25V, di/dt = -100A/μs		30		nC
<b>Dynamic Characteristics**</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz			40	pF
Output Capacitance	C <sub>oss</sub>				30	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				10	pF
<b>Switching Characteristics**</b>						
Turn-On Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 50V, R <sub>G</sub> = 50Ω, R <sub>GS</sub> = 50Ω, R <sub>L</sub> = 250Ω			10	ns
Turn-Off Delay Time	t <sub>d(off)</sub>				15	ns
Reverse recovery Time	t <sub>rr</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA, V <sub>R</sub> = 25V, di/dt = -100A/μs		30		ns
<b>GATE-SOURCE ZENER DIODE</b>						
Gate-Source Breakdown Voltage	BV <sub>GSO</sub>	I <sub>GS</sub> = ±1mA (Open Drain)	±21.5		±30	V

**Notes:**

\*Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%.

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



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### Ordering Information :

Device	Packing
Part Number-TP	Tape&Reel: 3Kpcs/Reel

Note : Adding "-HF" suffix for halogen free, eg. Part Number-TP-HF

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