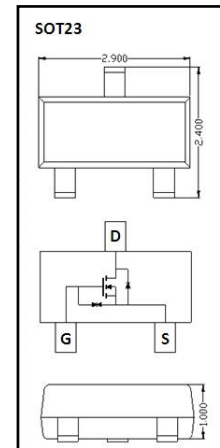


## DATA SHEET

### 2N7002K

- ◇Epoxy meets UL 94 V-0 flammability rating
- ◇High density cell design for low  $R_{DS(ON)}$
- ◇Voltage controlled small signal switch
- ◇Rugged and reliable
- ◇ESD Protected up to 2KV (HBM)

Device Marking Code	
2N7002K	72K



#### MAXIMUM RATINGS ( $T_a = 25\text{ }^\circ\text{C}$ )

Symbol	Parameter	Value	Units
$V_{DS}$	Drain-source Voltage	60	V
$V_{GS}$	Gate-source Voltage	$\pm 20$	V
$I_D$	Drain Current	340	mA
$P_d$	Total Power Dissipation	300	mW
$T_J$	Junction Temperature	-55 to 150	$^\circ\text{C}$
$T_{J_s}$	Storage Temperature	-55 to 150	$^\circ\text{C}$
R	Thermal Resistance from Junction to Ambient	357	$^\circ\text{C}/\text{W}$

#### ELECTRICAL CHARACTERISTICS ( $T_a = 25\text{ }^\circ\text{C}$ )

Symbol	Parameter	Test Conditions	Min	Max	Units
$V_{(BR)DSS}$	Drain-source Voltage Breakdown Voltage	$V_{GS}=0V, I_D=10\mu A$	60		V
$V_{GS(th)}$	Gate-Threshold Voltage	$V_{DS}=V_{GS}, I_D=1mA$	1.0	2.5	V
$I_{GSS}$	Gate-body Leakage	$V_{DS}=0V, V_{GS}=\pm 10V$ $V_{DS}=0V, V_{GS}=\pm 5V$		$\pm 200$ $\pm 100$	nA nA
$I_{DSS}$	Zero Gate Voltage Drain Current	$V_{DS}=48V, V_{GS}=0V$		1	$\mu A$
$R_{dson}$	Drain-source On-resistance	$V_{GS}=4.5V, I_D=200mA$ $V_{GS}=10V, I_D=500mA$		5.3 5.0	$\Omega$
$V_{sd}$	Diode Forward Voltage	$V_{GS}=0V, I_s=300mA$		1.5	V
Qr	Recovered charge	$V_{gs}=0V, I_s=300mA, V_r=25V$ $DI_s/dt=-100A/\mu s$		30	nC

Ciss	Input Capacitance	$V_{DS}=10V$		40	
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Coss	Output Capacitance	VGS=0V		30	pF
Crss	Reverse Transfer Capacitance	F=1MHz		10	

### SWITCHING

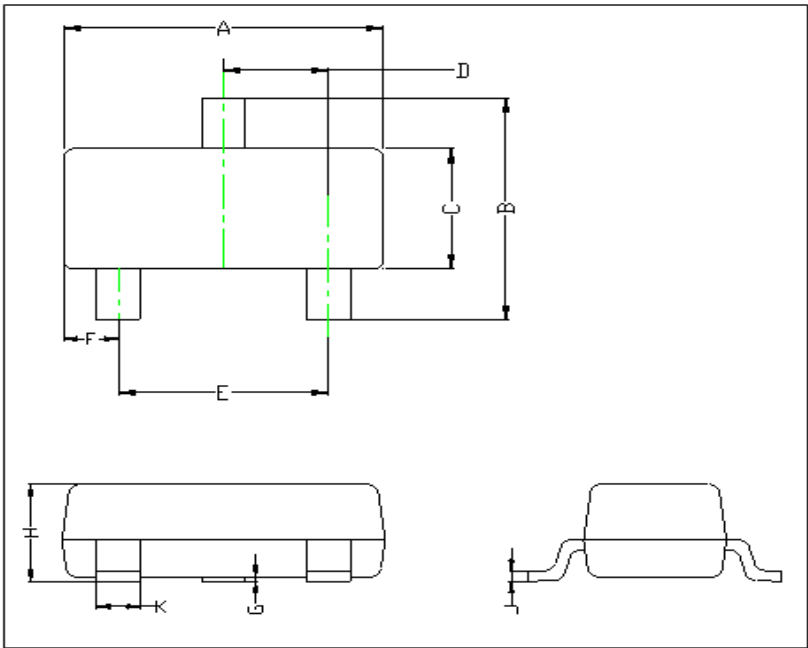
Td(on)	Turn on time	VDD=50V,RL=250Ω		10	ns
Td(off)	Turn off time	RGS=50Ω,VGS=10V RG=50Ω		15	
trr	Reverse recovery time	VGS=0V,Is=300mA VR=25V DIs/dt=-100A/us		30	

### ORDERING INFORMATION

Device	Package	Shipping	Tape wide	Emboss pitch	Tape specification	Notes
2N7002K	SOT23	Tape & Reel 3000pcs /7" Reel	8mm	4mm	Conductive	

### PACKAGE DIMENSIONS

**Package Outline : SOT23**



Symbol	Dimensions in mm	
	Min.	Max.
A	2.800	3.040
B	2.100	2.640
C	1.200	1.400
D	0.890	1.030
E	1.780	2.050
F	0.450	0.600
G	0.013	0.100
H	0.900	1.110
J	0.090	0.180
K	0.370	0.510

**SOT23 Package Outline**

Note:  
 1. Halogen free ,EMC  
 2. Pb free solder  
 3. Lead thickness solder plating  
 4. Lead frame CAC-5  
 5. Other Tolerance ±0.05  
 6. Dimensions are exclusive of Burrs Mold Flash and Tie Bar extrusions  
 7. Unit :mm

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