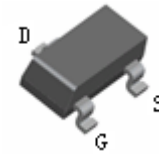


## FEATURES

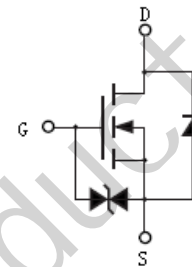
- Low on-resistance.
- High ESD.
- High-speed switching.
- Low-voltage drive(4V).
- Drive circuits can be simple.
- Parallel use is easy.



SOT-23

## APPLICATIONS

- N-channel enhancement mode effect transistor.
- Switching application.



## ORDERING INFORMATION

Type No.	Marking	Package Code
2N7002K	7002K	SOT-23

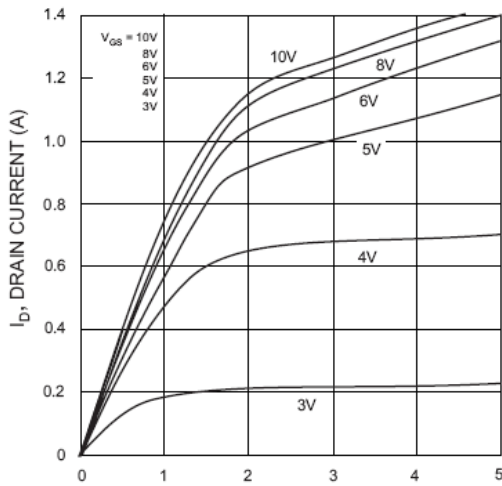
## MAXIMUM RATING @ Ta=25°C unless otherwise specified

Symbol	Parameter	Value	Units
$V_{DSS}$	Drain-Source voltage	63	V
$V_{GSS}$	Gate -Source voltage	$\pm 20$	V
$I_D$	Drain current	-continuous	$\pm 300$
		-Pulsed	$\pm 800$
$I_S$	Source current	-continuous	200
		-Pulsed	0.8
$P_D$	Power Dissipation	350	mW
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	357	$^{\circ}C/W$
$T_J, T_{stg}$	Junction and Storage Temperature	-65 to +150	$^{\circ}C$

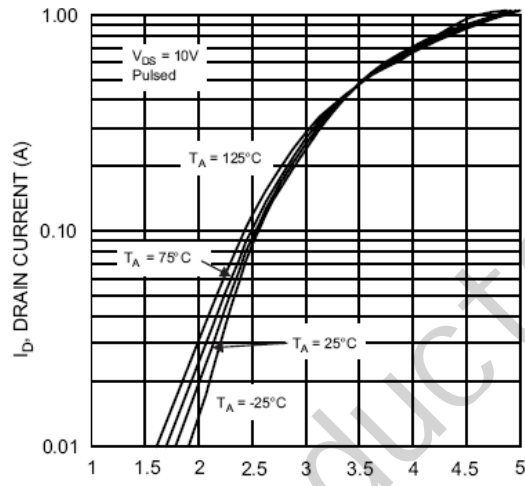
**ELECTRICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified**

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Gate leakage current	$I_{GSS}$	$V_{GS}=\pm 20V, V_{DS}=0V$			$\pm 6$	$\mu A$
Forward voltage	$V_{SD}$	$I_S=0.3A, V_{GS}=0V$			1.2	V
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS}=0V, I_D=250\mu A$	63			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}=V_{GS}, I_{DS}=250\mu A$	1.1		2.4	V
Drain cutoff Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			0.06	$\mu A$
Drain-source on-state resistance	$R_{DS(on)}$	$I_D=0.05A, V_{GS}=5V$			7.5	$\Omega$
		$I_D=0.5A, V_{GS}=10V$			7.5	
Forward transfer admittance	$ Y_{fs} $	$V_{DS}=10V, I_D=200mA$	80			mS
Input capacitance	$C_{ISS}$	$V_{DS}=10V, V_{GS}=0V, f=1.0MHz$		33		pF
Output capacitance	$C_{OSS}$			14		
Reverse transfer capacitance	$C_{RSS}$			9		
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD}=30V, I_D=150mA,$ $R_L=200\Omega, V_{GS}=10V,$ $R_{GEN}=10\Omega$		6		ns
Rise time	$t_R$			5		ns
Turn-Off Delay Time	$t_{D(OFF)}$			13		ns
Fall time	$t_F$			80		ns
Total gate charge	$Q_g$	$V_{DD}=30V, V_{GS}=10V$ $I_D=200mA$		3	6	nC
Gate-source charge	$Q_{gs}$			0.6		nC
Gate-drain charge	$Q_{gd}$			0.5		nC

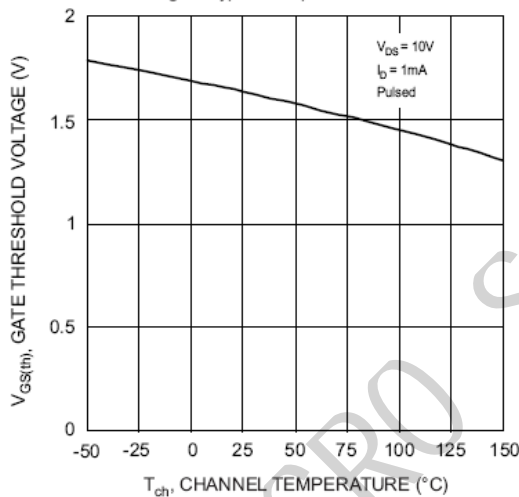
## TYPICAL CHARACTERISTICS @ Ta=25°C unless otherwise specified



V<sub>DS</sub>, DRAIN-SOURCE VOLTAGE (V)  
 Fig. 1 Typical Output Characteristics



V<sub>GS</sub>, GATE-SOURCE VOLTAGE (V)  
 Fig. 2 Typical Transfer Characteristics



T<sub>ch</sub>, CHANNEL TEMPERATURE (°C)  
 Fig. 3 Gate Threshold Voltage vs. Channel Temperature

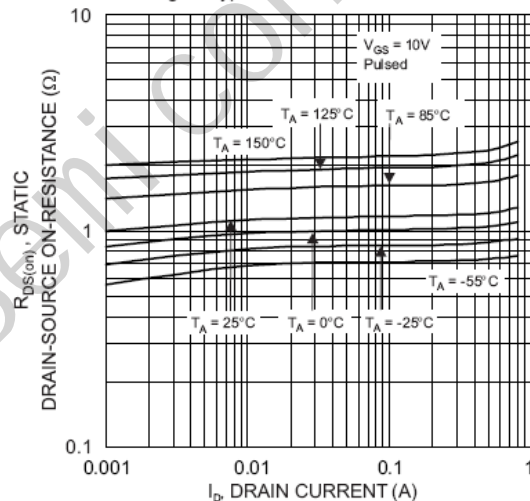


Fig. 4 Static Drain-Source On-Resistance Vs. Drain Current

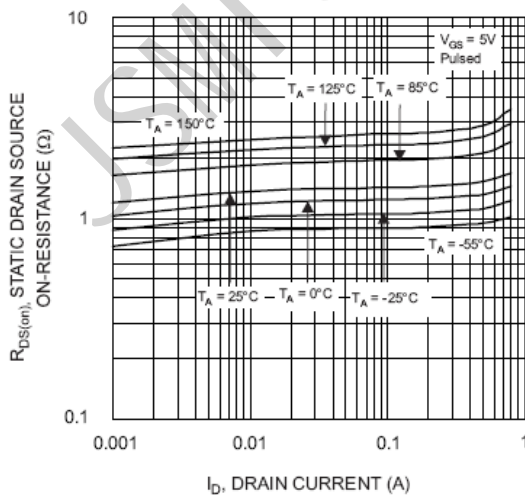


Fig. 5 Static Drain-Source On-Resistance vs. Drain Current

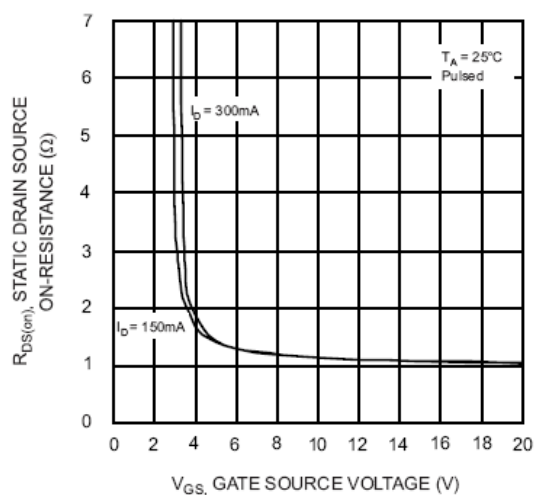
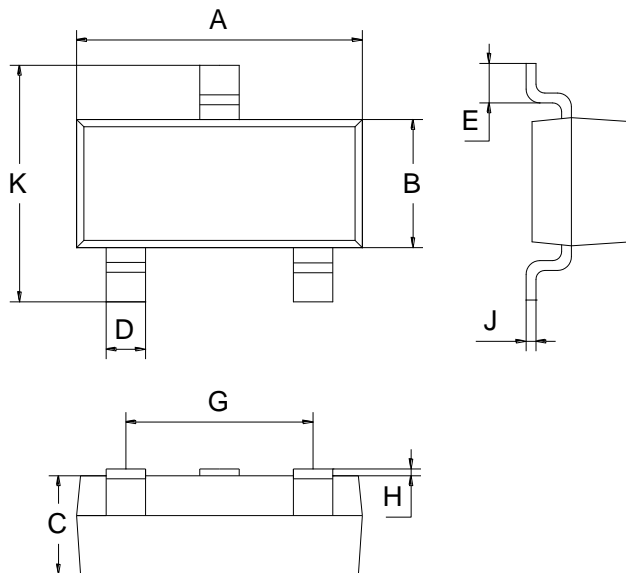


Fig. 6 Static Drain-Source On-Resistance vs. Gate-Source Voltage

## PACKAGE OUTLINE

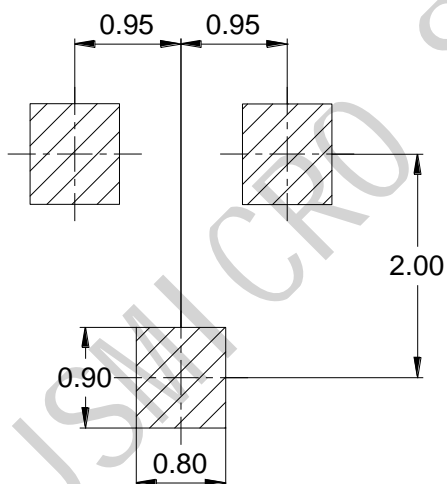
Plastic surface mounted package

SOT-23



SOT-23		
Dim	Min	Max
A	2.70	3.10
B	1.10	1.50
C	0.90	1.10
D	0.30	0.50
E	0.35	0.48
G	1.80	2.00
H	0.02	0.10
J	0.05	0.15
K	2.20	2.60
All Dimensions in mm		

## SOLDERING FOOTPRINT



Unit: mm

## PACKAGE INFORMATION

Device	Package	Shipping
2N7002K	SOT-23	3000 pcs / Tape & Reel