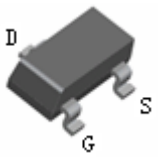
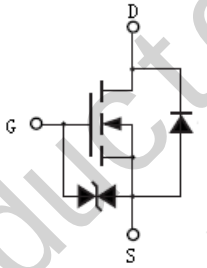
FEATURES

- 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℃ unless otherwise specified

Symbol	Parameter	Value	Units
V_{DSS}	Drain-Source voltage	63	V
V_{GSS}	Gate -Source voltage	±20	V
I_D	Drain current -continuous -Pulsed	±300 ±800	mA mA
I_S	Source current -continuous -Pulsed	200 0.8	mA A
P_D	Power Dissipation	350	mW
$R_{\Theta JA}$	Thermal Resistance,Junction to Ambient	357	℃/W
T_J, Tstg	Junction and Storage Temperature	-65 to +150	℃

ELECTRICAL CHARACTERISTICS @ Ta=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	MIN	TYP	MAX	UNIT
Gate leakage current	I_{GSS}	V_{GS}=±20V,V_{DS}=0V			±6	μA
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=250uA	63			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS} , I_{DS}=250uA	1.1		2.4	V
Drain cutoff Current	I_{DSS}	V_{DS}=60V, V_{GS}=0V			0.06	μA
Drain-source on-state resistance	$R_{DS(on)}$	I_D=0.05A,V_{GS}=5V			7.5	Ω
		I_D=0.5A,V_{GS}=10V			7.5	
Forward transfer admittance	$\lvert Y_{fs} \rvert$	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 = 200Ω, V_{GS}= 10V, R_{GEN}= 10Ω		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℃ unless otherwise specified

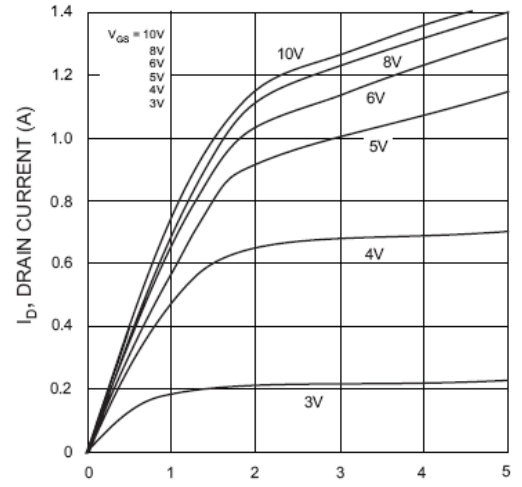


Fig. 1 Typical Output Characteristics

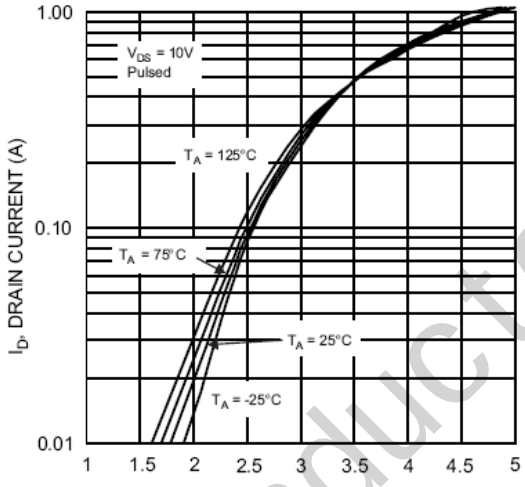


Fig. 2 Typical Transfer Characteristics

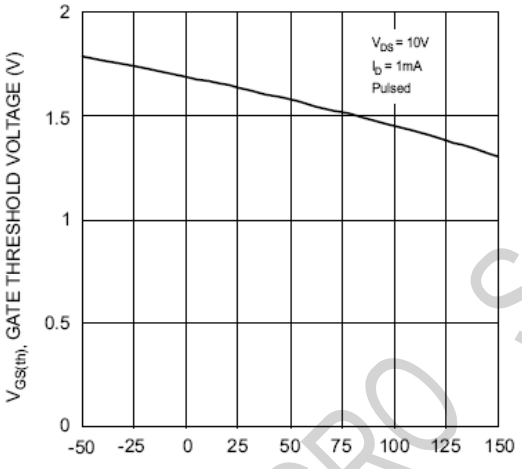


Fig. 3 Gate Threshold Voltage
vs. Channel Temperature

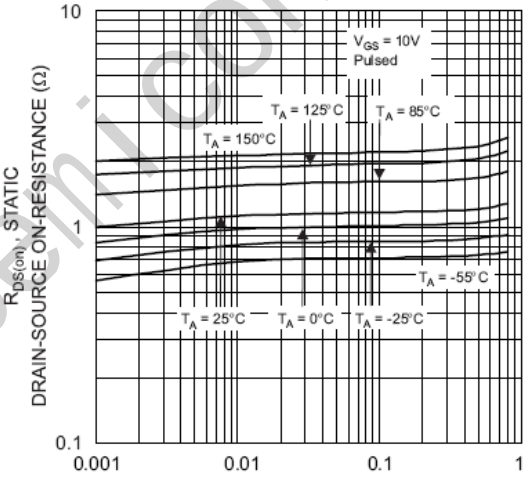


Fig. 4 Static Drain-Source On-Resistance
Vs. Drain Current

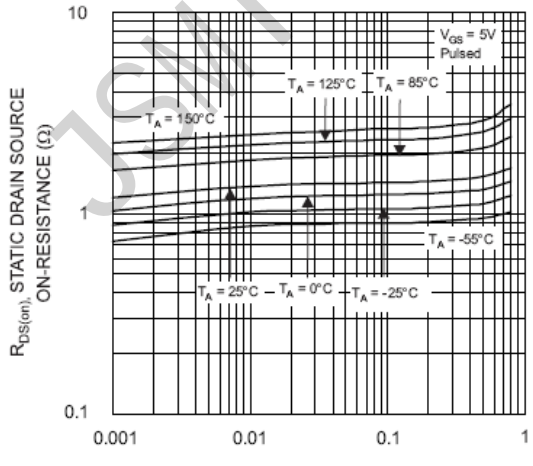


Fig. 5 Static Drain-Source On-Resistance
vs. Drain Current

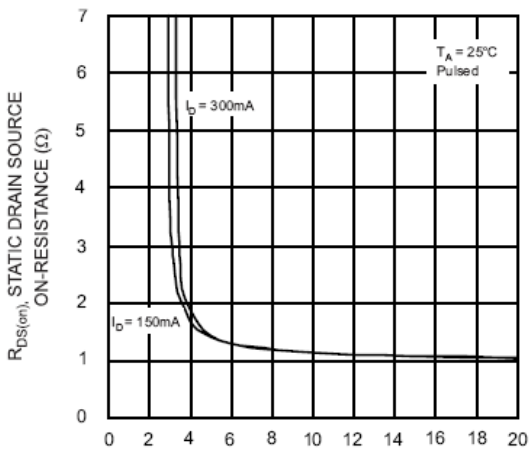
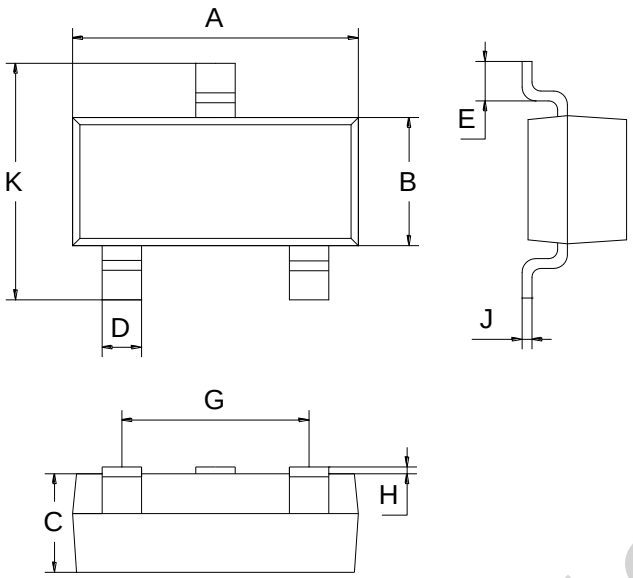


Fig. 6 Static Drain-Source On-Resistance
vs. Gate-Source Voltage

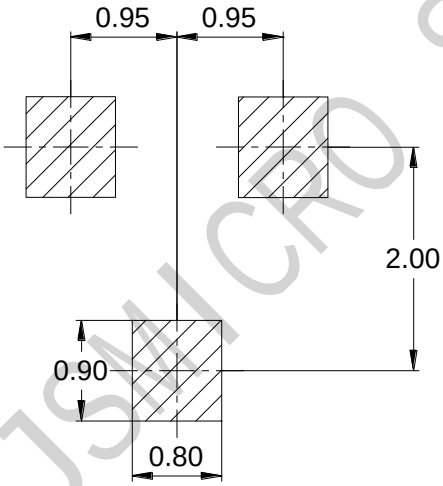
PACKAGE OUTLINE

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