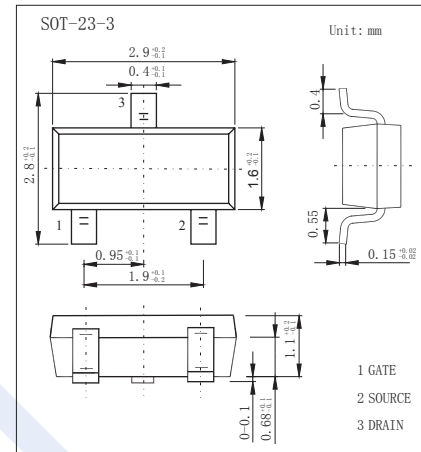
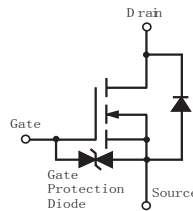


## N-Channel Enhancement MOSFET

## 2N7002K

## ■ Features

- Low On-Resistance:  $R_{DS(on)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected 2KV HBM

■ Absolute Maximum Ratings  $T_a=25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit	
Drain-Source Voltage	$V_{DS}$	60	V	
Gate-Source Voltage -Continuous	$V_{GS}$	$\pm 20$		
Drain Current	$I_D$	-Continuous ( Note:1)	300	mA
		-Pulsed	800	
Power Dissipation (Note 1)	$P_D$	350	mW	
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	357	$^\circ\text{C}/\text{W}$	
Junction Temperature	$T_J$	150	$^\circ\text{C}$	
Junction and Storage Temperature Range	$T_{stg}$	-55 to 150		

Notes: 1. Device mounted on FR-4 PCB.

■ Electrical Characteristics  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage (Note.2)	$V_{DSS}$	$I_D=100\ \mu\text{A}$ , $V_{GS}=0\text{V}$	60			V
Zero Gate Voltage Drain Current (Note.2)	$I_{DSS}$	$V_{DS}=60\text{V}$ , $V_{GS}=0\text{V}$			1	$\mu\text{A}$
Gate-Body Leakage Current (Note.2)	$I_{GSS}$	$V_{DS}=0\text{V}$ , $V_{GS}=\pm 20\text{V}$			$\pm 10$	$\mu\text{A}$
Gate Threshold Voltage (Note.2)	$V_{GS(th)}$	$V_{DS}=V_{GS}$ , $I_D=250\ \mu\text{A}$	1	1.6	2.5	V
Static Drain-Source On-Resistance (Note.2)	$R_{DS(on)}$	$V_{GS}=10\text{V}$ , $I_D=500\text{mA}$			2	$\Omega$
		$V_{GS}=10\text{V}$ , $I_D=50\text{mA}$			3	
Forward Transfer Admittance (Note.2)	$ Y_{fs} $	$V_{GS}=10\text{V}$ , $I_D=200\text{mA}$	80			ms
Input Capacitance	$C_{iss}$	$V_{GS}=0\text{V}$ , $V_{DS}=25\text{V}$ , $f=1\text{MHz}$			50	$\text{pF}$
Output Capacitance	$C_{oss}$				25	
Reverse Transfer Capacitance	$C_{rss}$				5	
Total Gate Charge	$Q_g$	$V_{GS}=4.5\text{V}$ , $V_{DS}=15\text{V}$ , $I_D=200\text{mA}$			0.8	nC
Turn-On DelayTime	$t_{d(on)}$	$I_D=200\text{mA}$ , $V_{DS}=30\text{V}$ , $R_G=10\Omega$ , $V_{GEN}=10\text{V}$ , $R_L=150\Omega$			20	ns
Turn-Off DelayTime	$t_{d(off)}$				40	

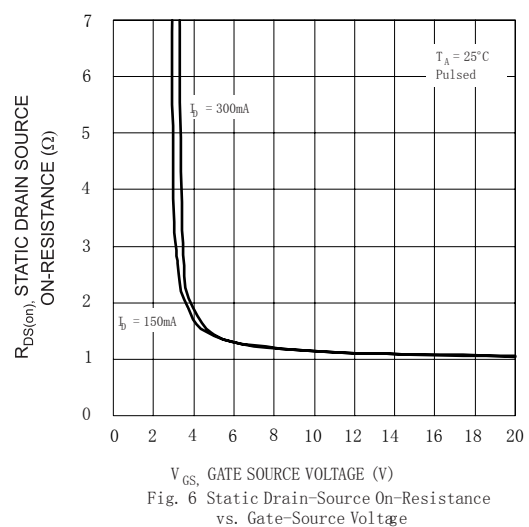
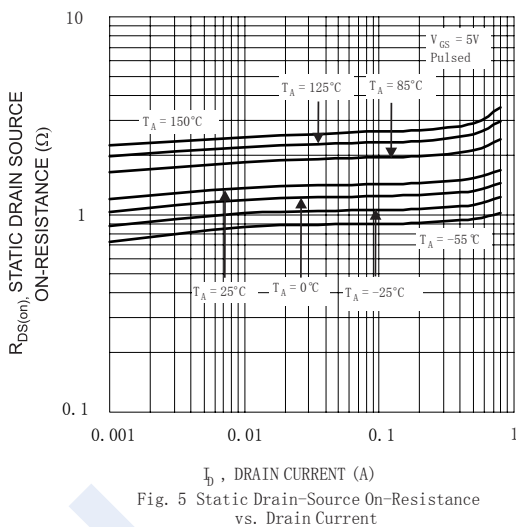
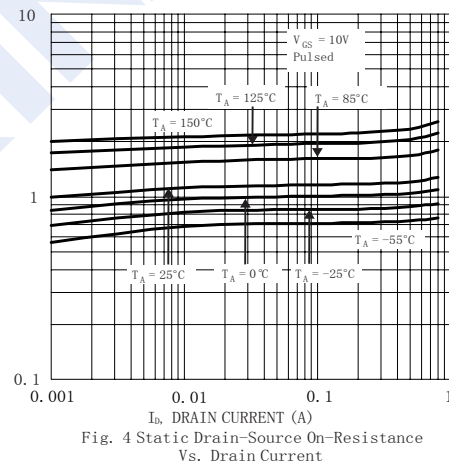
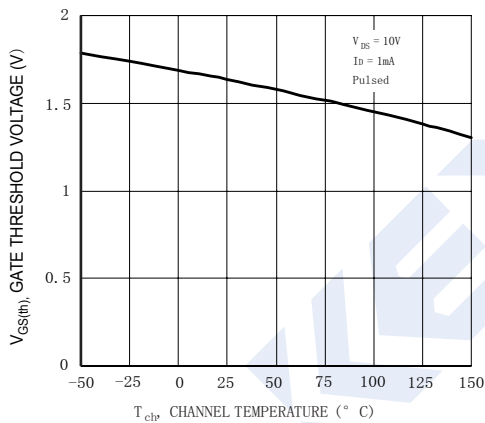
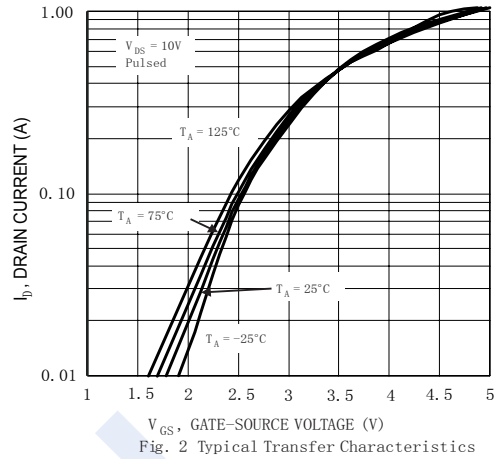
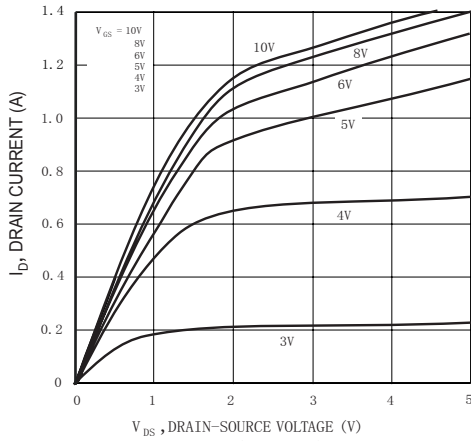
Note: 2. Short duration test pulse used to minimize self-heating effect.

## ■ Marking

Marking	702.
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# 2N7002K

## Typical Characteristics



2N7002K

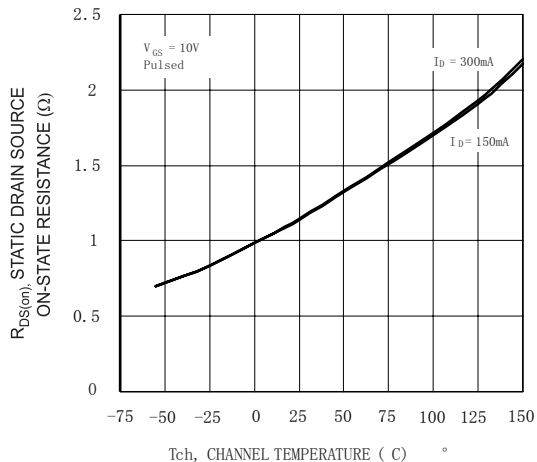


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

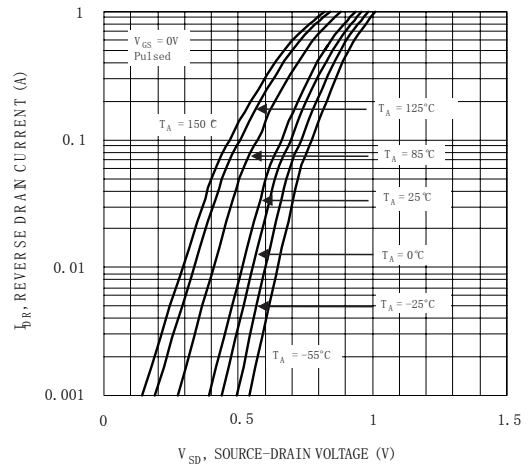


Fig. 8 Reverse Drain Current vs. Source-Drain Voltage

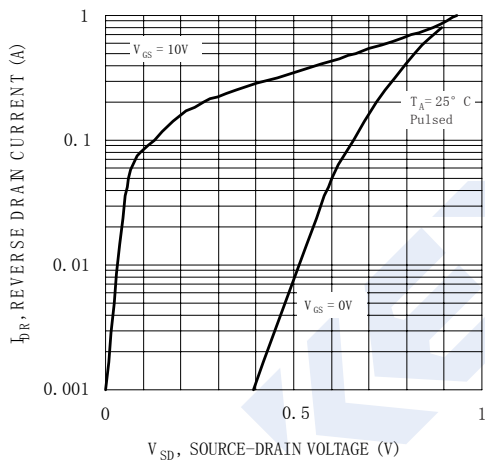


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage

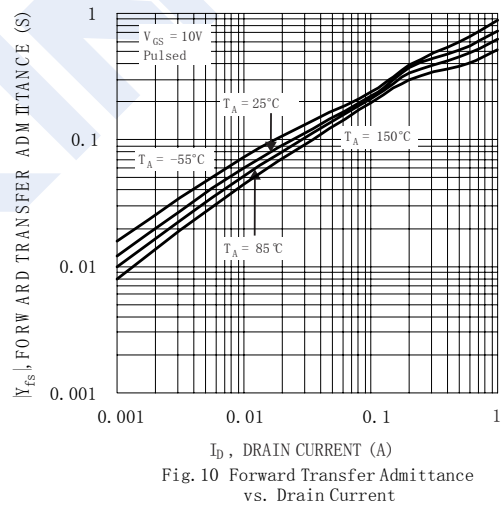


Fig. 10 Forward Transfer Admittance vs. Drain Current