



N-Channel High Density Trench MOSFET (60V, 0.5A)

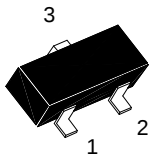
PRODUCT SUMMARY

V_{DS}	I_D	$R_{DS(on)}$ (ohm) Max
60V	0.5A	3 @ $V_{GS} = 10V$, $I_D=0.5A$
		5 @ $V_{GS} = 5V$, $I_D=0.05A$

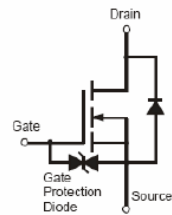
Features

- Low On-Resistance
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- ESD Protected Up To 2KV

2N7002K Pin Assignment & Symbol



3-Lead Plastic **SOT-23**
Pin 1: Gate 2: Source 3: Drain



Absolute Maximum Ratings ($T_A=25^{\circ}C$, unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current ^a	0.5	A
I_{DM}	Drain Current (Pulsed) ^b	0.8	A
P_D	Total Power Dissipation @ $T_A=25^{\circ}C$ ^a	0.35	W
T_j, T_{stg}	Operating Junction and Storage Temperature Range	-55 to +150	$^{\circ}C$
$R_{\theta JA}$	Thermal Resistance Junction to Ambient (PCB mounted)	357	$^{\circ}C/W$

a: Device mounted on FR-4 PCB

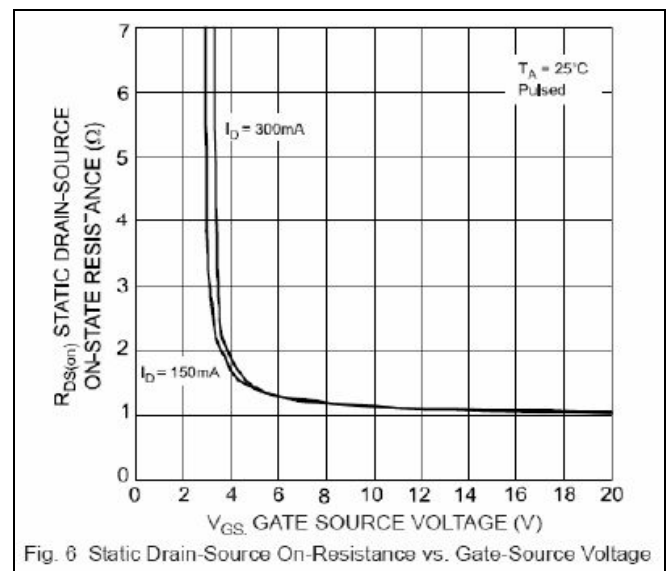
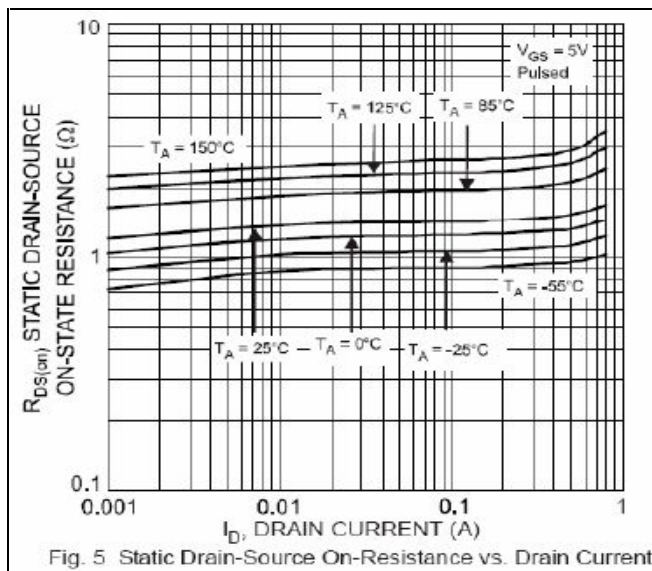
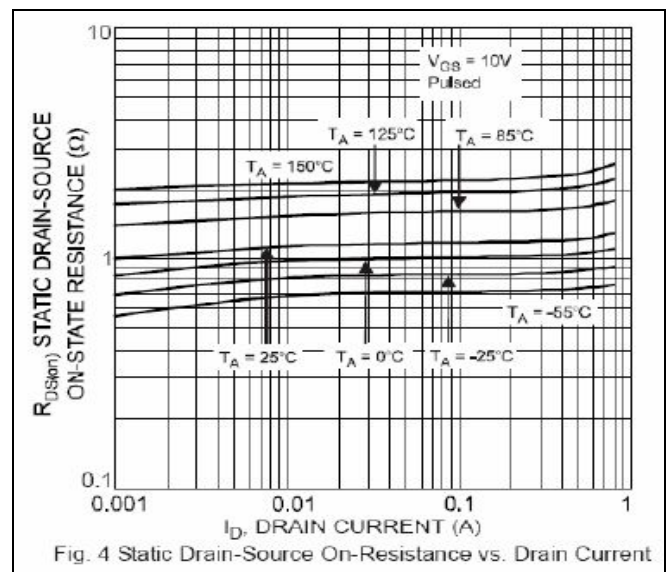
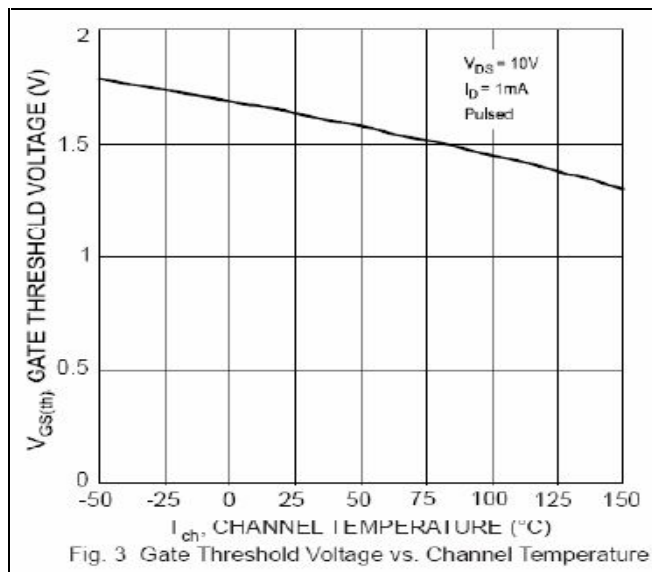
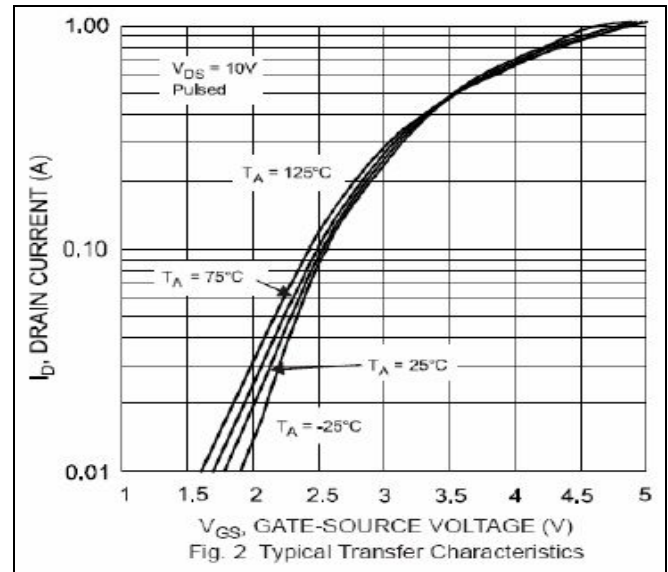
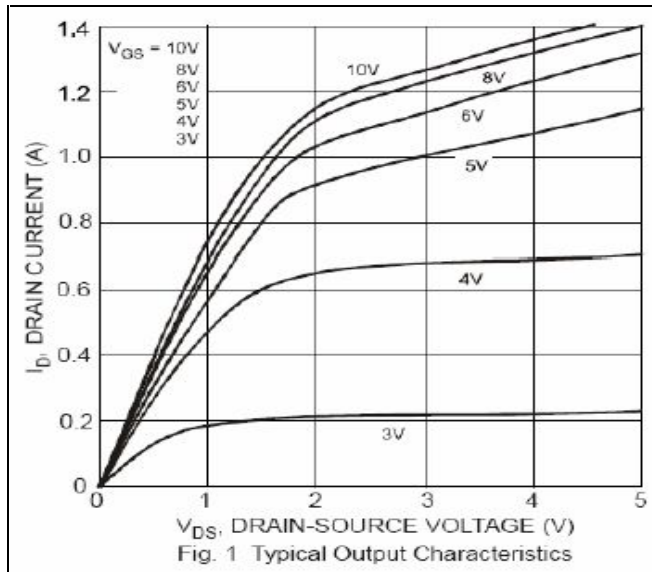
b: Pulse width $\leq 10\mu s$, Duty Cycle $\leq 1\%$

**Electrical Characteristics** ($T_A=25^{\circ}\text{C}$, unless otherwise noted)

Symbol	Characteristic	Test Conditions	Min.	Typ.	Max.	Unit
• Off Characteristics^c						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=10\mu A$	60	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=60V, V_{GS}=0V$	-	-	1	μA
I_{GSS}	Gate-Body Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0V$	-	-	± 10	μA
• On Characteristics^c						
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=10V, I_D=1mA$	1.0	-	2.0	V
$R_{DS(on)}$	Drain-Source On-State Resistance	$V_{GS}=10V, I_D=0.5A$	-	-	3	Ω
		$V_{GS}=5V, I_D=0.05A$	-	-	5	
g_{FS}	Forward Transconductance	$V_{DS}=10V, I_D=0.2A$	80	-	-	mS
• Dynamic Characteristics						
C_{iss}	Input Capacitance	$V_{DS}=25V, V_{GS}=0V, f=1MHz$	-	-	50	pF
C_{oss}	Output Capacitance		-	-	25	
C_{rss}	Reverse Transfer Capacitance		-	-	5	

C: Short duration pulse test used to minimize self-heating effect

Characteristics Curve



Characteristics Curve

