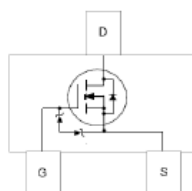
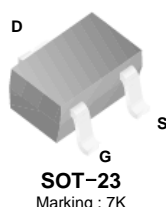


2N7002K

N-Channel Enhancement Mode Field Effect Transistor

Features

- Low On-Resistance
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage
- Ultra-Small Surface Mount Package
- Pb Free/RoHS Compliant
- ESD HBM=2000V (Typical:3000V) as per JESD22 A114 and ESD CDM=2000V as per JESD22 C101



Absolute Maximum Ratings * $T_A = 25^\circ\text{C}$ unless otherwise noted

Symbol	Parameter	Value	Units
V _{DSS}	Drain-Source Voltage	60	V
V _{DGR}	Drain-Gate Voltage R _{GS} ≤ 1.0MΩ	60	V
V _{GSS}	Gate-Source Voltage	±20	V
I _D	Drain Current Continuous Pulsed	300 800	mA
T _J	Operating Junction Temperature Range	-55 to +150	°C
T _{STG}	Storage Temperature Range	-55 to +150	°C

* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Thermal Characteristics

Symbol	Parameter	Value	Units
P_D	Total Device Dissipation Derating above $T_A = 25^\circ\text{C}$	350 2.8	mW mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient *	350	$^\circ\text{C}/\text{W}$

* Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch. Minimum land pad size

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

Symbol	Parameter	Test Condition	MIN	MAX	Units
Off Characteristics (Note1)					
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} = 0V, I _D = 10uA	60		V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} = 60V, V _{GS} = 0V V _{DS} = 60V, V _{GS} = 0V, @T _C =125°C		1.0 500	μA
I _{GSS}	Gate-Body Leakage	V _{GS} = ±20V, V _{DS} = 0V		±10	μA
On Characteristics (Note1)					
V _{GS(th)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250uA	1.0	2.5	V
R _{DS(ON)}	Satic Drain-Source On-Resistance	V _{GS} = 10V, I _D = 0.5A V _{GS} = 4.5V, I _D = 200mA		2 4	Ω
I _{D(ON)}	On-State Drain Current	V _{GS} = 10V, V _{DS} = 7.5V	1.5		A
g _{FS}	Forward Transconductance	V _{DS} = 10V, I _D = 0.2A	200		mS
Dynamic Characteristics					
C _{iss}	Input Capacitance	V _{DS} = 25V, V _{GS} = 0V, f = 1.0MHz		50	pF
C _{oss}	Output Capacitance			15	pF
C _{rss}	Reverse Transfer Capacitance			6	pF
Switching Characteristics					
t _{D(ON)}	Turn-On Delay Time	V _{DD} = 30V, I _{DSS} = 200mA, R _G = 10Ω, V _{GS} = 10V		5	ns
t _{D(OFF)}	Turn-Off Delay Time			30	

Note1 : Short duration test pulse used to minimize self-heating effect.

Typical Performance Characteristics

Figure 1. On-Region Characteristics

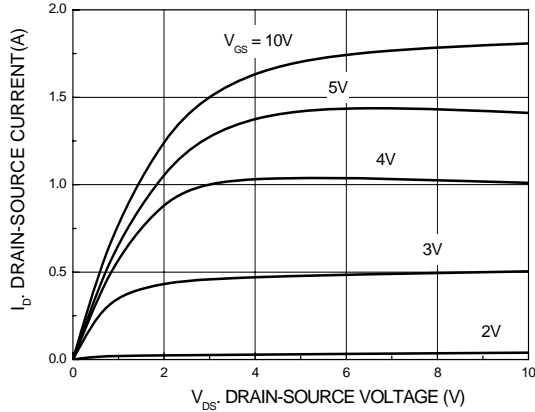


Figure 2. On-Resistance Variation with Gate Voltage and Drain Current

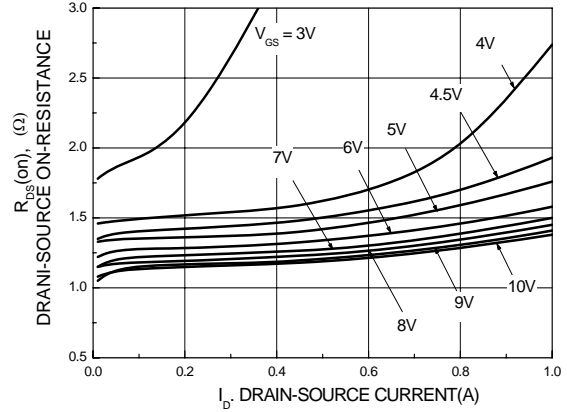


Figure 3. On-Resistance Variation with Temperature

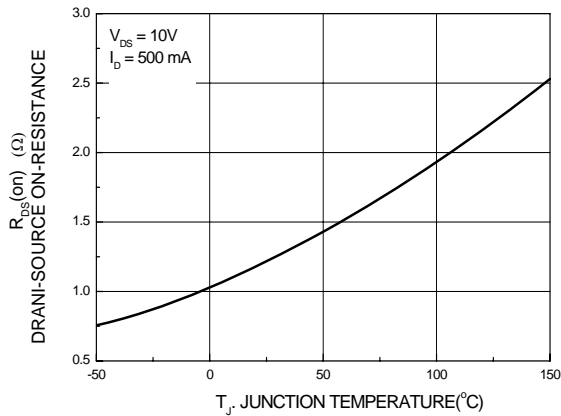


Figure 4. On-Resistance Variation with Gate-Source Voltage

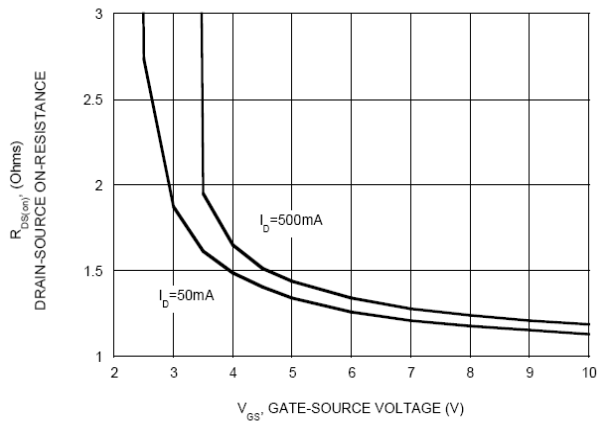


Figure 5. Transfer Characteristics

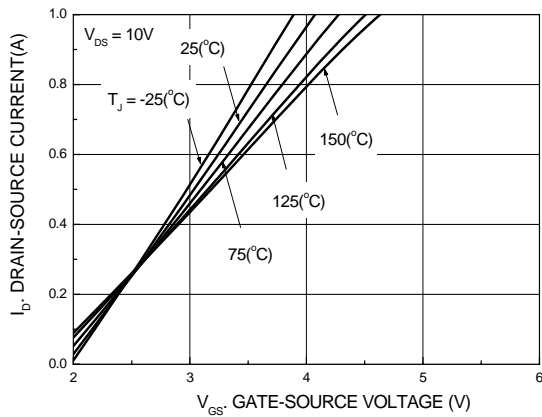
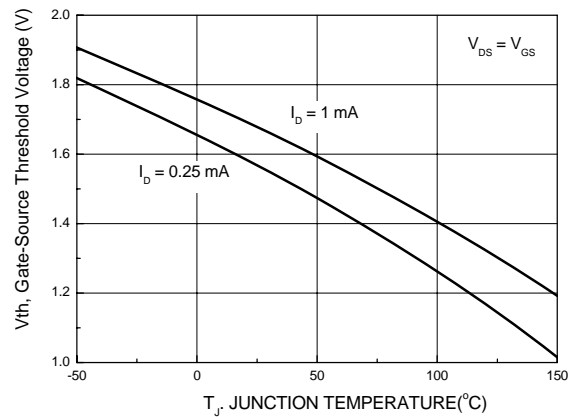
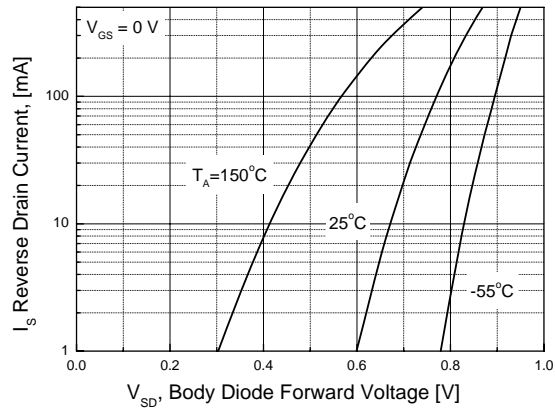


Figure 6. Gate Threshold Variation with Temperature



Typical Performance Characteristics (Continue)

Figure 7. Reverse Drain Current Variation with Diode Forward Voltage and Temperature





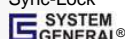


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