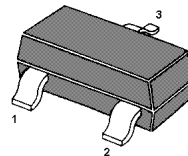
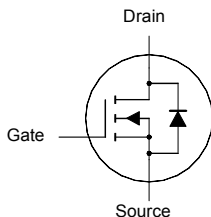


2N7002 N-Channel Enhancement Mode Field Effect Transistor

Features

- High density cell design for low $R_{DS(ON)}$
- Voltage controlled small signal switching
- High saturation current capability
- High speed switching



1.Gate 2.Source 3.Drain
SOT-23 Plastic Package

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V
Drain-Gate Voltage ($R_{GS} \leq 1\text{M}\Omega$)	V_{DGR}	60	V
Gate-Source Voltage -Continuous -Non Repetitive ($t_p < 50 \mu\text{s}$)	V_{GSS}	± 20 ± 40	V
Maximum Drain Current -Continuous -Pulsed	I_D	115 800	mA
Total Power Dissipation	P_{tot}	200	mW
Operating and Storage Temperature Range	T_J, T_s	- 55 to + 150	$^\circ\text{C}$

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

Parameter	Symbol	Min.	Max.	Unit
Drain Source Breakdown Voltage at $I_D = 10 \mu\text{A}$	BV_{DSS}	60	-	V
Zero Gate Voltage Drain Current at $V_{DS} = 60 \text{ V}$	I_{DSS}	-	1	μA
Gate-Body Leakage Current at $V_{GS} = \pm 20 \text{ V}$	$\pm I_{GSS}$	-	100	nA
Gate Threshold Voltage at $V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$	$V_{GS(th)}$	1	2.5	V
On-State Drain Current at $V_{GS} = 10 \text{ V}, V_{DS} = 7.5 \text{ V}$	$I_{D(ON)}$	500	-	mA
Drain-Source On-Voltage at $V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}$ at $V_{GS} = 5 \text{ V}, I_D = 50 \text{ mA}$	$V_{DS(ON)}$	- -	3.75 1.5	V V
Static Drain-Source On-Resistance at $V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}$	$R_{DS(ON)}$	-	7.5	Ω
Forward Transconductance at $V_{DS} = 10 \text{ V}, I_D = 200 \text{ mA}$	g_{FS}	80	-	mS
Input Capacitance at $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{iss}	-	50	pF
Output Capacitance at $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{oss}	-	25	pF
Reverse Transfer Capacitance at $V_{DS} = 25 \text{ V}, f = 1 \text{ MHz}$	C_{rss}	-	5	pF
Turn-On Time at $V_{DD} = 30 \text{ V}, R_L = 150 \Omega, I_D = 0.2 \text{ A}, V_{GS} = 10 \text{ V}, R_{GEN} = 25 \Omega$	t_{on}	-	20	ns
Turn-Off Time at $V_{DD} = 30 \text{ V}, R_L = 150 \Omega, I_D = 0.2 \text{ A}, V_{GS} = 10 \text{ V}, R_{GEN} = 25 \Omega$	t_{off}	-	20	ns

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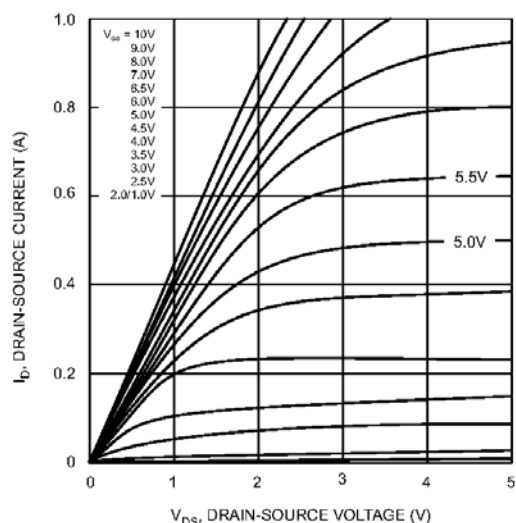


Fig. 1 On-Region Characteristics

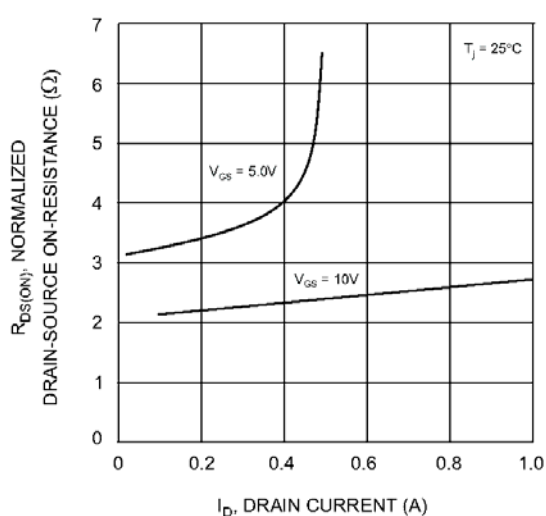


Fig. 2 On-Resistance vs Drain Current

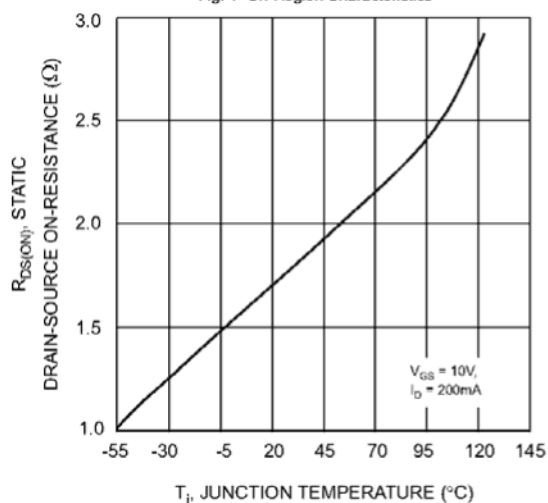


Fig. 3 On-Resistance vs Junction Temperature

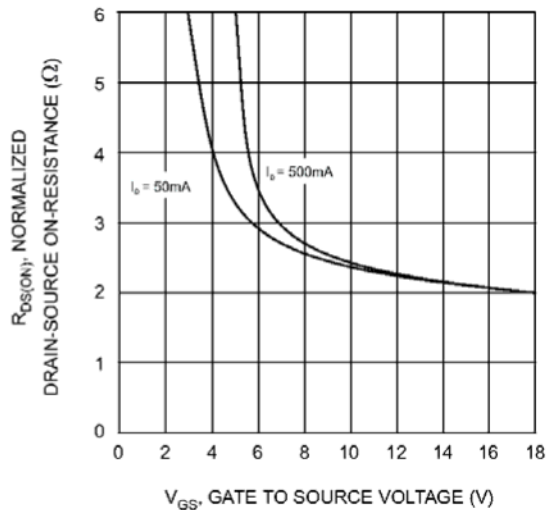


Fig. 4 On-Resistance vs. Gate-Source Voltage

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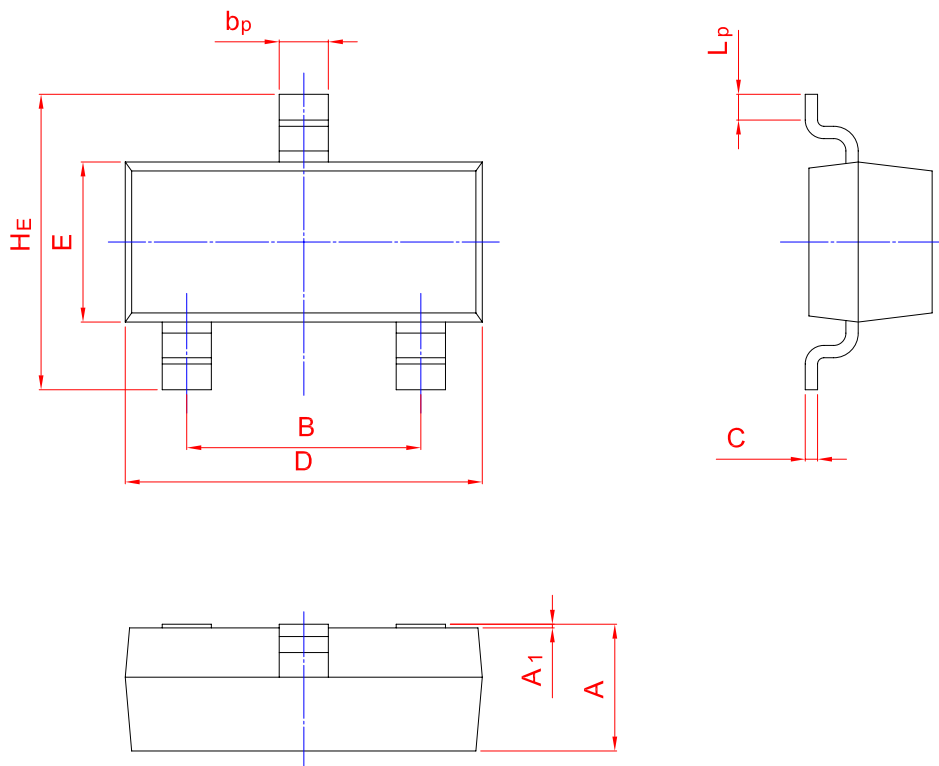
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PACKAGE OUTLINE

Plastic surface mounted package; 3 leads

SOT-23



UNIT	A	B	b _p	C	D	E	H _E	A ₁	L _p
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20

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