

N-Channel Enhancement MOSFET

2N7002E

■ Features

- Low On-Resistance: $R_{DS(ON)}$
- Low Gate Threshold Voltage
- Low Input Capacitance
- Fast Switching Speed
- Low Input/Output Leakage

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

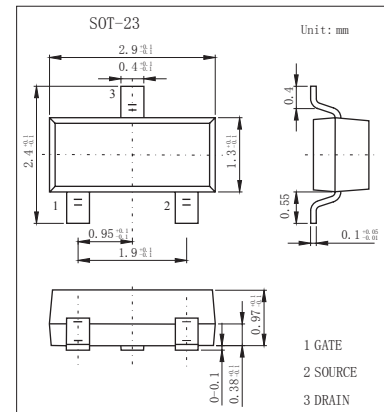
Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	60	V
Drain-Gate Voltage $R_{GS} \leq 1.0\text{M}\Omega$	V_{DGR}	60	
Gate-Source Voltage -Continuous -Pulsed	V_{GS}	± 20	
		± 40	
Continuous Drain Current	I_D	240	mA
Power Dissipation	P_D	300	mW
Thermal Resistance.Junction- to-Ambient	R_{thJA}	417	$^{\circ}\text{C}/\text{W}$
Junction Temperature	T_J	150	$^{\circ}\text{C}$
Junction and Storage Temperature Range	T_{stg}	-55 to 150	

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

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	$V_{GS} = 0\text{V}, I_D = 100\mu\text{A}$	60	70		V
Zero Gate Voltage Drain Current @ $T_c = 25^{\circ}\text{C}$ @ $T_c = 125^{\circ}\text{C}$	I_{DSS}	$V_{DS} = 60\text{V}, V_{GS} = 0\text{V}$			1.0	μA
					500	
Gate-Body Leakage	I_{GSS}	$V_{GS} = \pm 15\text{V}, V_{DS} = 0\text{V}$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu\text{A}$	1.0		2.5	V
Static Drain-Source On-Resistance @ $T_J = 25^{\circ}\text{C}$	$R_{DS(ON)}$	$V_{GS} = 10\text{V}, I_D = 250\text{mA}$		1.6	3	Ω
		$V_{GS} = 4.5\text{V}, I_D = 200\text{mA}$		2.0	4	
On-State Drain Current	$I_{D(ON)}$	$V_{GS} = 10\text{V}, V_{DS} = 7.5\text{V}$	0.8	1.0		A
Forward Transconductance	g_{FS}	$V_{DS} = 10\text{V}, I_D = 0.2\text{A}$	80			mS
Input Capacitance	C_{iss}	$V_{DS} = 25\text{V}, V_{GS} = 0\text{V}, f = 1.0\text{MHz}$		22	50	pF
Output Capacitance	C_{oss}			11	25	pF
Reverse Transfer Capacitance	C_{rss}			2.0	5.0	pF
Turn-On Delay Time	$t_{D(ON)}$	$V_{DD} = 30\text{V}, I_D = 0.2\text{A}, R_L = 150\Omega, V_{GEN} = 10\text{V}, R_{GEN} = 25\Omega$		7.0	20	ns
Turn-Off Delay Time	$t_{D(OFF)}$			11	20	ns

■ Marking

Marking	703
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■ Typical Characteristics

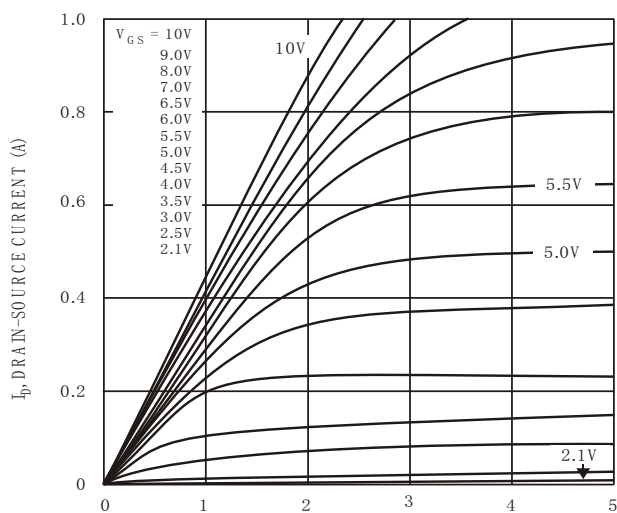


Fig. 1 On-Region Characteristics

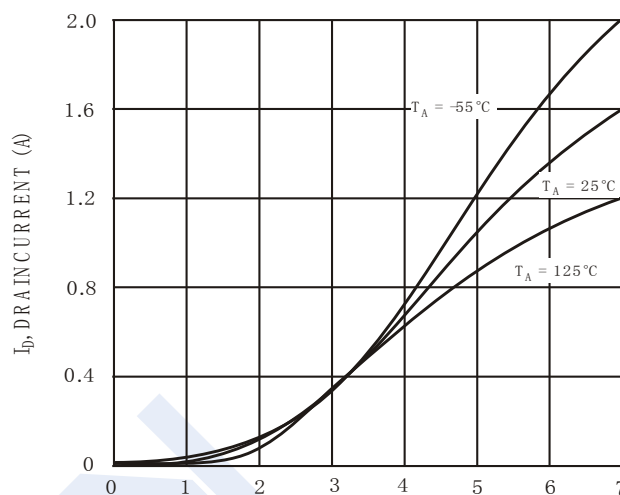


Fig. 2 Drain Current vs. Gate-Source Voltage

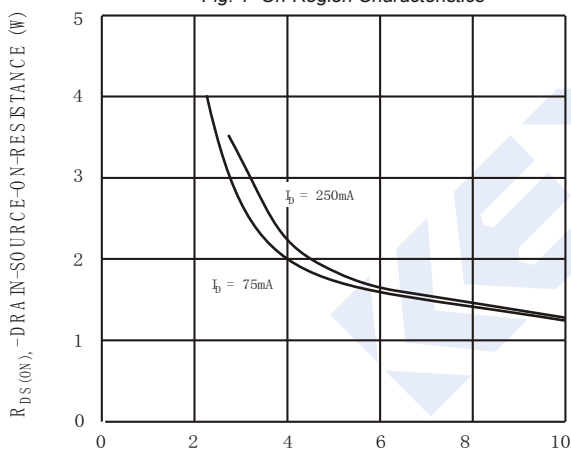


Fig. 3 On Resistance vs. Gate to Source Voltage

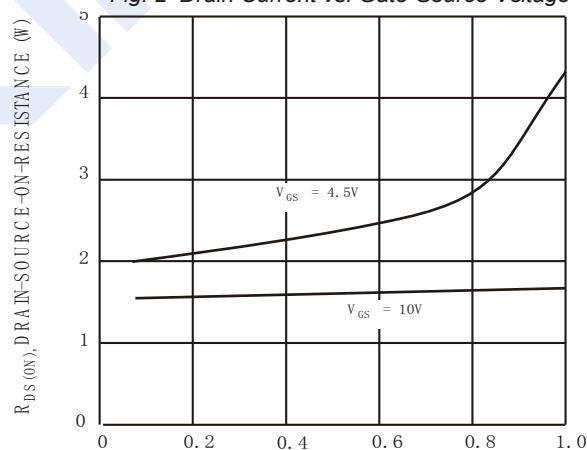


Fig. 4 On Resistance vs. Drain Current

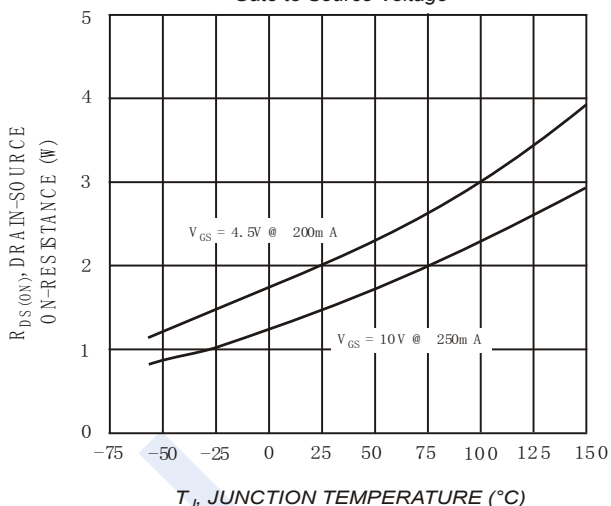


Fig. 5 On-Resistance vs. Junction Temperature

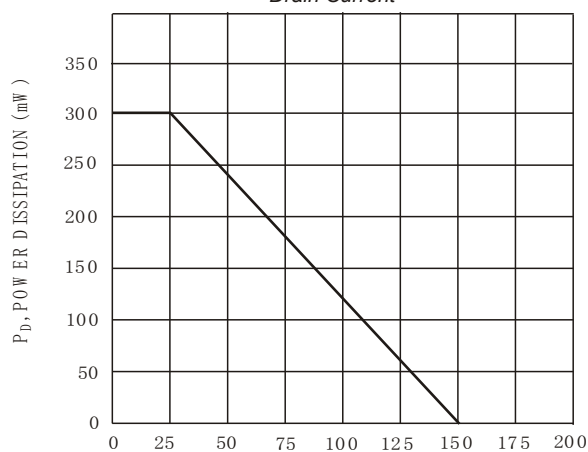


Fig. 6, Max Power Dissipation vs Ambient Temperature