Siliconix incorporated

2N7002
N-Channel Enhancement-Mode MOS Transistor

PRODUCT SUMMARY

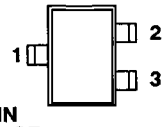
$V_{(BR)DSS}$ (V)	$r_{DS(ON)}$ (Ω)	I_D (A)
60	7.5	0.115

Performance Curves: VNDS06

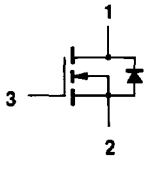
PRODUCT MARKING	
2N7002	702

SOT-23

TOP VIEW



1 DRAIN
2 SOURCE
3 GATE



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±40	
Continuous Drain Current	T_A = 25°C	I_D	±0.115	A
	T_A = 100°C		±0.073	
Pulsed Drain Current[1]		I_{DM}	0.8	
Power Dissipation	T_A = 25°C	P_D	200	mW
	T_A = 100°C		80	
Operating Junction Temperature Range		T_J	-55 to 150	°C
Storage Temperature Range		T_{stg}	-55 to 150	
Lead Temperature ($^1/_{16}$" from case for 10 sec.)		T_L	300	

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	LIMITS	UNITS
Junction-to-Ambient	R_{thJA}	625	K/W

[1]Pulse width limited by maximum junction temperature

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SPECIFICATIONS[a]			LIMITS			
PARAMETER	SYMBOL	TEST CONDITIONS	TYP[b]	MIN	MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D = 10 µA, V_{GS} = 0 V	70	60		V
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 0.25 mA	2.15	1	2.5	
Gate-Body Leakage	I_{GSS}	V_{GS} = ±20 V, V_{DS} = 0 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 60 V, V_{GS} = 0 V			1	µA
		T_C = 125°C			500	
On-State Drain Current[c]	$I_{D(ON)}$	V_{DS} = ≥ 2 $V_{DS(ON)}$, V_{GS} = 10 V	1000	500		mA
Drain-Source On-Resistance[c]	$r_{DS(ON)}$	V_{GS} = 5 V, I_D = 50 mA	5		7.5	Ω
		T_C = 125°C	9		13.5	
		V_{GS} = 10 V, I_D = 0.5 A	2.5		7.5	
		T_C = 125°C	4.4		13.5	
Drain-Source On-Voltage[c]	$V_{DS(ON)}$	V_{GS} = 5 V, I_D = 50 mA	0.25		0.375	V
		V_{GS} = 10 V, I_D = 0.5 A	1.25		3.75	
		T_C = 125°C[d]	2.2		6.75	
Forward Transconductance[c]	g_{FS}	V_{DS} = 10 V, I_D = 0.2 A	170	80		mS
Common Source Output Conductance[c, d]	g_{OS}	V_{DS} = 5 V, I_D = 50 mA	500			µS
DYNAMIC						
Input Capacitance	C_{iss}	V_{DS} = 25 V, V_{GS} = 0 V, f = 1 MHz	16		50	pF
Output Capacitance[d]	C_{oss}		11		25	
Reverse Transfer Capacitance	C_{rss}		2		5	
SWITCHING						
Turn-On Time	t_{ON}	V_{DD} = 30 V, R_L = 150 Ω, I_D = 0.2 A, V_{GEN} = 10 V, R_G = 25 Ω	7		20	nS
Turn-Off Time	t_{OFF}	(Switching time is essentially independent of operating temperature)	7		20	

NOTES:
a. T_C = 25°C unless otherwise noted.
b. For design aid only, not subject to production testing.
c. Pulse test; PW = ≤ 80 µS, duty cycle ≤ 1%.
d. This parameter not registered with JEDEC.