



Micro Commercial Components

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2N7002

N-Channel MOSFET

Features

- Case Material: Molded Plastic. UL Flammability Classification Rating 94V-0 and MSL Rating 1
- Advanced Trench Process Technology
- High Input Impedance
- High Speed Switching
- CMOS Logic Compatible Input
- Marking : 7002/S72

Maximum Ratings @ 25°C Unless Otherwise Specified

Symbol	Rating	Rating	Unit
V _{DS}	Drain-source Voltage	60	V
I _D	Drain Current	115	mA
P _D	Total Power Dissipation	200	mW
R _{θJA}	Thermal Resistance Junction to Ambient	625	°C/W
T _J	Operating Junction Temperature	-55 to +150	°C
T _{STG}	Storage Temperature	-55 to +150	°C

Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Typ	Max	Units
V _{(BR)DSS}	Drain-Source Breakdown Voltage (V _{GS} =0Vdc, I _D =10μAdc)	60	---	---	Vdc
V _{th(GS)}	Gate-Threshold Voltage (V _{DS} =V _{GS} , I _D =250μAdc)	1.0	---	2.5	Vdc
I _{GSS}	Gate-body Leakage (V _{DS} =0Vdc, V _{GS} =±20Vdc)	---	---	±100	nAdc
I _{DSS}	Zero Gate Voltage Drain Current (V _{DS} =60Vdc, V _{GS} =0Vdc) (V _{DS} =60Vdc, V _{GS} =0Vdc, T _J =125°C)	---	---	1 500	μAdc
I _{D(ON)}	On-state Drain Current (V _{DS} =7.5Vdc, V _{GS} =10Vdc)	500	2700	---	mAdc
r _{DS(on)}	Drain-Source On-Resistance (V _{GS} =10Vdc, I _D =500mAdc) (V _{GS} =5Vdc, I _D =50mAdc)	---	1.2 1.7	7.5 7.5	Ω
V _{DS(on)}	Drain-Source On-Voltage (V _{GS} =10Vdc, I _D =500mAdc) (V _{GS} =5Vdc, I _D =50mAdc)	---	---	3.75 1.5	Vdc
G _{FS}	Forward Transconductance (V _{DS} =10Vdc, I _D =200mAdc)	80	---	---	ms
V _{SD}	Diode Forward Voltage (V _{GS} =0Vdc, I _S =115mAdc)	---	---	1.5	Vdc
I _S	Maximum Continuous Drain-Source Diode Forward Current	-	---	115	mA
C _{iss}	Input Capacitance	---	---	50	pF
C _{oss}	Output Capacitance	---	---	25	
C _{rss}	Reverse Transfer Capacitance	---	---	5	

Switching

t _{d(on)}	Turn-on Time	V _{DD} =30Vdc, V _{GEN} =10Vdc	---	---	20	ns
t _{d(off)}	Turn-off Time	R _L =150Ω, I _D =200mA, R _{GEN} =25Ω	---	---	20	

SOT-23

1. GATE
2. SOURCE
3. DRAIN

DIMENSIONS

DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

Suggested Solder Pad Layout

inches
mm

Fig. 1 – On-Resistance vs. Gate-to-Source Voltage

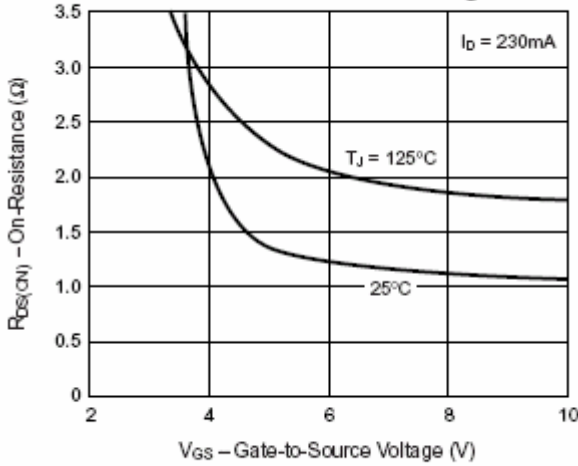


Fig. 2 – Source-Drain Diode Forward Voltage

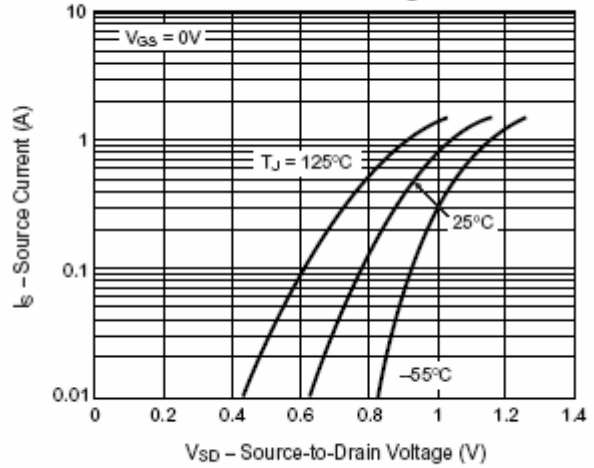


Fig. 3 – Output Characteristics

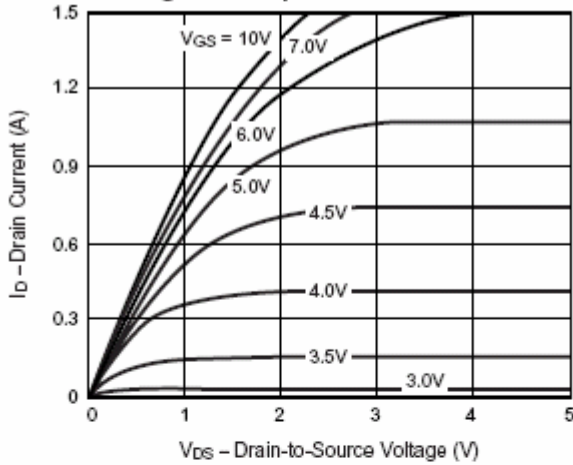


Fig. 4 – Transfer Characteristics

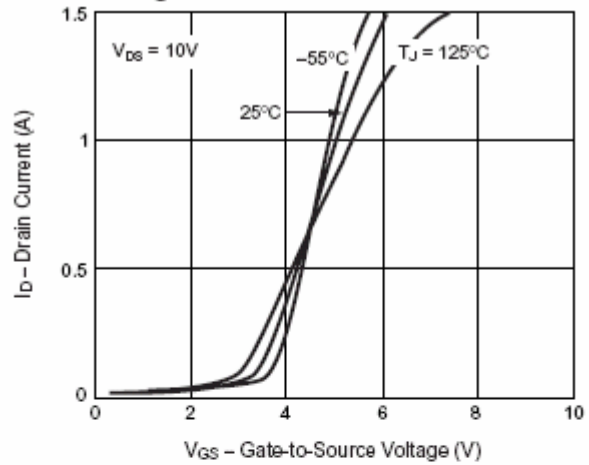


Fig. 5 – Capacitance

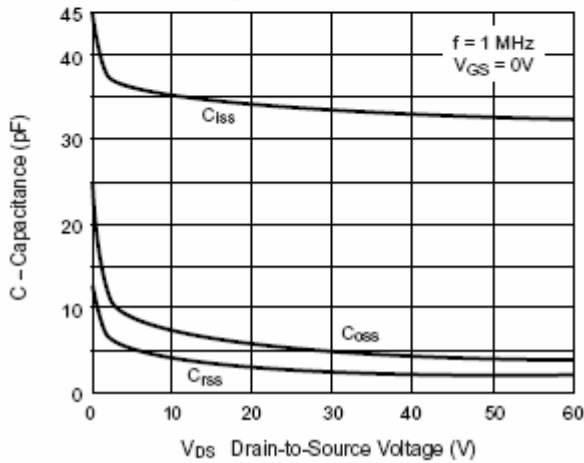
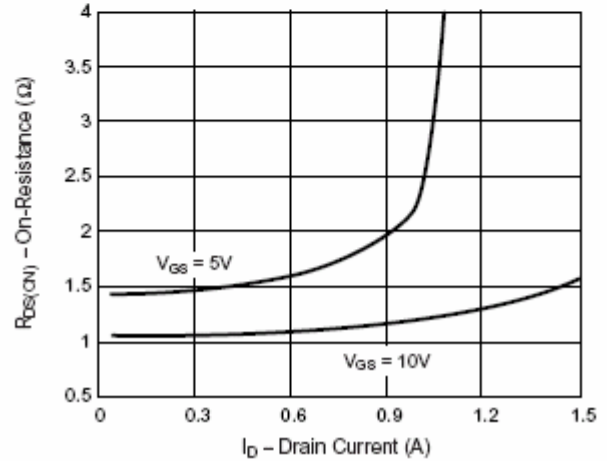


Fig. 6 – On-Resistance vs. Drain Current



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Fig. 7 – Gate Charge

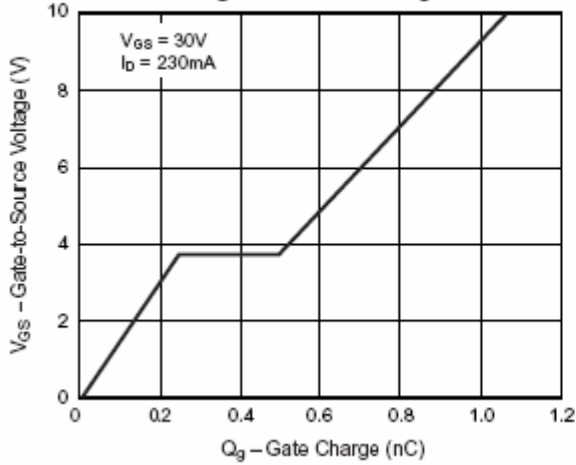


Fig. 8 – Breakdown Voltage vs. Junction Temperature

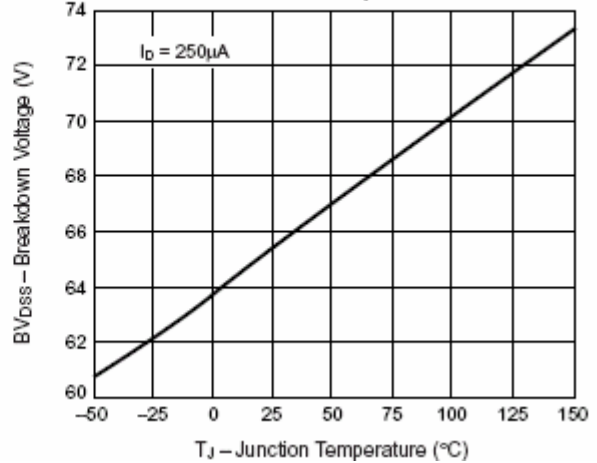


Fig. 9 – Threshold Voltage

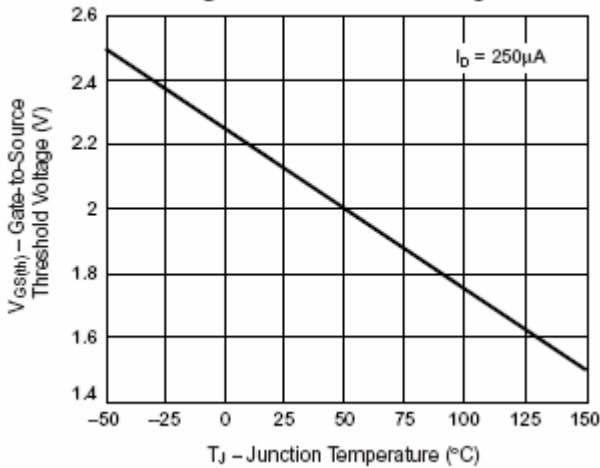


Fig. 10 – On-Resistance vs. Junction Temperature

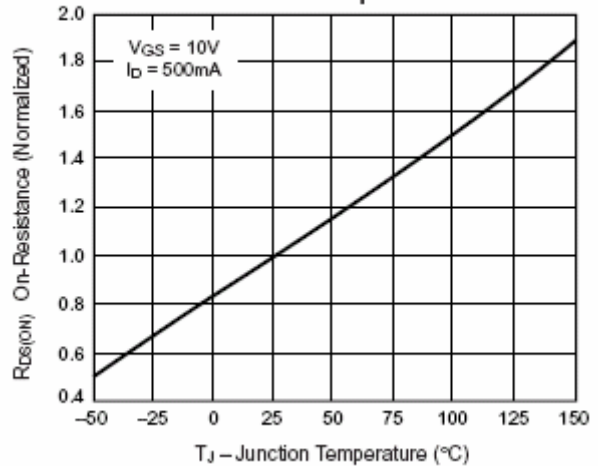


Fig. 11 – Thermal Impedance

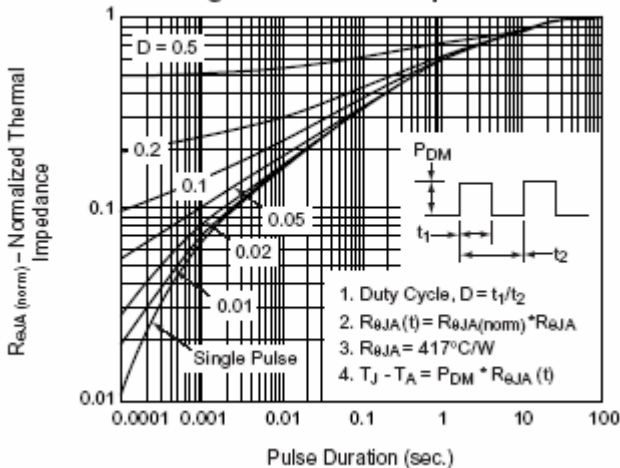
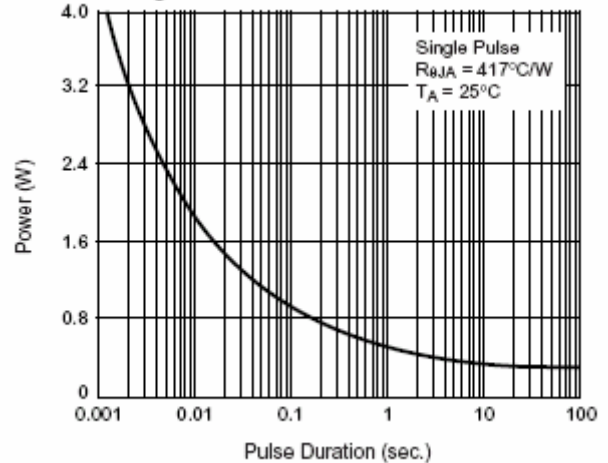
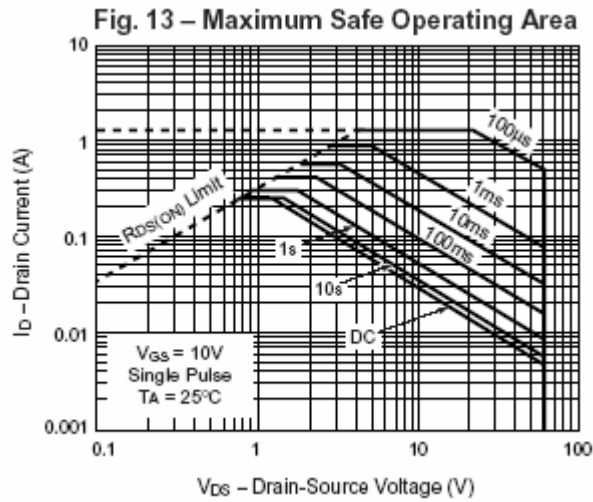


Fig. 12 – Power vs. Pulse Duration







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Ordering Information

Device (Part Number)-TP	Packing Tape&Reel;3Kpcs/Reel
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