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
$R_{\theta JA}$	Thermal Resistance Junction to Ambient	625	℃/W
T_J	Operating Junction Temperature	-55 to +150	℃
T_{STG}	Storage Temperature	-55 to +150	℃

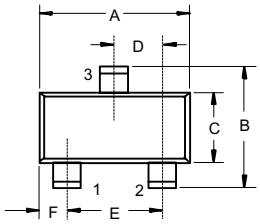
Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Typ	Max	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage (V_{GS}=0Vdc, I_D=10μAdc)	60	---	---	Vdc
$V_{tth(GS)}$	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℃)	--- ---	--- ---	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 (V_{DS}=25Vdc, V_{GS} =0Vdc f=1MHz)	---	---	50	pF
C_{OSS}	Output Capacitance	---	---	25	
C_{rSS}	Reverse Transfer Capacitance	---	---	5	

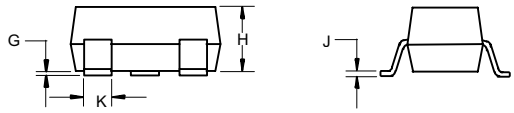
Switching

$t_{d(on)}$	Turn-on Time	V_{DD}=30Vdc, V_{GEN}=10Vdc R_L=150Ω,I_D=200mA, R_{GEN}=25Ω	---	---	20	ns
$t_{d(off)}$	Turn-off Time		---	---	20	

SOT-23



1.GATE
2. SOURCE
3. DRAIN



DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
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

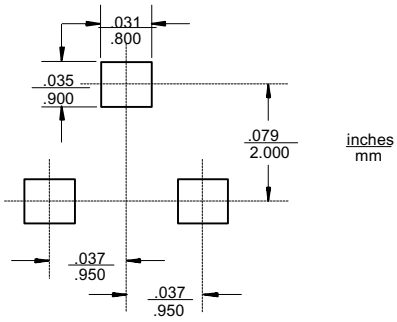


Fig. 1 – On-Resistance vs. Gate-to-Source Voltage

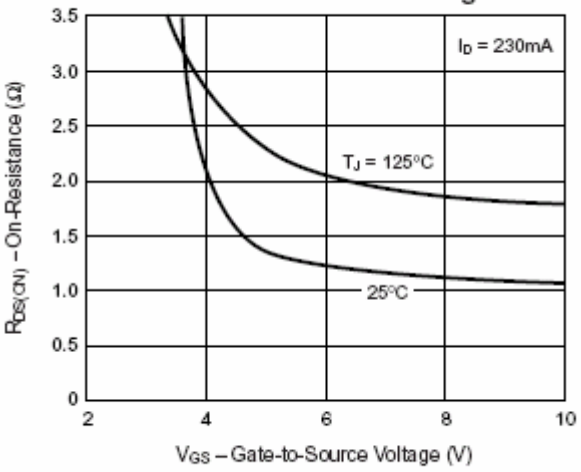


Fig. 2 – Source-Drain Diode Forward Voltage

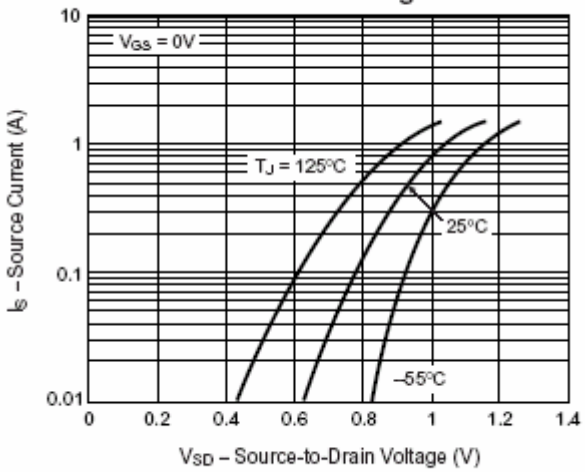


Fig. 3 – Output Characteristics

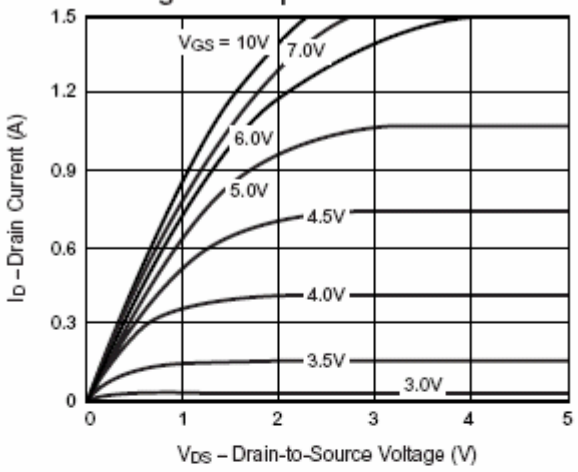


Fig. 4 – Transfer Characteristics

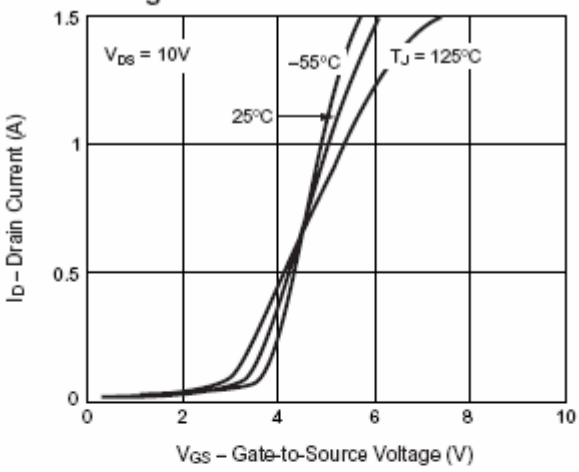


Fig. 5 – Capacitance

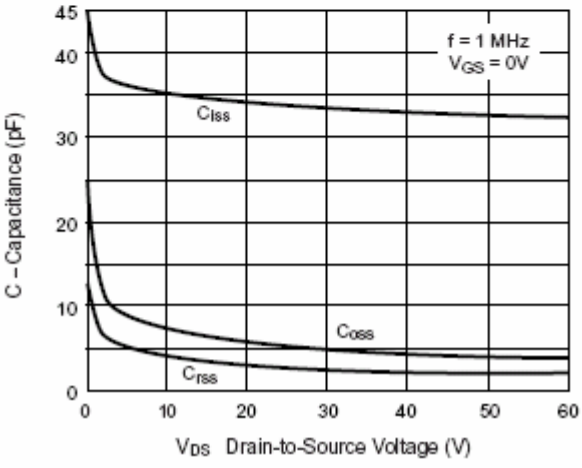


Fig. 6 – On-Resistance vs. Drain Current

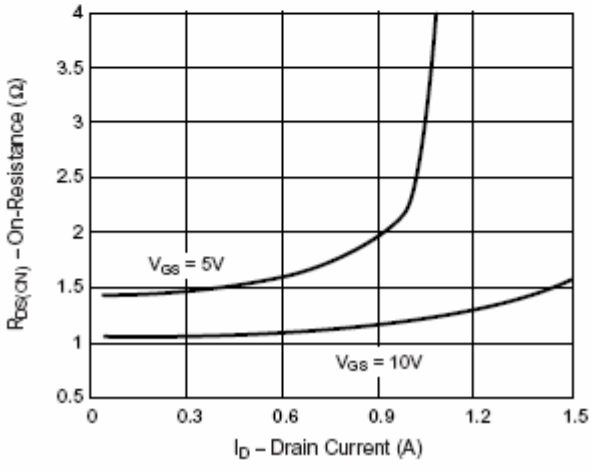


Fig. 7 – Gate Charge

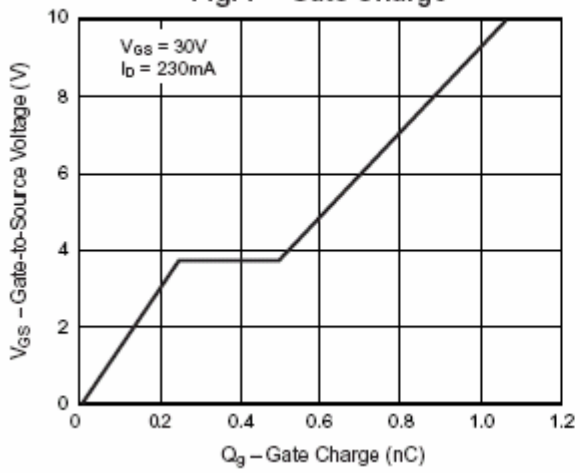


Fig. 8 – Breakdown Voltage vs. Junction Temperature

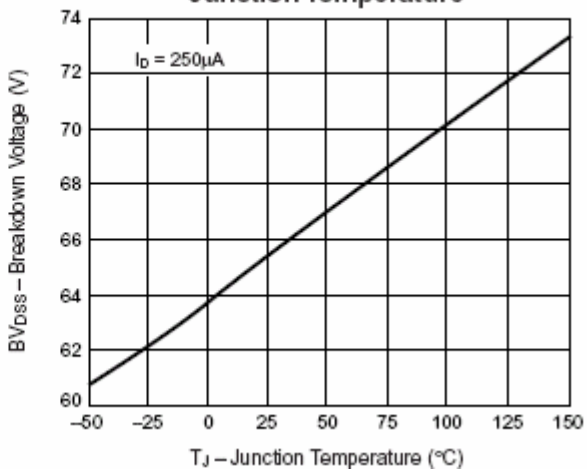


Fig. 9 – Threshold Voltage

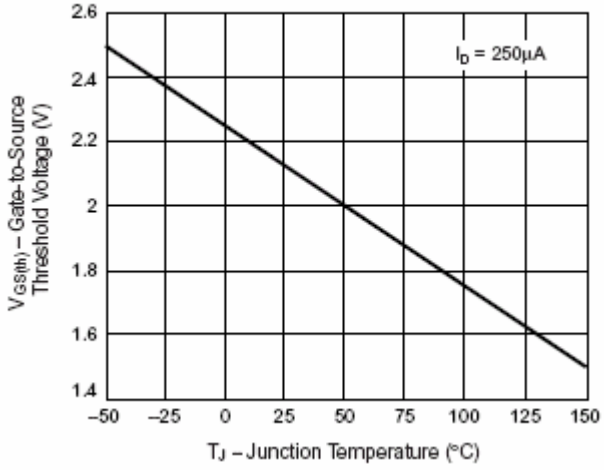


Fig. 10 – On-Resistance vs. Junction Temperature

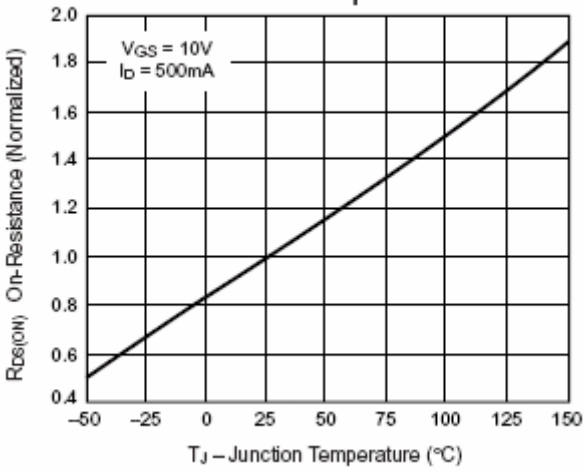


Fig. 11 – Thermal Impedance

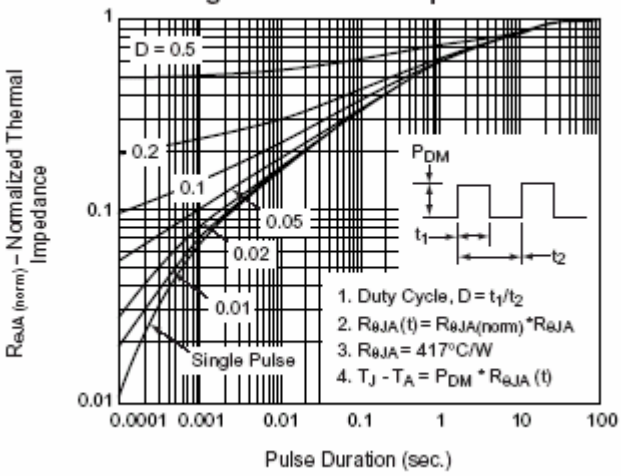


Fig. 12 – Power vs. Pulse Duration

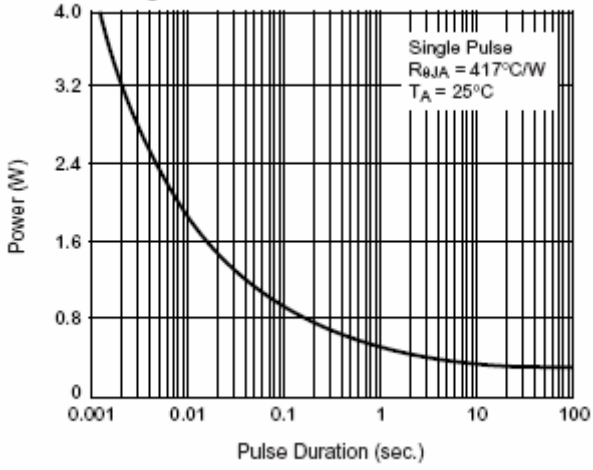
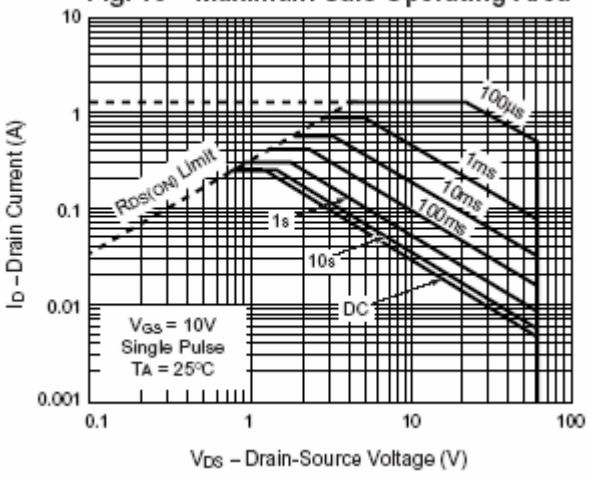


Fig. 13 – Maximum Safe Operating Area



Micro Commercial Components

Ordering Information

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

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