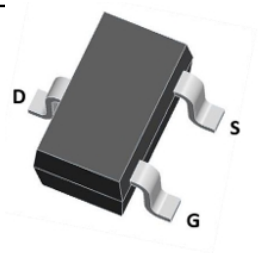
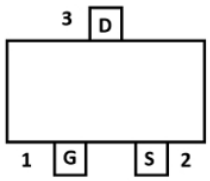
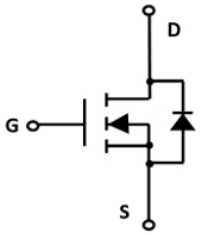
2N7002W
N-Channel MOSFET

General description
N-Channel MOSFET







SOT-323

FEATURES
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage

FEATURES
- Battery operated systems
- Solid-state relays
- Direct logic-level interface：TTL/CMOS

$V_{(BR)DSS}$	$R_{DS(ON)MAX}$	I_D
60V	2.5Ω@10V	340mA
	3Ω@4.5V	

Maximum Ratings & Thermal Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified.)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	60	V
Gate-source Voltage		V_{GS}	±30	V
Peak Gate-source Voltage Tp<50uS, duty cycle=0.25		V_{GSM}	±40	V
Drain Current	T_A=25℃ @ Steady State	I_D	340	mA
	T_A=70℃ @ Steady State		272	
Pulsed Drain Current [A]		IDM	1.5	A
Total Power Dissipation @ T_A=25℃		P_D	350	mW
Thermal Resistance Junction-to-Ambient @ Steady State [B]		$R_{\theta JA}$	357	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

Electrical Characteristics (Ratings at 25℃ ambient temperature unless otherwise specified).

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	B_{VDSS}	V_{GS}= 0V, I_D=250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V,V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS1}	V_{GS}= ±30V, V_{DS}=0V			±100	nA
	I_{GSS2}	V_{GS}= ±20V, V_{DS}=0V			±50	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=250μA	1.0	1.6	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= 10V, I_D=300mA		1.2	2.5	Ω
		V_{GS}= 4.5V, I_D=200mA		1.3	3.0	
Diode Forward Voltage	V_{SD}	I_S=300mA,V_{GS}=0V			1.2	V
Maximum Body-Diode Continuous Current	I_S				340	mA
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=30V,V_{GS}=0V,f=1MHZ		15		pF
Output Capacitance	C_{oss}			9.5		
Reverse Transfer Capacitance	C_{rss}			5.5		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=15V,V_{DS}=30V,I_D=0.3A		1.7	2.4	nC
Turn-on Delay Time	t_D(on)	V_{GS}=10V,V_{DD}=30V, I_D=300mA, R_{GEN}=6Ω		5		ns
Turn-off Delay Time	t_D(off)			17		
Reverse recovery Time	trr	V_{GS}=0V,I_S=300mA,V_R=25V, dI_S/dt=-100A/μs		30		ns

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.
B. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch.

Typical characteristics

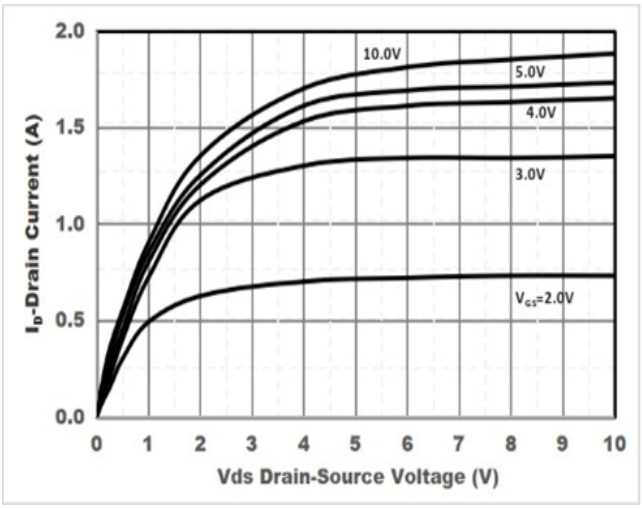


Figure1. Output Characteristics

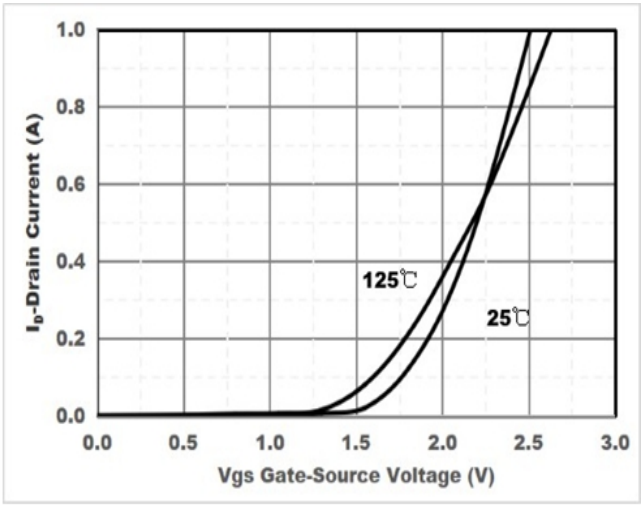


Figure2. Transfer Characteristics

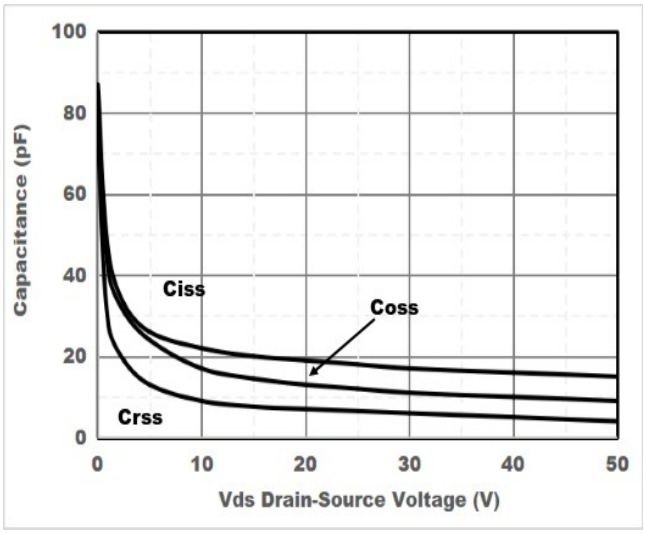


Figure3. Capacitance Characteristics

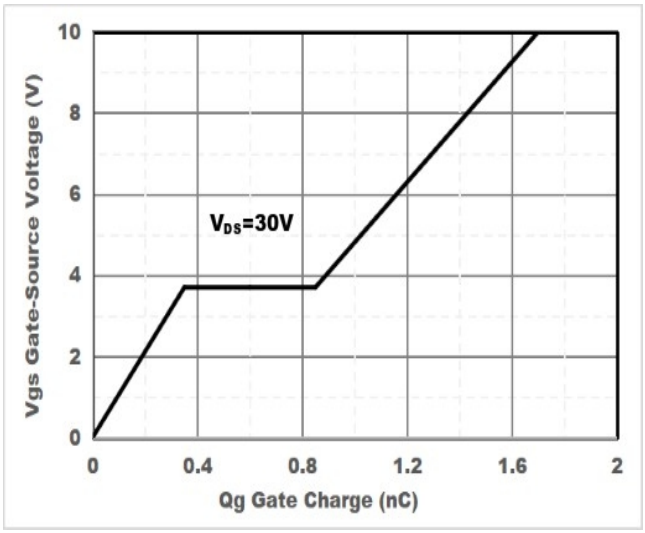


Figure4. Gate Charge

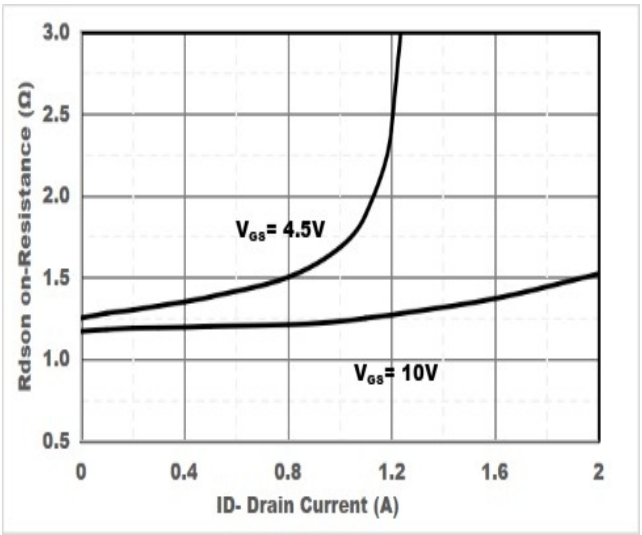


Figure5. Drain-Source on Resistance

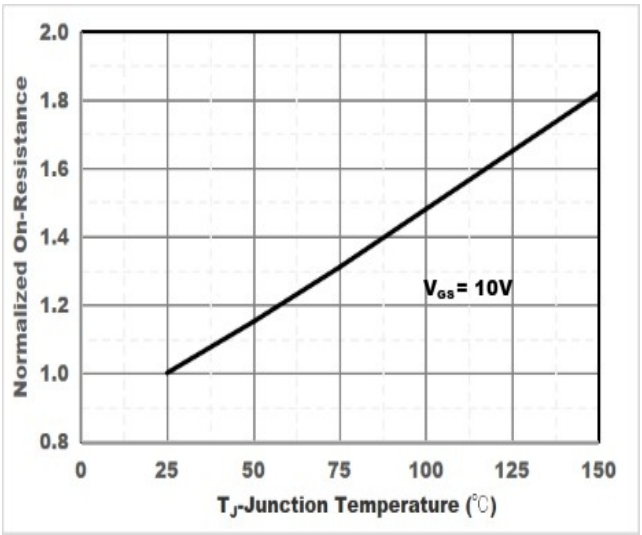


Figure6. Drain-Source on Resistance

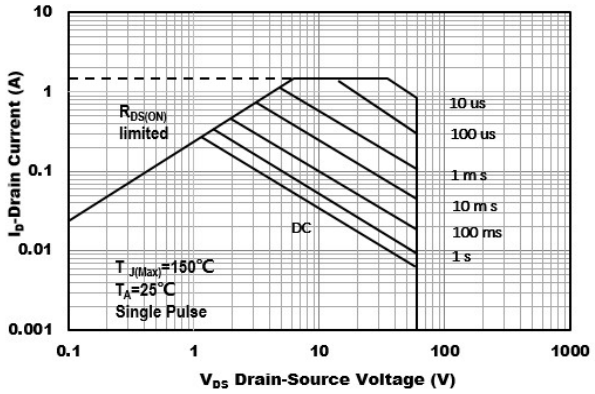


Figure7. Safe Operation Area

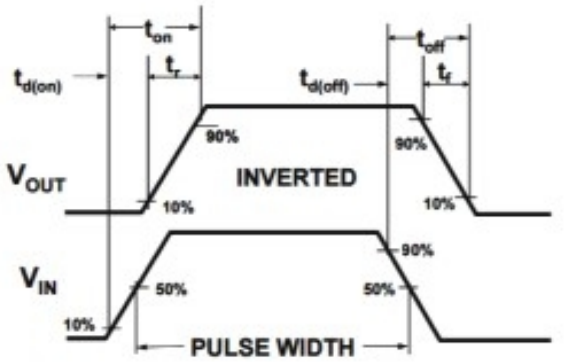
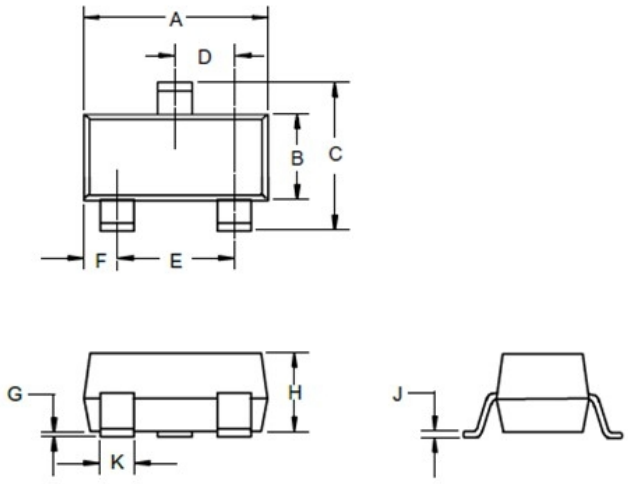


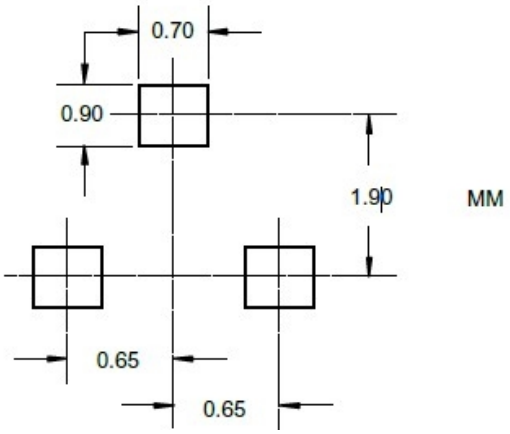
Figure8. Switching wave

SOT-323 Package information



DIMENSIONS					
	INCHES		MM		
DIM	MIN	MAX	MIN	MAX	NOTE
A	.071	.087	1.80	2.20	
B	.045	.053	1.15	1.35	
C	.083	.096	2.10	2.45	
D	.026 Nominal		0.65Nominal		
E	.047	.055	1.20	1.40	
F	.012	.016	.30	.40	
G	.000	.004	.000	.100	
H	.035	.039	.90	1.00	
J	.004	.010	.100	.250	
K	.006	.016	.15	.40	

Suggested Pad Layout



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