

2N7002KW

2N7002KW N-Channel MOSFET

General description

N-Channel MOSFET

SOT-323

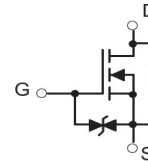
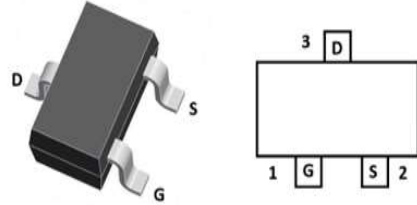
FEATURES

- Voltage controlled small signal switch
- High density cell design for Low RDS(on)
- Rugged and reliable
- High saturation current capability
- ESD protected

FEATURES

- Load switch for Portable Devices
- DC-DC Converter

V(BR)DSS	RDS(ON)MAX	ID
60V	2.5Ω@10V	340mA
	3Ω@4.5V	



Device Marking : 7002 or 72K

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

Parameter	Symbol	Limit	Unit	
Drain-source Voltage	V _{DS}	60	V	
Gate-source Voltage	V _{GS}	±20	V	
Drain Current	T _A =25°C @ Steady State	I _D	340	mA
Pulsed Drain Current ^A	IDM	800	mA	
Total Power Dissipation @ T _A =25°C	P _D	0.2	W	
Thermal Resistance Junction-to-Ambient @ Steady State	R _{θJA}	625	°C/W	
Junction Temperature	T _J	150	°C	
Junction and Storage Temperature Range	T _{STG}	-55~+150	°C	

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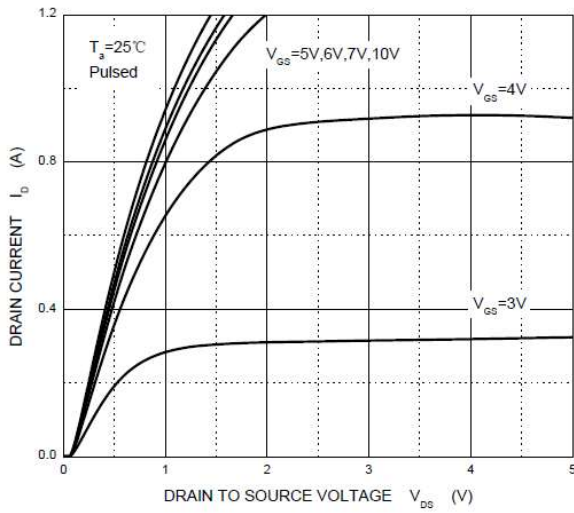
Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	B_{VDSS}	$V_{GS}=0V, I_D=250\mu A$	60			V
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS}=48V, V_{GS}=0V$			1	μA
Gate-Body Leakage Current	I_{GSS1}	$V_{GS}= \pm 20V, V_{DS}=0V$			± 10	μA
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS}= V_{GS}, I_D=250\mu A$	1.0	1.3	2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS}= 10V, I_D=500mA$		0.9	2.5	Ω
		$V_{GS}= 4.5V, I_D=200mA$		1.1	3.0	
Diode Forward Voltage (2)	V_{SD}	$I_S=300mA, V_{GS}=0V$			1.5	V
Pulsed Diode Forward Voltage (1)	I_{SM}				0.53	A
Maximum Diode Continuous Current	I_S				0.2	A
Dynamic Parameters						
Input Capacitance	C_{iss}	$V_{DS}=10V, V_{GS}=0V, f=1MHz$		40		μF
Output Capacitance	C_{oss}			30		
Reverse Transfer Capacitance	C_{rss}			10		
Switching Parameters						
Turn-on Delay Time	$t_{D(on)}$	$V_{GS}=10V, V_{DD}=50V, R_G=50\Omega$			10	ns
Turn-off Delay Time	$t_{D(off)}$	$R_{GS}=50\Omega, R_L=250\Omega$			15	
Reverse recovery Time	t_{rr}	$V_{GS}=0V, I_S=300mA, V_R=25V, di_S/dt=-100A/\mu s$		30		ns
Reverse recovery Time Charge	Q_r	$V_{GS}=0V, I_S=300mA, V_R=25V, di_S/dt=-100A/\mu s$		30		nC

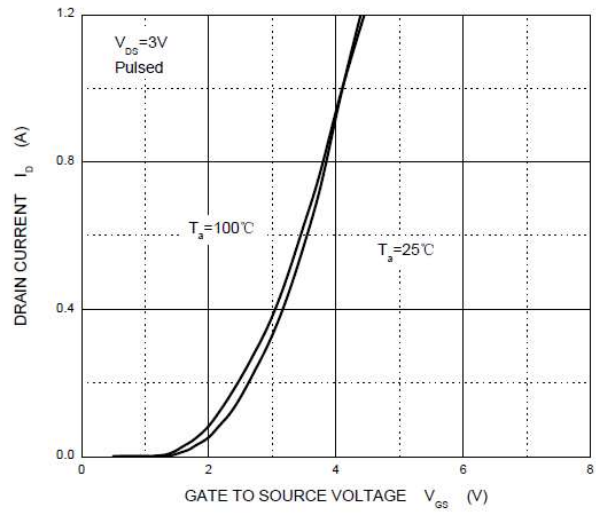
1. Repetitive rating-Pulse width limited by junction temperature.
2. Pulse Test : Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.
3. Guaranteed by design, not subject to production testing.

Typical characteristics

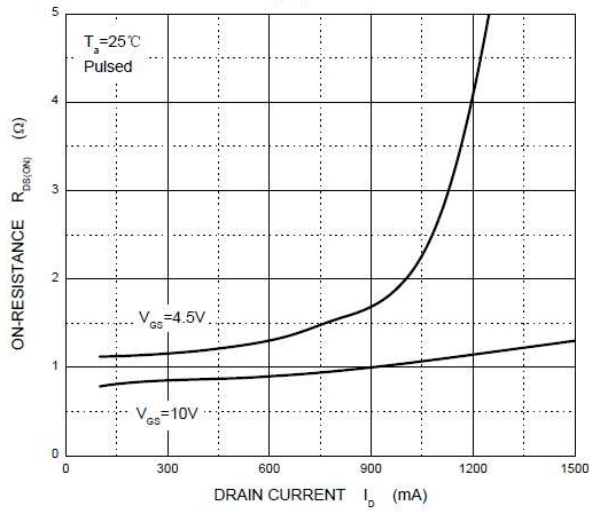
Output Characteristics



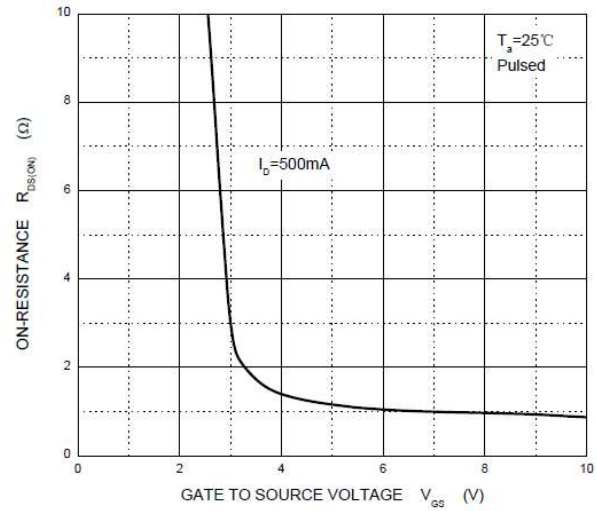
Transfer Characteristics



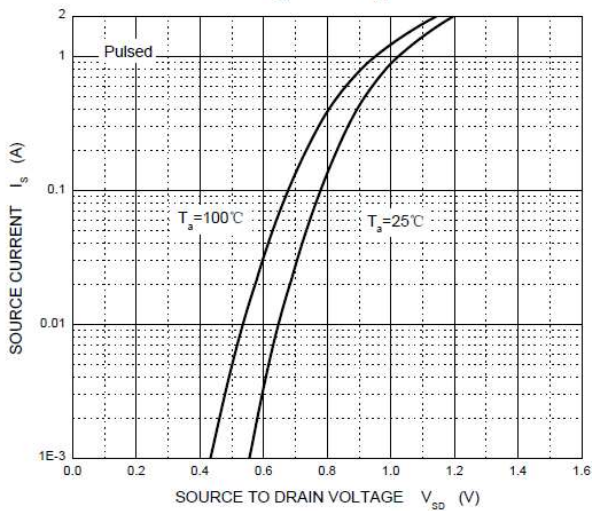
$R_{DS(ON)}$ — I_D



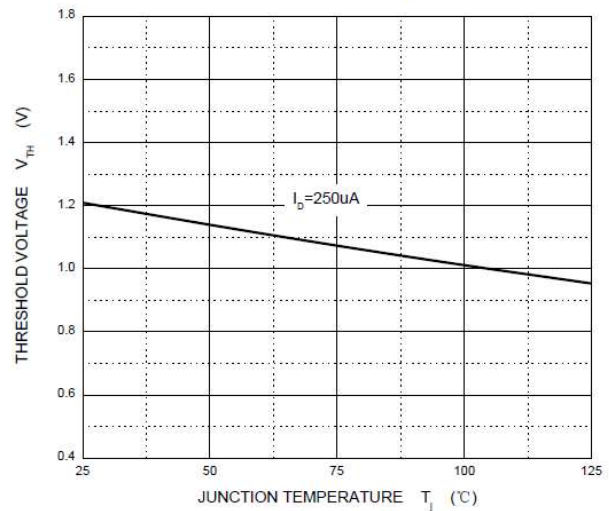
$R_{DS(ON)}$ — V_{GS}



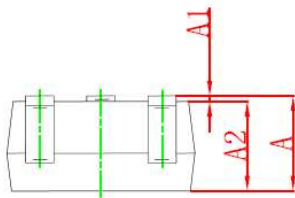
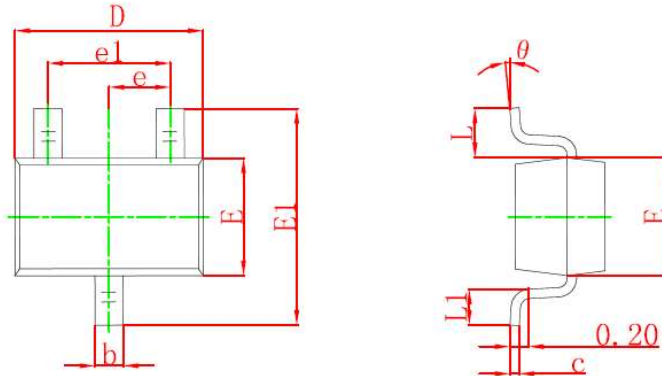
I_S — V_{SD}



Threshold Voltage

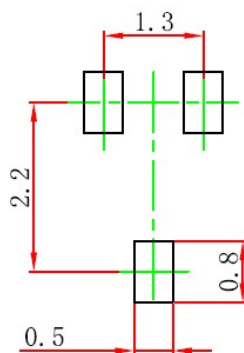


SOT-323 Package information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.200	0.400	0.008	0.016
c	0.080	0.150	0.003	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Suggested Pad Layout



Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

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