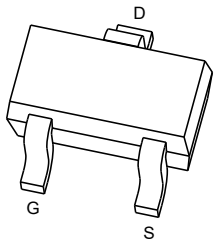
2N7002KTL

60V N-Channel MOSFET

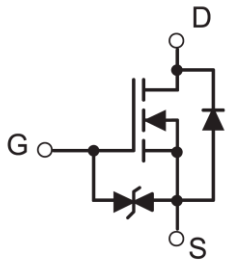
Product Summary

$V_{(BR)DSS}$	$R_{DS(on)TYP}$	I_D
60V	1.8Ω@10V	0.34A
	2.1Ω@4.5V	

SOT-523



Schematic diagram



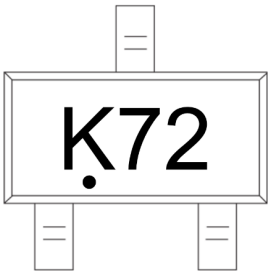
Feature

- Surface Mount Package
- High Density Cell Design for Extremely Low RDS(ON)
- Voltage Controlled Small Signal Switch
- Rugged and Reliable
- ESD Protcet

Application

- Small Servo Motor Controls
- Power MOSFET Gate Drivers
- Switching Application

MARKING:



ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current[1,2]	I_D	0.34	A
Pulsed Drain Current (tp=10μs)	I_{DM}	1.36	A
Power Dissipation	P_D	0.15	W
Thermal Resistance from Junction to Ambient[1,2]	$R_{\theta JA}$	833	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature	T_{STG}	-55~ +150	℃

MOSFET ELECTRICAL CHARACTERISTICS(T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Type	Max	Unit
Off Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0V			±5	μA
On Characteristics[3]						
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.4	1.8	V
Drain-Source on-Resistance	$R_{DS(on)}$	V_{GS} = 10V, I_D = 0.3A		1.8	2.5	Ω
		V_{GS} = 4.5V, I_D = 0.2A		2.1	3.0	
Forward Tranconductance	g_{FS}	V_{DS} = 10V, I_D = 0.2A	80			mS
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS} = 30V, V_{GS} = 0V, f = 1MHz		17.6		pF
Output Capacitance	C_{oss}			4.4		
Reverse Transfer Capacitance	C_{rss}			1.2		
Switchig Characteristics						
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = 30V, V_{GS} = 10V, R_L = 100Ω, R_G = 3Ω		3.8		ns
Turn-On Rise Time	t_r			2.9		
Turn-Off Delay Time	$t_{d(off)}$			14		
Turn-Off Fall Time	t_f			8		
Total Gate Charge	Q_g	V_{DS} =30V, I_D =0.3A, V_{GS} =10V		1.6		nC
Gate-Source Charge	Q_{gs}			0.2		
Gate-Drain Charge	Q_{gd}			0.8		
Diode Characteristics						
Diode Forward Voltage[3]	V_{SD}	I_S =0.3A, V_{GS} = 0V			1.2	V

Notes :

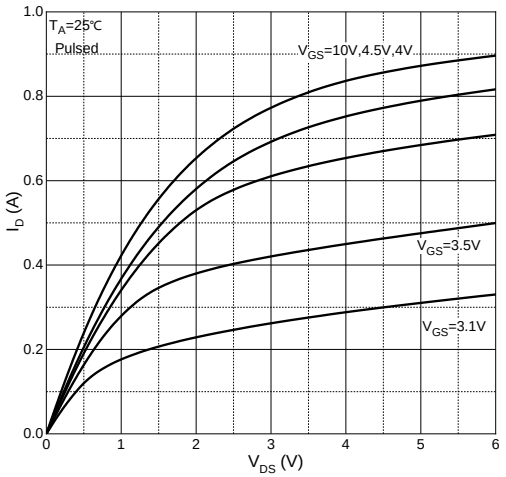
1.$R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR4 board with 1oz. single side copper, in a still air environment with T_A = 25°C.

2.$R_{\theta JA}$ is measured in the steady state

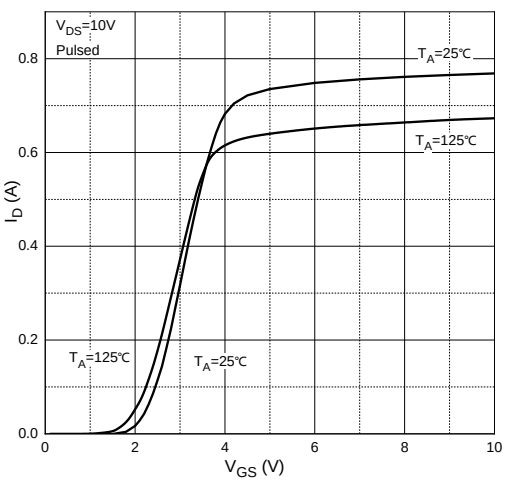
3.Pulse test : Pulse width ≤ 380μs, duty cycle ≤ 2%.

Typical Characteristics

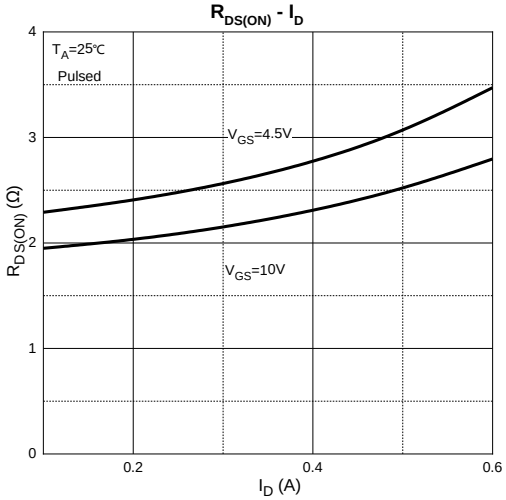
Output Characteristics



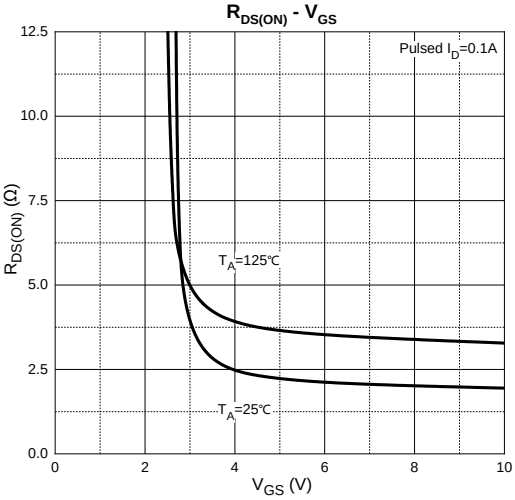
Transfer Characteristics



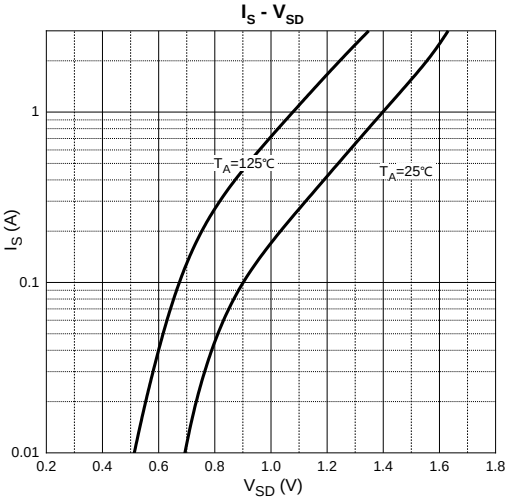
$R_{DS(ON)}$ - I_D



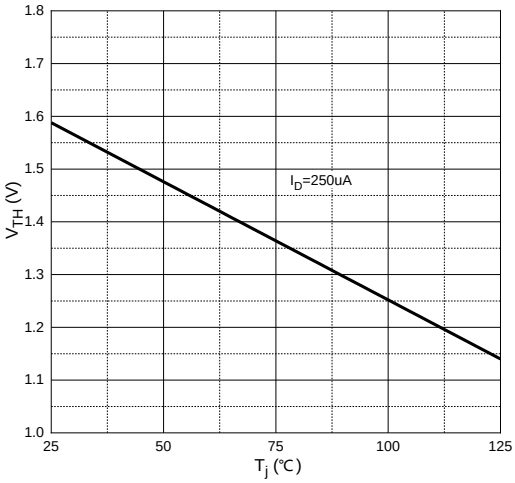
$R_{DS(ON)}$ - V_{GS}



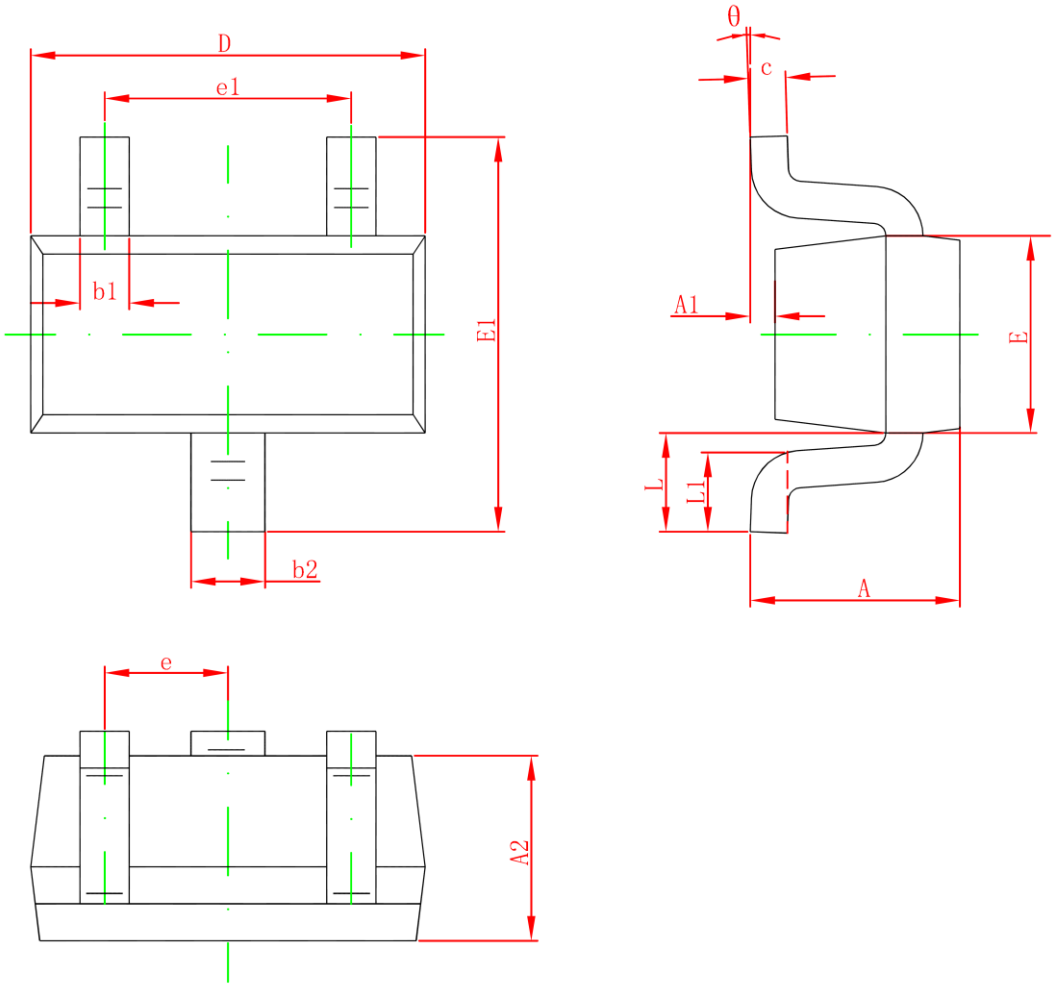
I_S - V_{SD}



Threshold Voltage



SOT-523 Package Information



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.700	0.900	0.028	0.035
A1	0.000	0.100	0.000	0.004
A2	0.700	0.800	0.028	0.031
b1	0.150	0.250	0.006	0.010
b2	0.250	0.350	0.010	0.014
c	0.100	0.200	0.004	0.008
D	1.500	1.700	0.059	0.067
E	0.700	0.900	0.028	0.035
E1	1.450	1.750	0.057	0.069
e	0.900	1.100	0.035	0.043
e1	0.500TYP		0.020TYP	
L	0.400REF		0.016REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Attention：

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