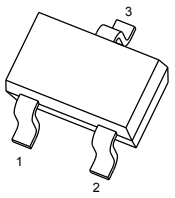
SOT-523 Plastic-Encapsulate MOSFETS

2N7002KT N-Channel MOSFET

$V_{(BR)DSS}$	$R_{DS(on)}$MAX	I_D
60 V	5Ω@10V	340mA
	5.3Ω@4.5V	

SOT-523



1. GATE
2. SOURCE
3. DRAIN

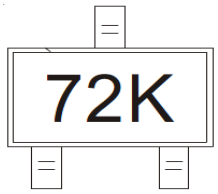
FEATURE

- High density cell design for Low $R_{DS(on)}$
- Voltage controlled small signal switch
- Rugged and reliable
- High saturation current capability
- ESD protected

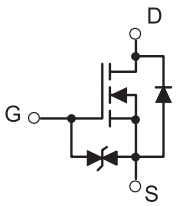
APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

MARKING



Equivalent Circuit



MOSFET MAXIMUM RATINGS (T_a=25℃ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	340	mA
I_{DM}	Pulsed Drain Current(note1)	800	mA
P_D	Power Dissipation	0.15	W
T_j	Junction Temperature	150	℃
T_{stg}	Storage Temperature	-55~+150	℃
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	℃/W

MOSFET ELECTRICAL CHARACTERISTICS

T_a=25℃ unless otherwise specified

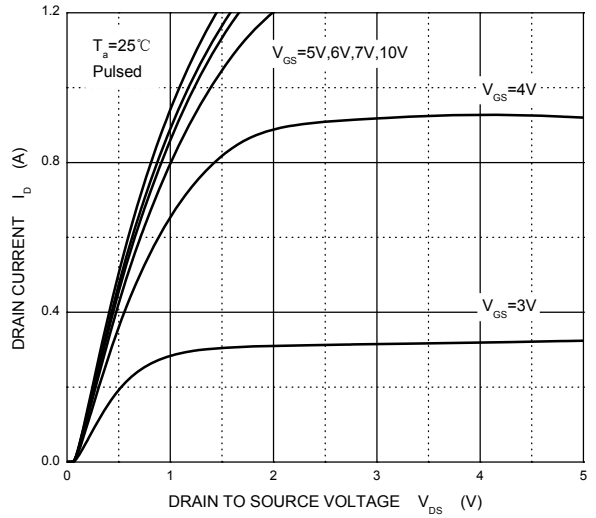
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
STATIC PARAMETERS						
Drain-source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D =250μA	60			V
GateThreshold Voltage (note 2)	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D =1mA	1	1.3	2.5	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =48V,V_{GS} = 0V			1	μA
Gate-Source Leakage Current	I_{GSS}	V_{GS} =±20V, V_{DS} = 0V			±10	μA
Drain-Source On-Resistance (note 2)	$R_{DS(on)}$	V_{GS} =4.5V, I_D =200mA		1.1	5.3	Ω
		V_{GS} =10V, I_D =500mA		0.9	5	Ω
DYNAMIC PARAMETERS (note 3)						
Input Capacitance	C_{iss}	V_{DS} =10V,V_{GS} =0V,f =1MHz			40	pF
Output Capacitance	C_{oss}				30	pF
Reverse Transfer Capacitance	C_{rss}				10	pF
SWITCHING PARAMETERS(note 3)						
Turn-on Delay Time	$t_{d(on)}$	V_{GS}=10V,V_{DD}=50V, R_G=50Ω			10	ns
Turn-off Delay Time	$t_{d(off)}$	R_{GS}=50Ω, R_L=250Ω			15	ns
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_S=300mA,V_R=25V, dIs/dt=-100A/us		30		ns
Recovered Charge	Qr	V_{GS}=0V,I_S=300mA,V_R=25V dIs/dt=-100A/us		30		nC
GATE-SOURCE ZENER DIODE						
Gate-Source Breakdown Voltage	BV_{GSO}	Igs=±1mA(Open Drain)	±21.5		±30	V
DRAIN-SOURCE DIODE						
Diode Forward Voltage(note 2)	V_{SD}	I_S=300mA, V_{GS} = 0V			1.5	V
Continuous Diode Forward Current	I_S				0.2	A
Pulsed Diode Forward Current(note1)	I_{SM}				0.53	A

Notes :

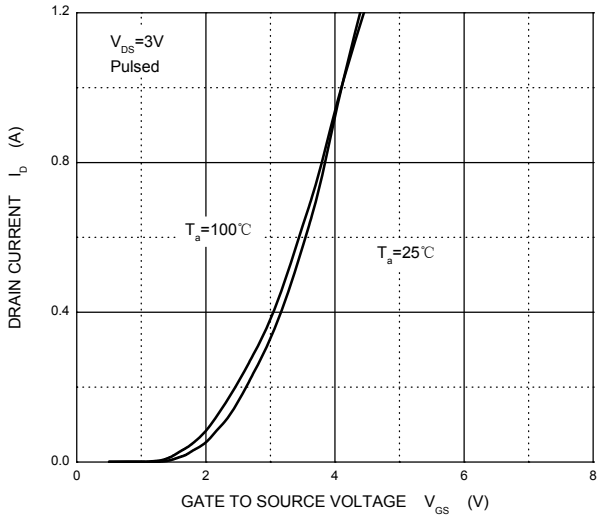
1. Repetitive rating：Pluse width limited by junction temperature.
2. Pulse Test : Pulse width≤300μs, duty cycle≤2%.
3. Guaranteed by design, not subject to production testing.

Typical Characteristics

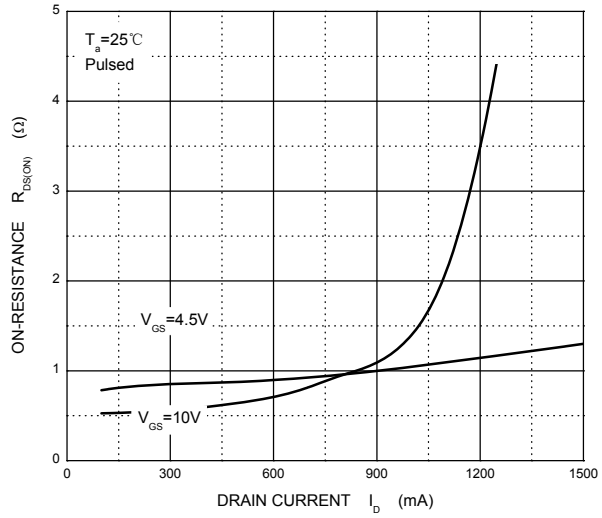
Output Characteristics



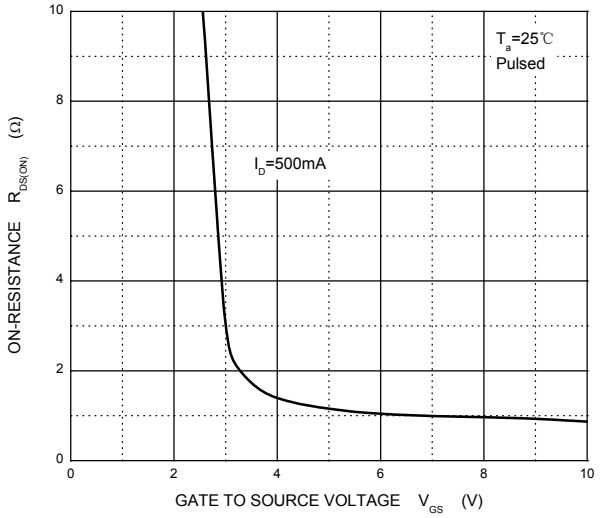
Transfer Characteristics



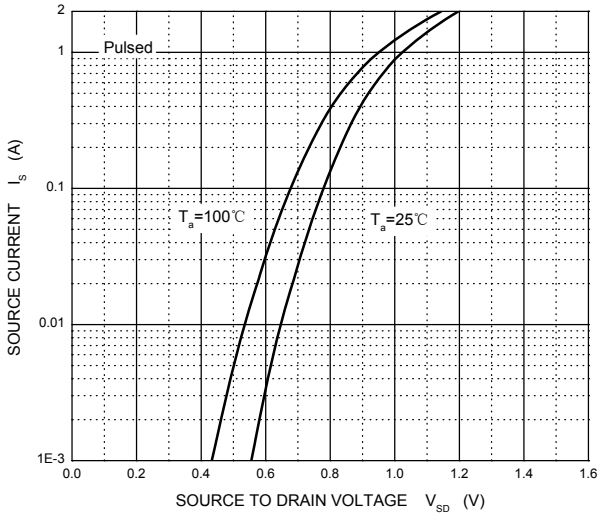
$R_{DS(ON)}$ — I_D



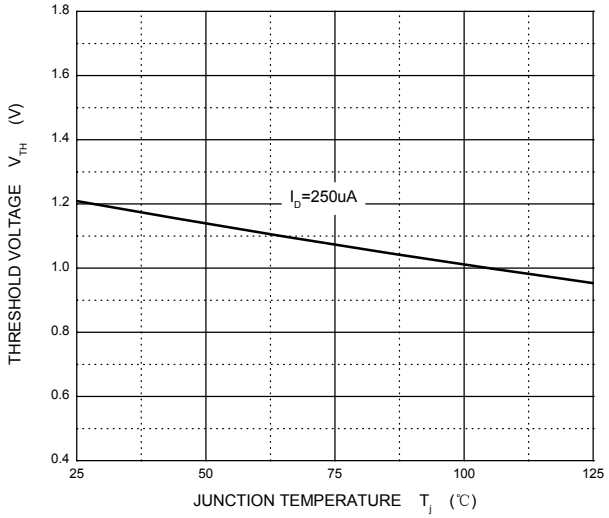
$R_{DS(ON)}$ — V_{GS}



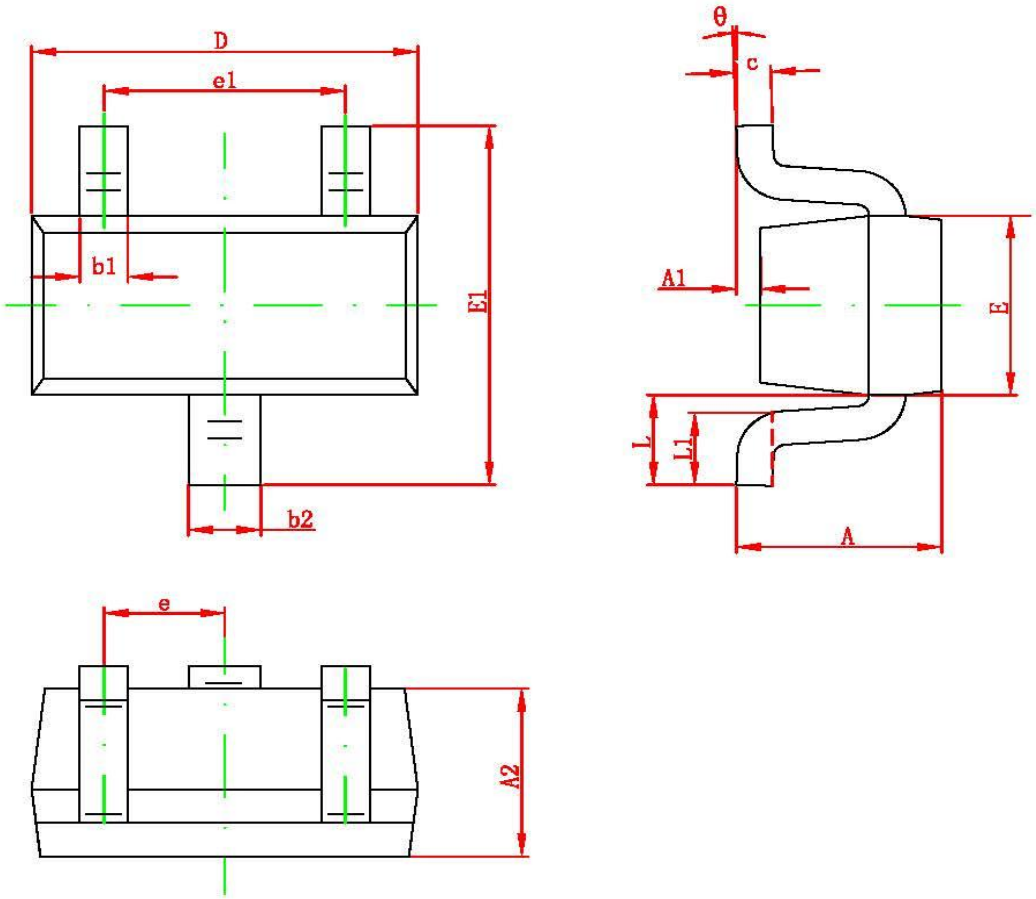
I_S — V_{SD}



Threshold Voltage



SOT-523 PACKAGE OUTLINE DIMENSIONS



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	0.500 TYP.		0.020 TYP.	
e1	0.900	1.100	0.035	0.043
L	0.400 REF.		0.016 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°