UMW®

2N7002B MOSFET (N-Channel)
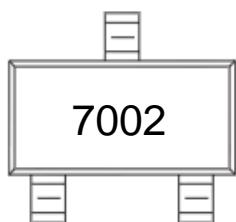
V$_{(BR)DSS}$	R$_{DS(on)}$MAX	I$_D$
60 V	5Ω@10V	115mA
	7Ω@5V	

SOT-23

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
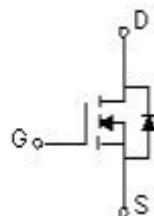
APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

MARKING

7002

Equivalent Circuit

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	I$_D$	0.115	A
Power Dissipation	P$_D$	0.225	W
Thermal Resistance from Junction to Ambient	R$_{\theta JA}$	556	℃/W
Junction Temperature	T$_J$	150	℃
Storage Temperature	T$_{stg}$	-50 ~+150	

SOT‑23 Plastic-Encapsulate MOSFETS

T$_a$=25℃ unless otherwise specified

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V$_{(BR)DSS}$	V$_{GS}$=0 V, I$_D$=250 µA	60			V
Gate-Threshold Voltage	V$_{th(GS)}$	V$_{DS}$=V$_{GS}$, I$_D$=250 µA	1		2.5	
Gate-body Leakage	I$_{GSS}$	V$_{DS}$=0 V, V$_{GS}$=±20 V			±80	nA
Zero Gate Voltage Drain Current	I$_{DSS}$	V$_{DS}$=60 V, V$_{GS}$=0 V			80	nA
On-state Drain Current	I$_{D(ON)}$	V$_{GS}$=10 V, V$_{DS}$=7 V	500			mA
Drain-Source On-Resistance	R$_{DS(on)}$	V$_{GS}$=10 V, I$_D$=500mA			5	Ω
		V$_{GS}$=5 V, I$_D$=50mA			7	
Forward Trans conductance	g$_{fs}$	V$_{DS}$=10 V, I$_D$=200mA	80			ms
Drain-source on-voltage	V$_{DS(on)}$	V$_{GS}$=10V, I$_D$=500mA			3.75	V
		V$_{GS}$=5V, I$_D$=50mA			0.375	V
Diode Forward Voltage	V$_{SD}$	I$_S$=115mA, V$_{GS}$=0 V	0.55		1.2	V
Input Capacitance *	C$_{iss}$	V$_{DS}$=25V, V$_{GS}$=0V, f=1MHz			50	pF
Output Capacitance *	C$_{oss}$				25	
Reverse Transfer Capacitance *	C$_{rss}$				5	

SWITCHING TIME
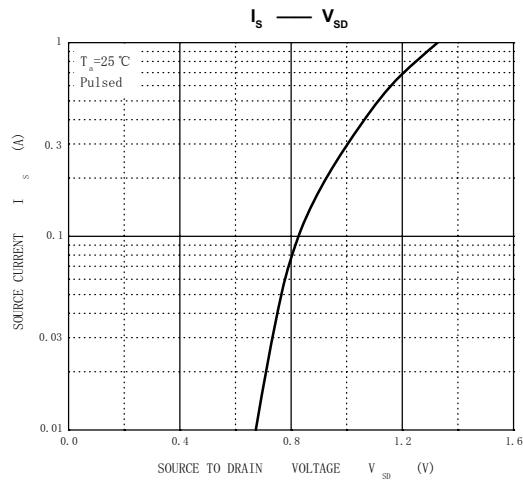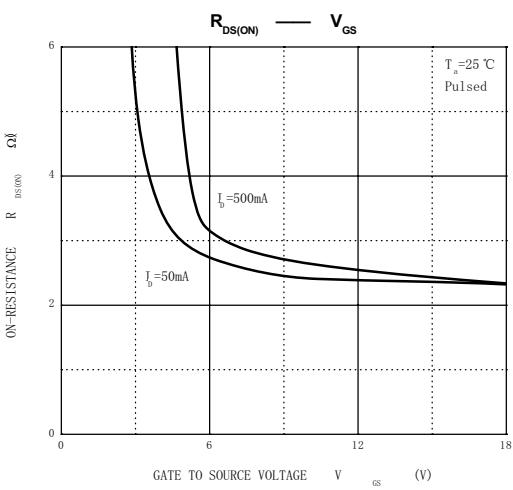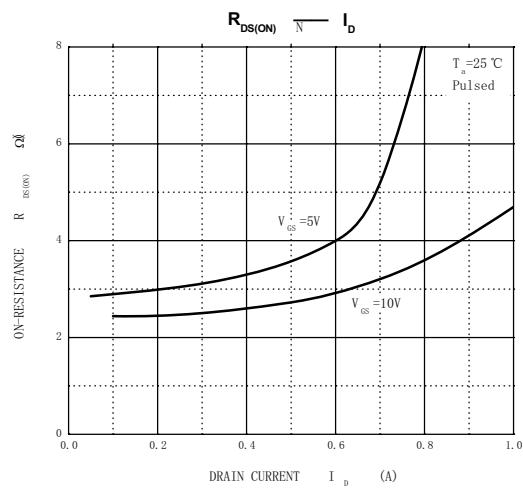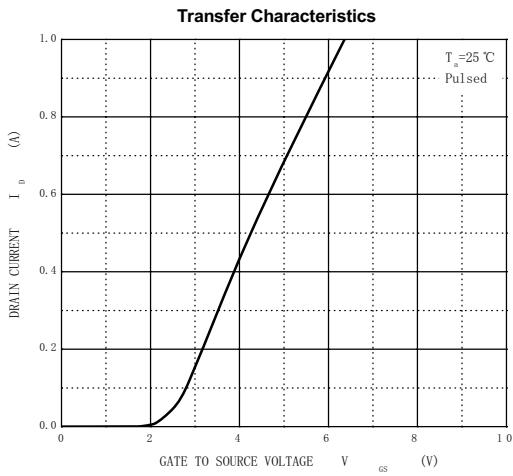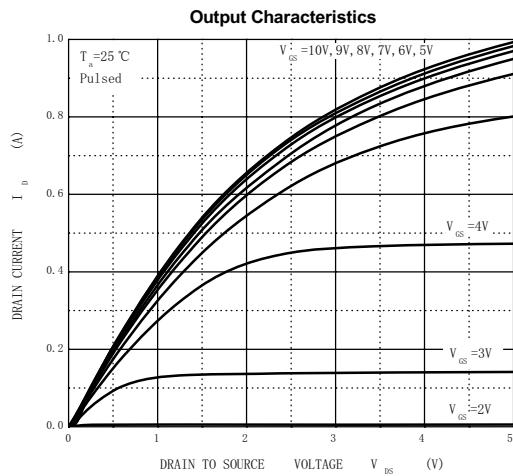
Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Turn-on Time *	t$_{d(on)}$	V$_{DD}$=25 V, R$_L$=50Ω, I$_D$=500mA,V$_{GEN}$=10 V R$_G$=25Ω			20	ns
Turn-off Time*	t$_{d(off)}$				40	
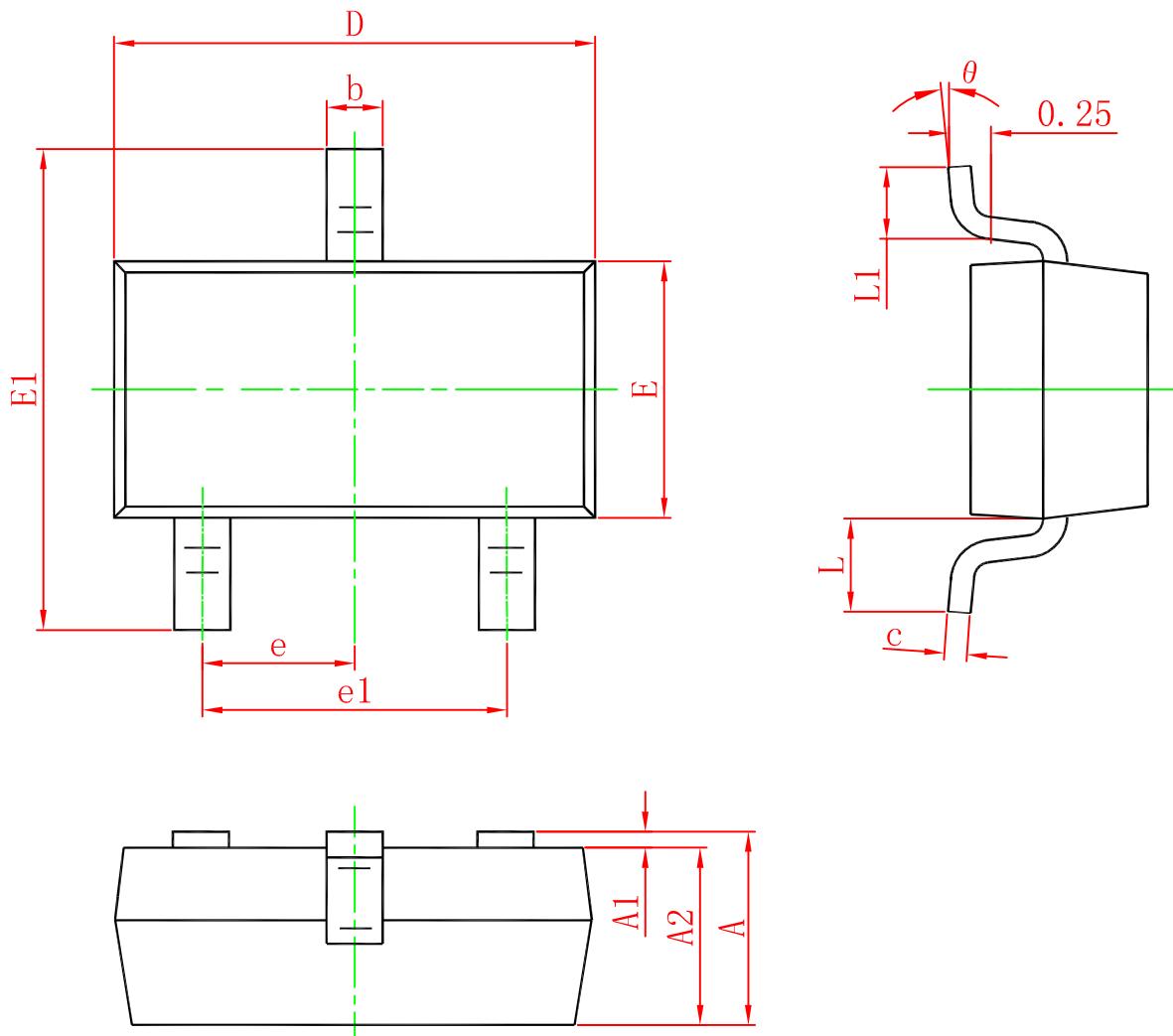
*These parameters have no way to verify.

Typical Characterisitics

Output Characteristics

Transfer Characteristics

$R_{DS(ON)}$ — I_D

$R_{DS(ON)}$ — V_{GS}

I_S — V_{SD}

SOT-23 PACKAGE OUTLINE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.080	0.150	0.003	0.006
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950 TYP.		0.037 TYP.	
e1	1.800	2.000	0.071	0.079
L	0.550 REF.		0.022 REF.	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

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