



Description

The 2N7002W uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

General Features

$V_{DS} = 60V$ $I_D = 0.115A$

$R_{DS(ON)} < 3\Omega @ V_{GS}=10V$

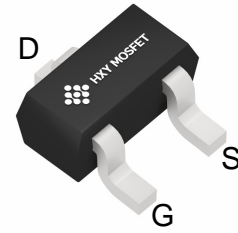
ESD Rating: HBM $\geq 2000V$

Application

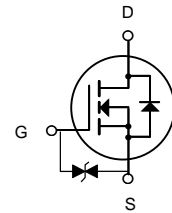
Battery protection

Load switch

Uninterruptible power supply



SOT-323



N-Channel MOSFET

Ordering Information

Product ID	Pack	Marking	Qty(PCS)
2N7002W	SOT-323	72K	3000

Absolute Maximum Ratings ($T_A=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Limit	Unit
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous	0.115	A
P_D	Maximum Power Dissipation	0.2	W
T_J, T_{STG}	Operating Junction and Storage Temperature Range	-55 To 150	$^\circ C$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient (Note 2)	625	$^\circ C/W$



Electrical Characteristics (T_A=25°C unless otherwise noted)

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 _{(GS)th}	V _{DS} =V _{GS} , I _D =250 μA	1	1.6	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 =115mA		1.3	3	Ω
		V _{GS} =4.5V, I _D =50mA		2	5	
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	

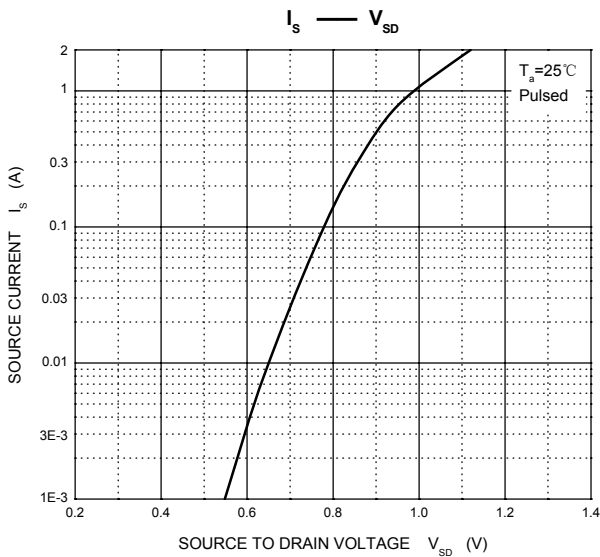
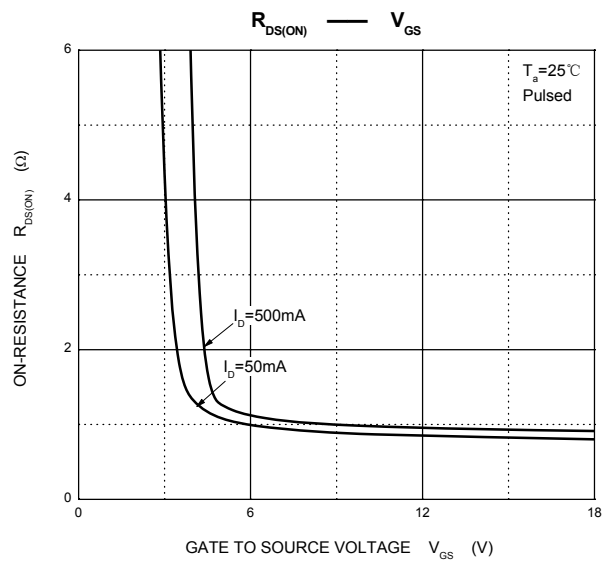
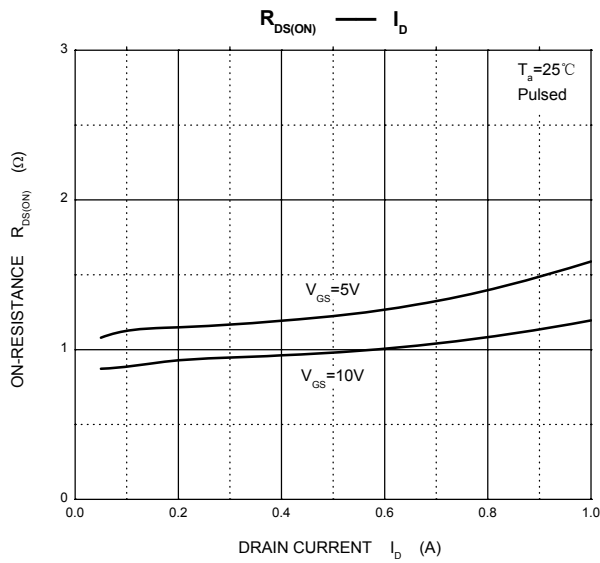
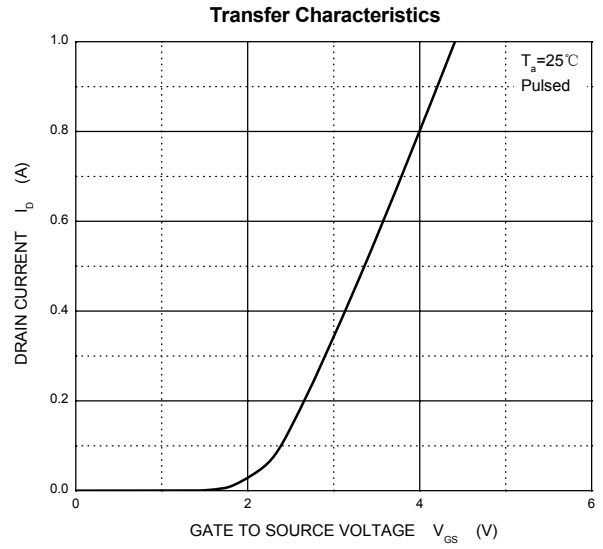
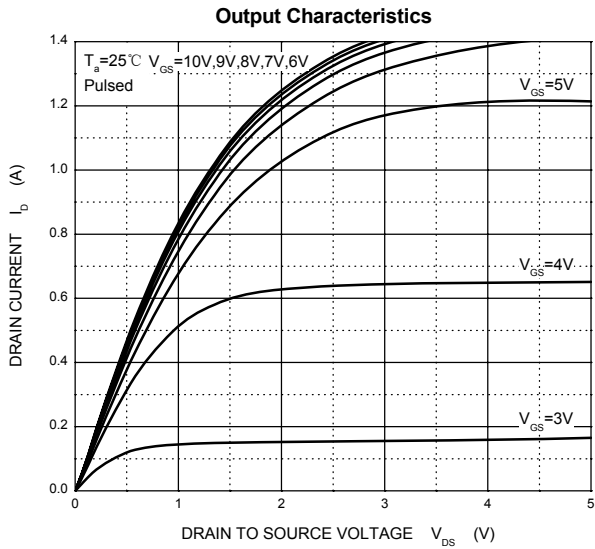
Switching Time

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.

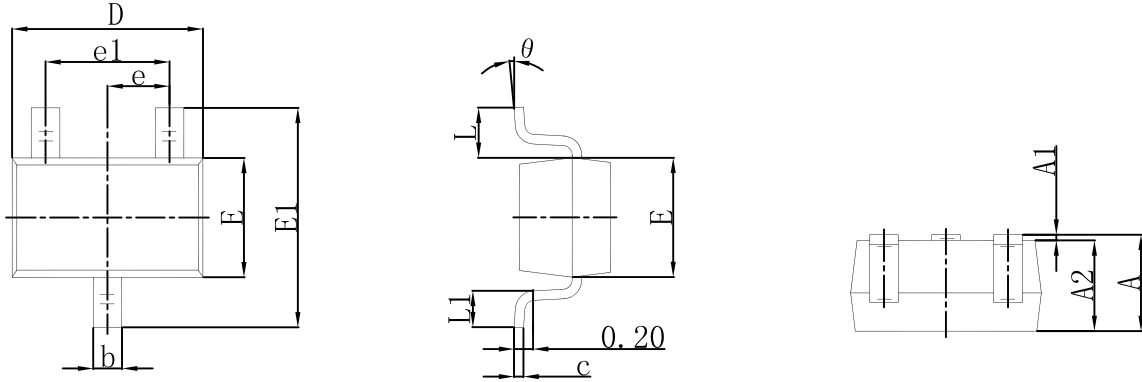


Typical Characteristics





SOT-323 Package Outline Dimensions



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
K	0°	8°	0°	8°



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