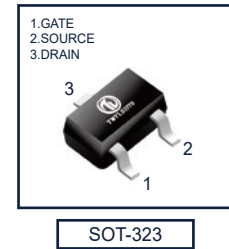


Description

The 2N7002KW is N-Channel enhancement MOS Field Effect Transistor. Uses advanced trench technology and design to provide excellent $R_{DS(on)}$, with low gate charge. Device is suitable for use in DC-DC conversion, power switch and charging circuit.

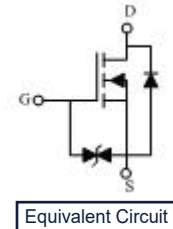
General Features

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

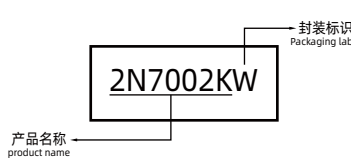


Applications

- Load Switch for Portable Devices
- DC/DC Converter



Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
2N7002KW	SOT-323		K72	3000
			72K	

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

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Drain Current-Continuous	0.34	A
I_{DM}	Drain Current -Pulsed(note1)	0.8	A
P_D	Power Dissipation	0.2	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	$^{\circ}\text{C/W}$
T_J, T_{stg}	Operation Junction and Storage Temperature Range	$-55 \sim +150$	$^{\circ}\text{C}$

Electrical Characteristics (T_A=25℃, unless otherwise noted)

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
STATIC CHARACTERISTICS						
V _{(BR) DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V , I _D =250μA	60	---	---	V
V _{GS(th)}	GateThreshold Voltage (note 2)	V _{DS} =V _{GS} , I _D =1mA	1	1.6	2.5	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =48V,V _{GS} = 0V	---	---	1	μA
I _{GSS}	Gate -Source leakage current	V _{GS} =±20V, V _{DS} =0V	---	---	±10	μA
R _{DS(on)}	Drain-Source On-Resistance (note 2)	V _{GS} = 4.5V, I _D =200mA	---	1.1	2	Ω
		V _{GS} = 10V, I _D =500mA	---	0.9	2.5	
DYNAMIC PARAMETERS (note 3)						
C _{iss}	Input Capacitance	V _{DS} =10V,V _{GS} =0V,f=1MHz	---	---	40	pF
C _{oss}	Output Capacitance		---	---	30	
C _{rss}	Reverse Transfer Capacitance		---	---	10	
SWITCHING PARAMETERS(note 3)						
T _{d(on)}	Turn-On Delay Time	V _{GS} =10V,V _{DD} =50V,R _G =50Ω, R _{GS} =50Ω, R _L =250Ω	---	---	10	ns
T _r	Rise Time		---	---	15	
T _{rr}	Reverse recovery Time	V _{GS} =0V,I _S =300mA,V _R =25V, dI _S /dt=- 100A/μS	---	30	---	
Q _r	Recovered charge	V _{GS} =0V,I _S =300mA,V _R =25V, dI _S /dt=-100A/μS	---	30	---	nC
GATE-SOURCE ZENER DIODE						
BV _{GSO}	Gate-Source Breakdown Voltage	I _{GS} =±1mA (Open Drain)	±21.5	---	±30	V
DRAIN-SOURCE DIODE						
V _{SD}	Diode Forward Voltage(note 2)	V _{GS} =0V, I _S =300mA	---	---	1.5	V
I _S	Continuous Diode Forward Current		---	---	0.2	A
I _{SM}	Pulsed Diode Forward Current(note1)		---	---	0.53	A

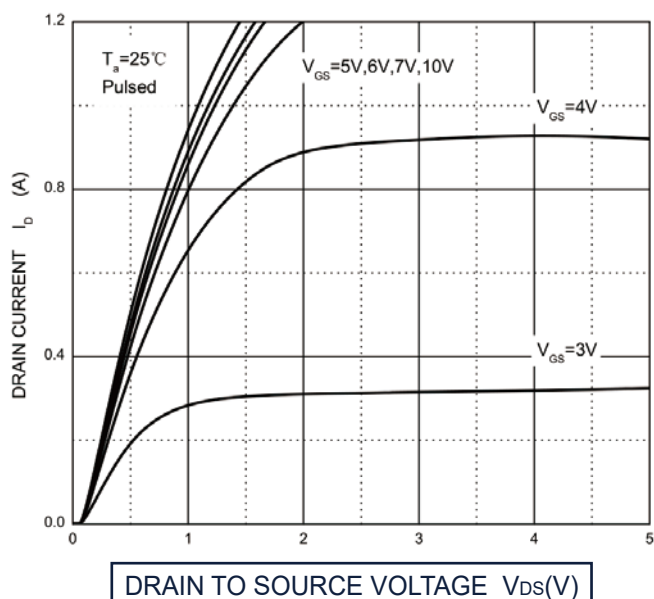
Notes :

- 1.Repetitive ratingPulse width limited by junction temperature.
- 2.Pulse Test : Pulse width300μs, duty cycle%.
- 3.Guaranteed by design, not subject to production testing.

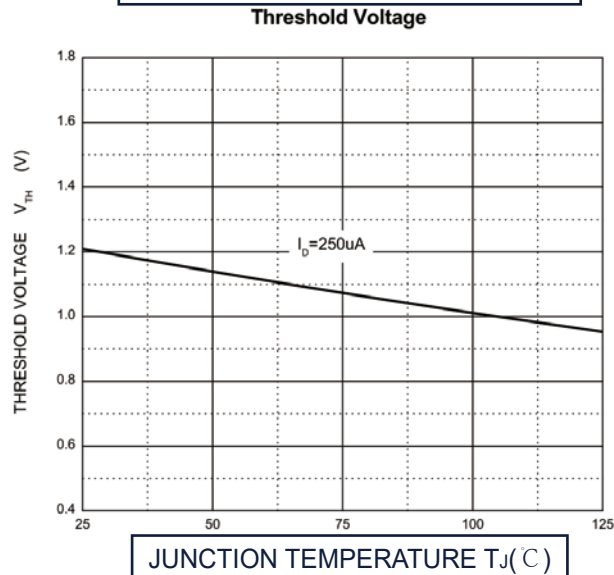
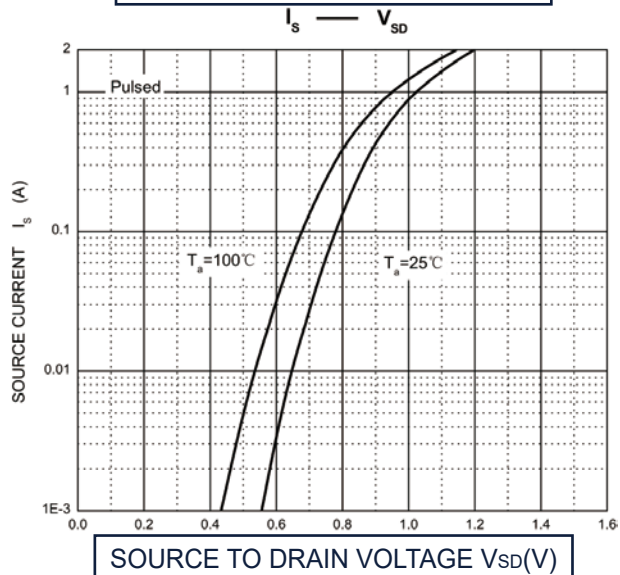
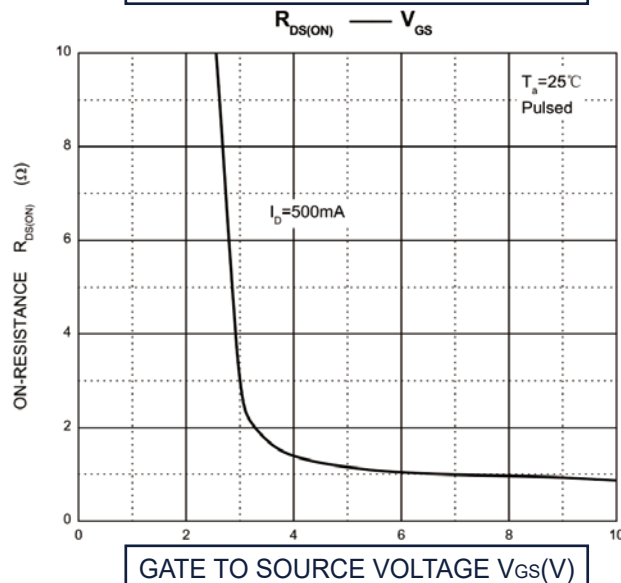
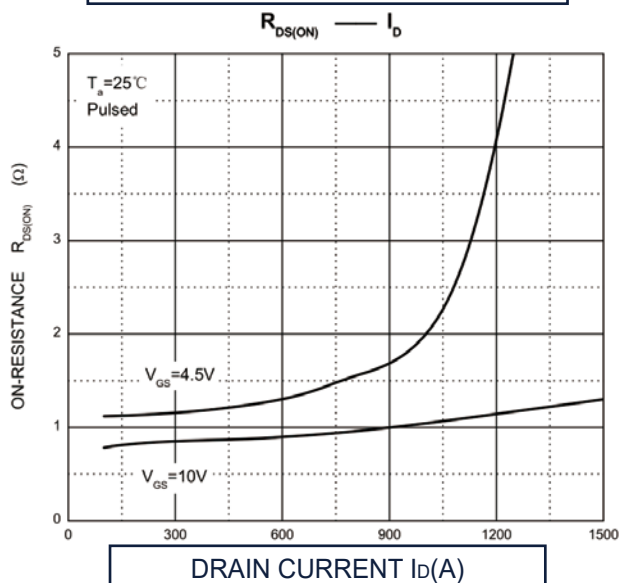
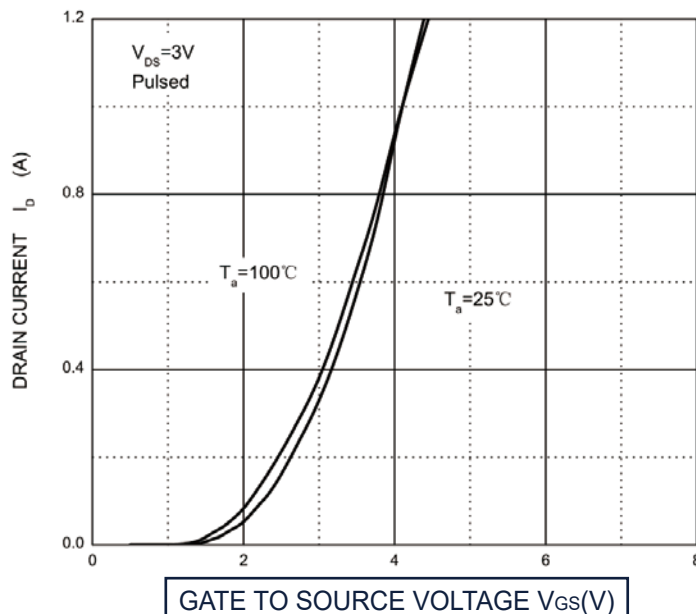


Typical Characteristics

Output Characteristics

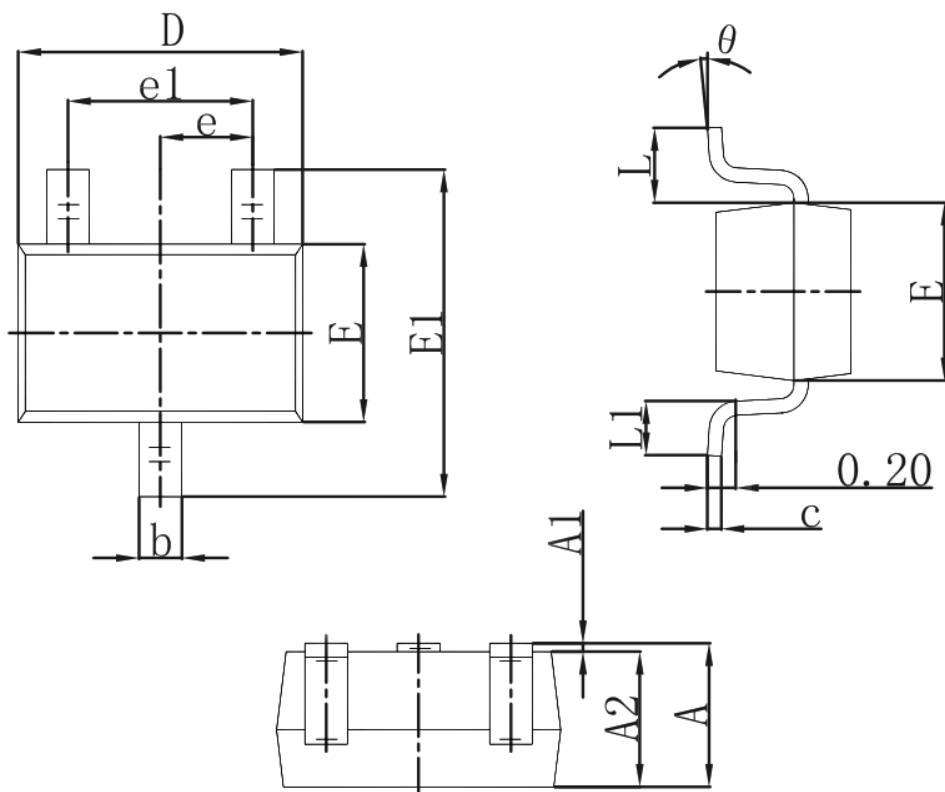


Transfer Characteristics





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	1.350	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°