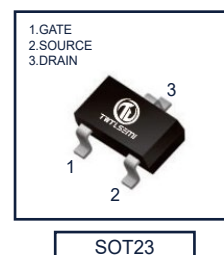


Description

The 2N7002K 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.

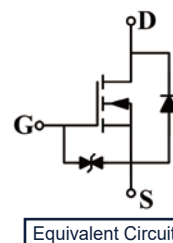
General Features

- 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)
2N7002K	SOT23	2N7002K 产品名称 product name	7002K	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	Continuous Drain Current	0.34	A
P_D	Power Dissipation	0.35	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	$^{\circ}\text{C/W}$
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)}	Gate Threshold Voltage ¹	V _{DS} =V _{GS} , I _D =250μA	1	1.6	2.5	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =60V,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 ¹	V _{GS} =10V, I _D =0.3A	---	1.8	2.2	Ω
		V _{GS} =4.5V, I _D =0.2A	---	2.0	3.0	
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =300mA	---	---	1.5	V
Q _r	Recovered charge	V _{GS} =0V,I _S =300mA,V _R =25V, dI _S /dt=-100A/μS	---	30	---	nC
DYNAMIC CHARACTERISTICS ²						
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 CHARACTERISTICS ²						
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	---	
GATE-SOURCE ZENER DIODE						
BV _{GSO}	Gate-Source Breakdown Voltage	I _{GS} =±1mA (Open Drain)	±21.5	---	±30	V

Notes :

- 1.Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%.
- 2.These parameters have no way to verify.



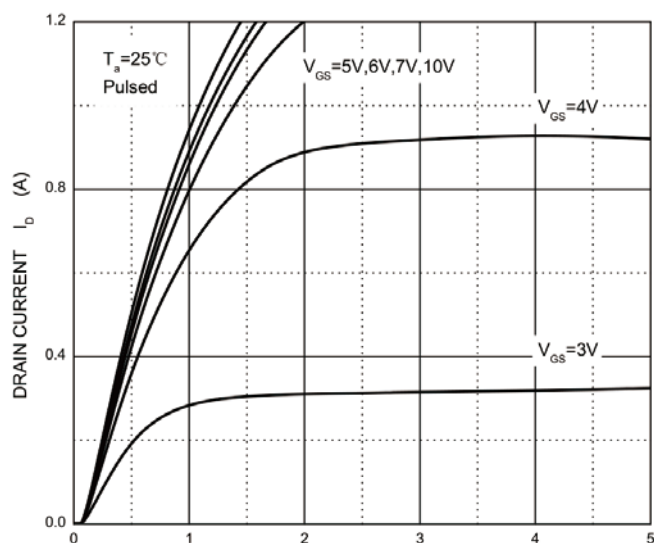
TWTLSEMI

TL-2N7002K

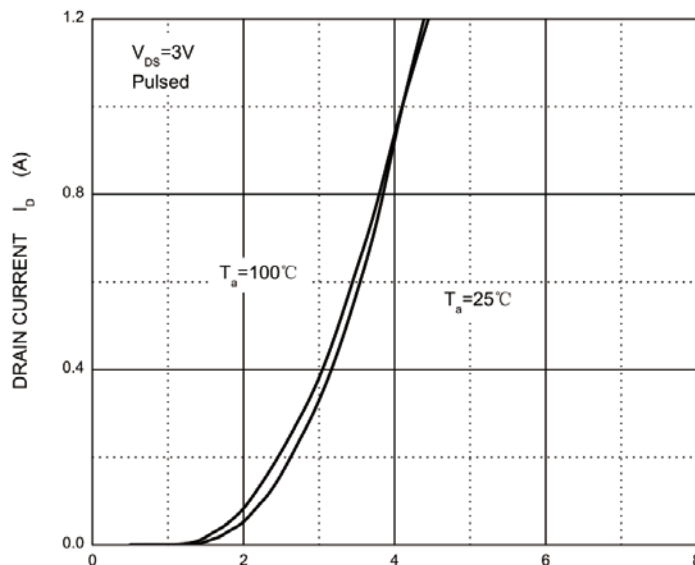
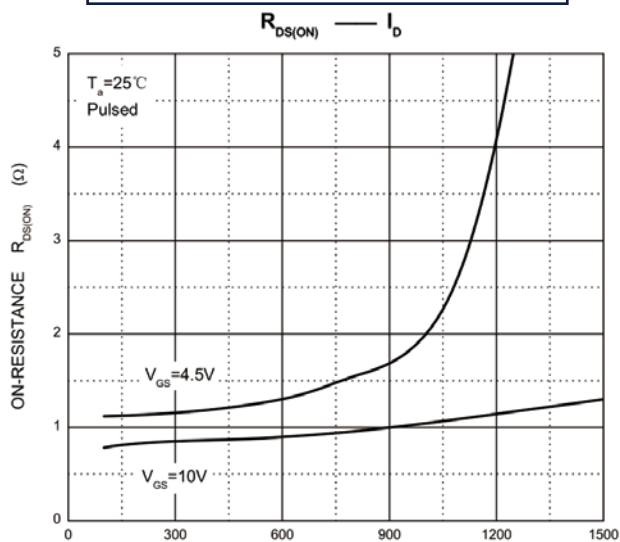
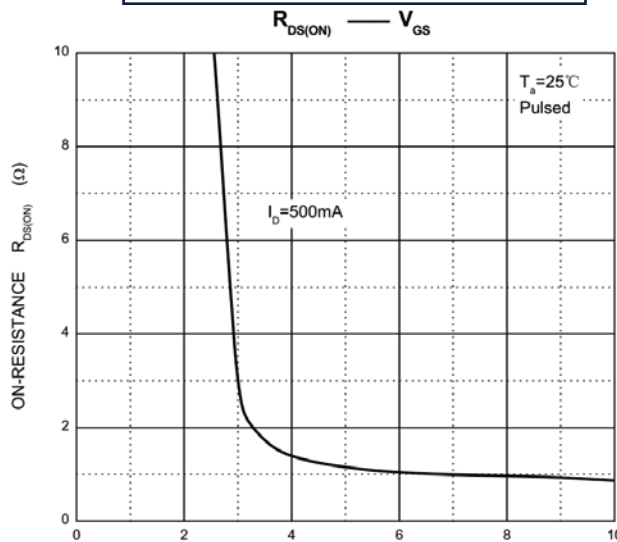
SOT23 60V N-Channel Enhancement Mode MOSFET

Typical Characteristics

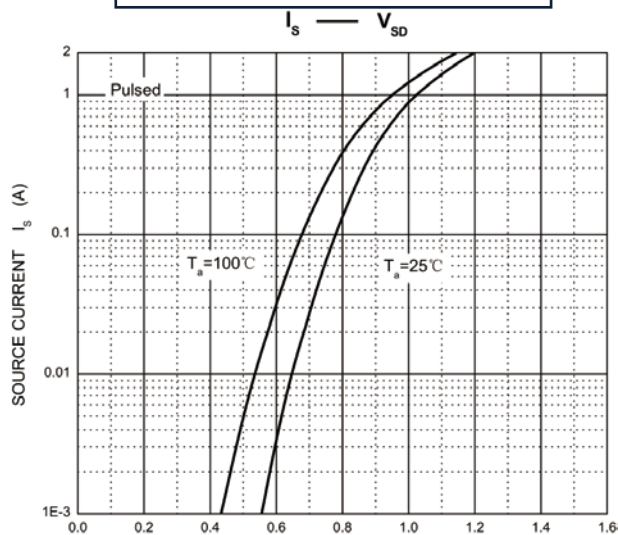
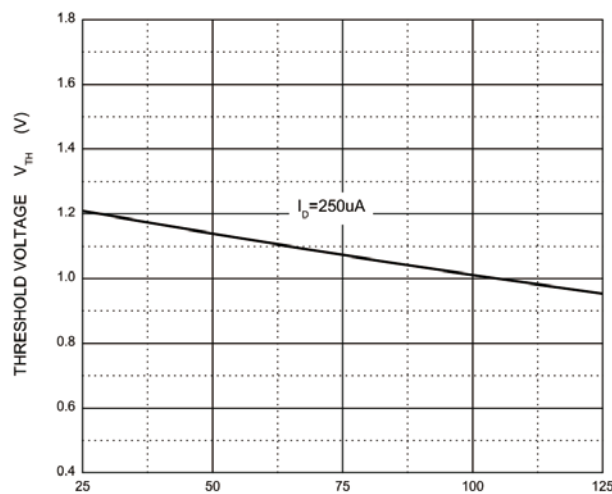
Output Characteristics

DRAIN TO SOURCE VOLTAGE V_{DS} (V)

Transfer Characteristics

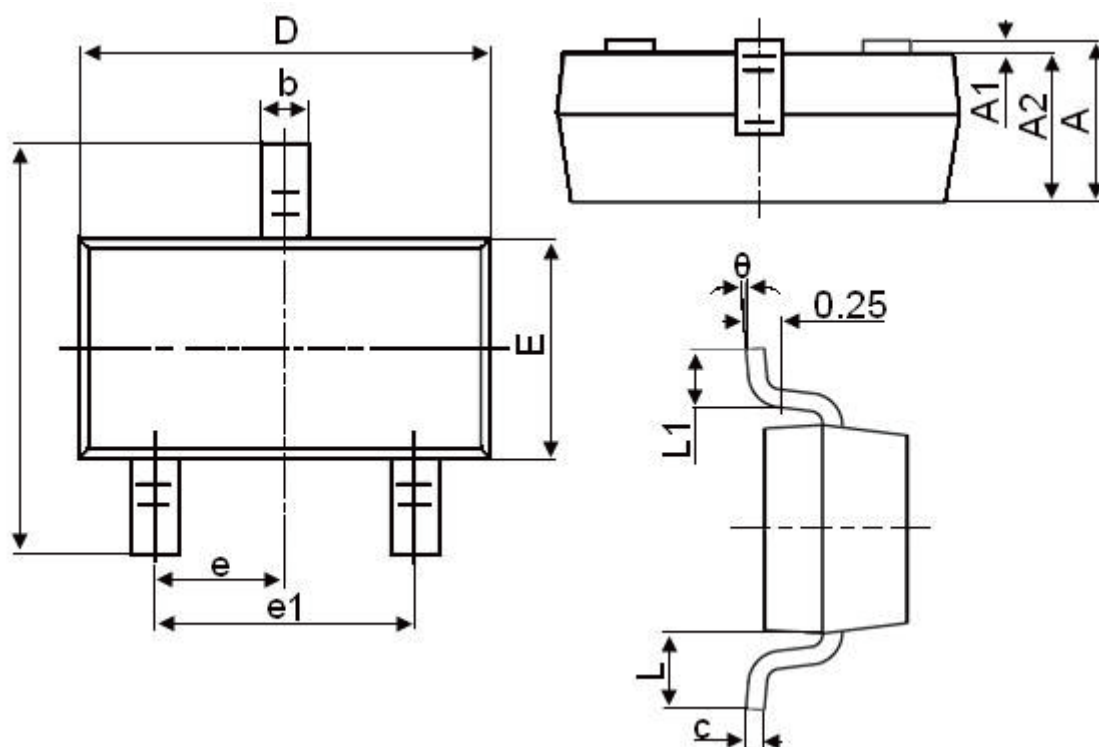
GATE TO SOURCE VOLTAGE V_{GS} (V)DRAIN CURRENT I_D (A)GATE TO SOURCE VOLTAGE V_{GS} (V)

Threshold Voltage

SOURCE TO DRAIN VOLTAGE V_{SD} (V)JUNCTION TEMPERATURE T_J ($^\circ\text{C}$)



SOT23 Package Outline Dimensions



Symbol	Dimensions in Millimeters	
	mm	
	Min	Max
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°