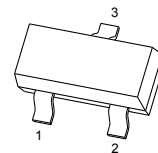


Features
2N7002K N-channel MOSFET

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

SOT-23

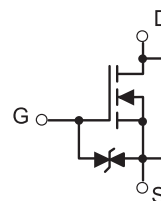
1. GATE
2. SOURCE
3. DRAIN


FEATURE

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

APPLICATION

- Load Switch for Portable Devices
- DC/DC Converter

Equivalent circuit

MARKING 7002K, 7002

MOSFET MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Unit
V_{DS}	Drain-Source voltage	60	V
V_{GS}	Gate-Source voltage	±20	V
I_D	Drain Current	340	mA
P_D	Power Dissipation	0.35	W
T_J	Junction Temperature	150	°C
T_{stg}	Storage Temperature	-55~+150	°C
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	357	°C /W

Features

MOSFET ELECTRICAL CHARACTERISTICS

$T_a = 25^\circ\text{C}$ unless otherwise specified

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
Static Characteristics						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0V, I _D =250μA	60			V
Gate Threshold Voltage*	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 _{GSS1}	V _{GS} =±20V, V _{DS} = 0V			±10	μA
	I _{GSS2}	V _{GS} =±10V, V _{DS} = 0V			±200	nA
	I _{GSS3}	V _{GS} =±5V, V _{DS} = 0V			±100	nA
Drain-Source On-Resistance*	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
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =300mA			1.5	V
Recovered charge	Q _r	V _{GS} =0V,I _S =300mA,V _R =25V, dI _S /dI=-100A/μS		30		nC
Dynamic Characteristics**						
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 Characteristics**						
Turn-On Delay Time	t _{d(on)}	V _{GS} =10V,V _{DD} =50V,R _G =50Ω, R _{GS} =50Ω, R _L =250Ω			10	ns
Turn-Off Delay Time	t _{d(off)}				15	ns
Reverse recovery Time	t _{rr}	V _{GS} =0V,I _S =300mA,V _R =25V, dI _S /dI=-100A/μS		30		ns
GATE-SOURCE ZENER DIODE						
Gate-Source Breakdown Voltage	BV _{GSO}	I _{gs} =±1mA (Open Drain)	±21.5		±30	V

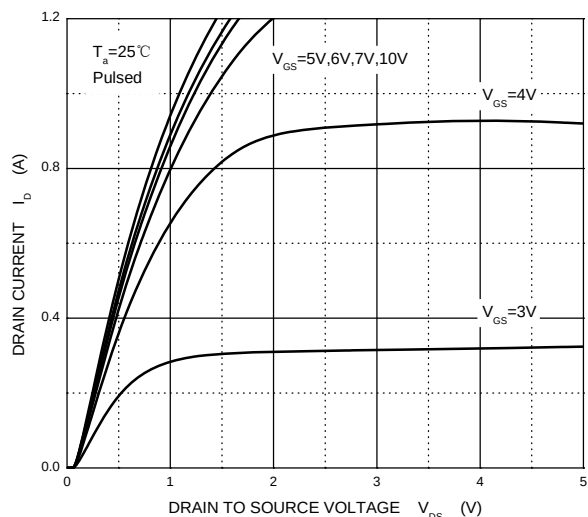
Notes :

*Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.

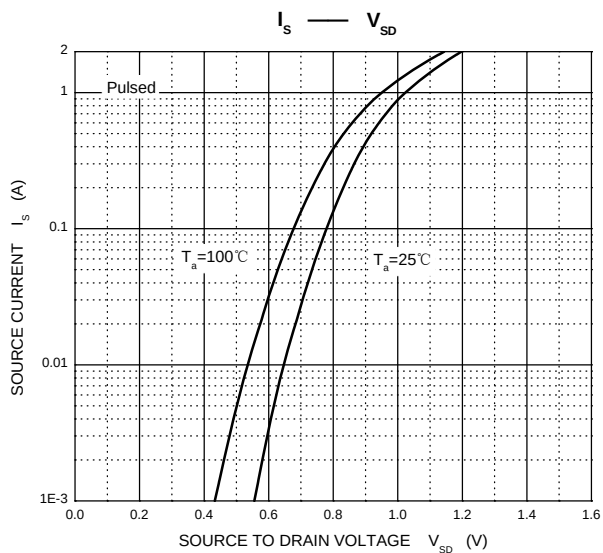
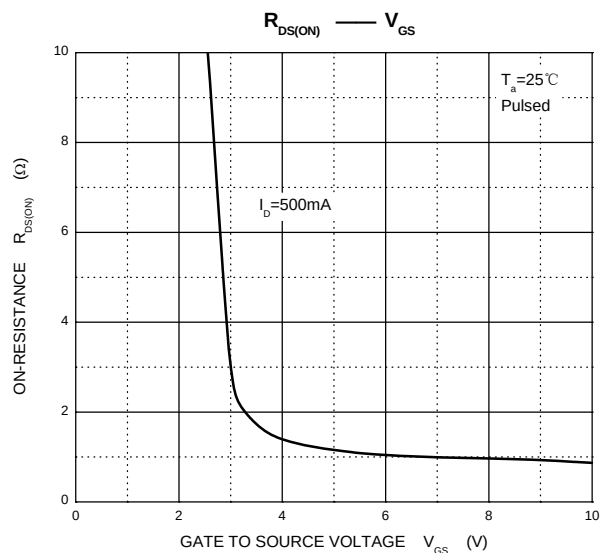
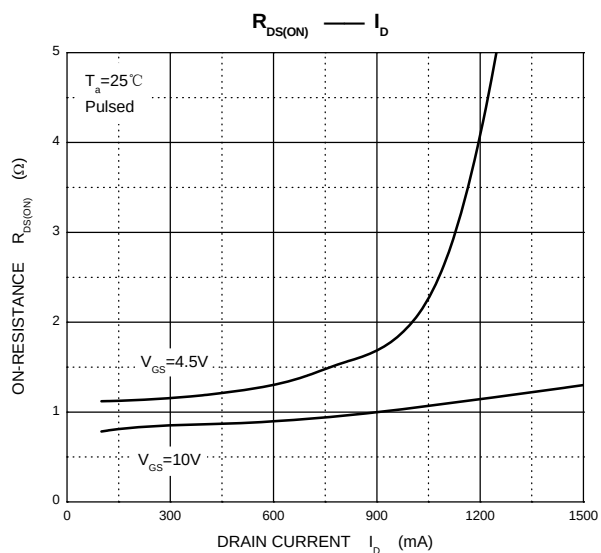
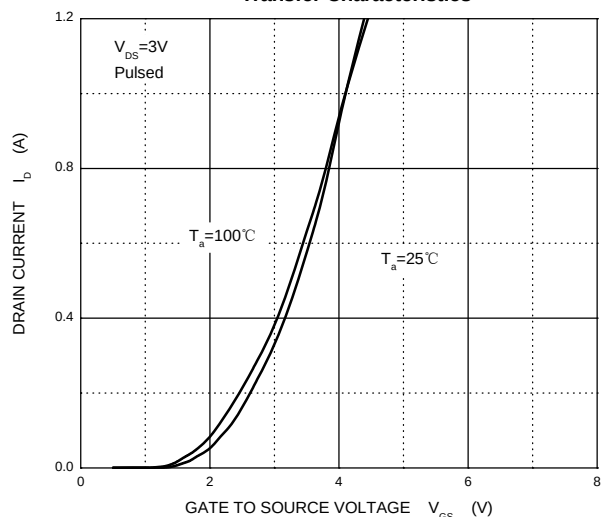
**These parameters have no way to verify.

Typical Characteristics

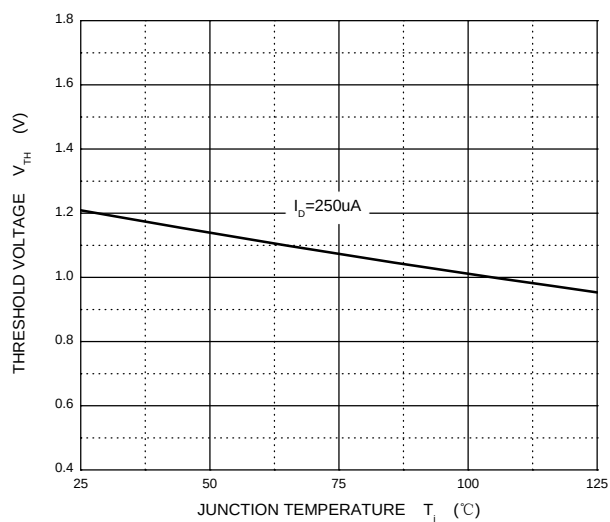
Output Characteristics



Transfer Characteristics

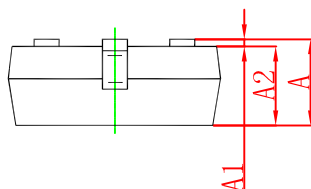
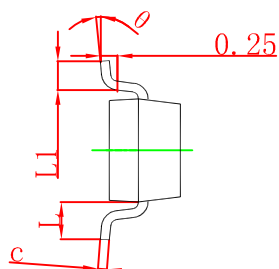
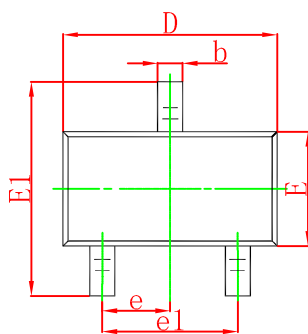


Threshold Voltage



Features

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°