

Description

The 2N7002KM is the N-Channel logic enhancement mode power field effect transistors are produced using high cell density, DMOS trench technology. This high density process is especially tailored to minimize on-state resistance. These devices are particularly suited for low voltage application such as cellular phone and notebook computer power management and other battery powered circuits where high-side switching, and low in-line power loss are needed in a very small outline surface mount package.

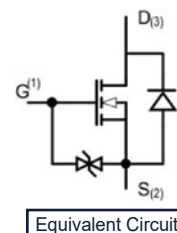
General Features

- 60V Trench DMOS technology
- Low on-state resistance
- Fast switching
- Improved dv/dt capability
- ESD Rating: 1000V HBM
- Pb-Free, RoHS Compliant

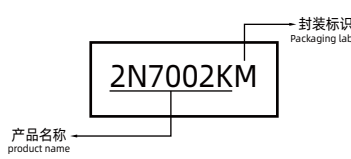


Applications

- Load switch
- Power management
- Battery operated systems
- Level Shift Circuits
- DC-DC Converter



Ordering information

Product ID	Pack	Naming rule	Marking	Qty(PCS)
2N7002KM	SOT723		RK	8000

Absolute Maximum Ratings (TA=25°C unless otherwise noted)

Symbol	Parameter	Rating	Units
V _{DSS}	Drain-Source Voltage	60	V
V _{GS}	Gate-Source Voltage	±20	V
I _D	Continuous Drain Current (note 1)	0.115	A
I _{DM}	Pulsed Drain Current (tp=10-s)	0.8	A
P _D	Power Dissipation (note 1)	150	mW
R _{θJA}	Thermal Resistance from Junction to Ambient (note1)	833	°C/W
T _J	Junction temperature	125	°C
T _{STG}	Storage temperature	-50 to +150	°C

Electrical Characteristics (TA=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
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
V _{GS(th)}	Gate threshold voltage (note2)	V _{DS} =V _{GS} , I _D =250μA	1.0	1.6	2.5	V
R _{DS(on)}	Drain-source on-resistance (note2)	V _{GS} = 10V, I _D =0.3A	---	---	3	Ω
		V _{GS} = 5V, I _D =0.3A	---	---	3.5	
I _S	Maximum Continuous Drain to Source Diode Forward Current	---	---	---	0.15	A
I _{SM}	Maximum Pulsed Drain to Source Diode Forward Current	---	---	---	0.8	A
V _{SD}	Diode Forward Voltage	V _{GS} =0V, I _S =0.15A	---	---	1.2	V
DYNAMIC CHARACTERISTICS (note3)						
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 (note3)						
T _{d(on)}	Turn-On Delay Time	V _{GS} =10V,V _{DS} =30V, I _D =200mA,R _G =3.3Ω	---	---	10	ns
T _r	Rise Time		---	---	20	
T _{d(off)}	Turn-off delay time		---	---	15	
T _f	Turn-off fall time		---	---	10	
GATE-SOURCE ZENER DIODE						
BV _{GSO}	Gate-Source Breakdown Voltage	I _{GS} =±1mA (Open Drain)	±20	---	±30	V

Notes :

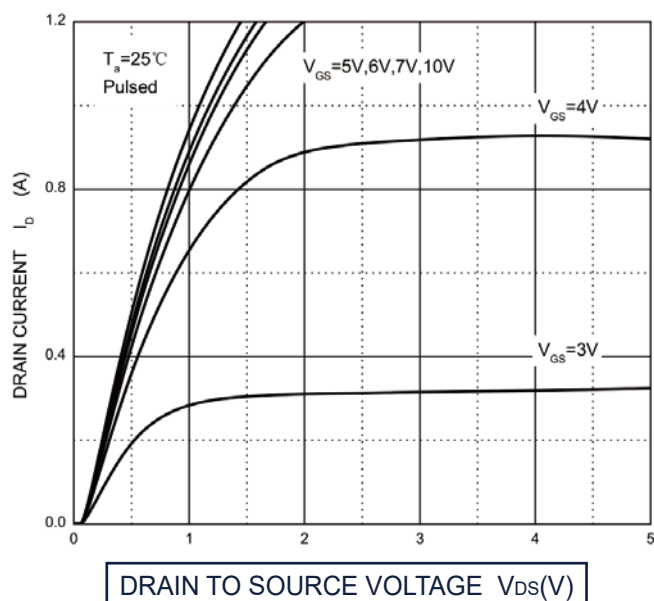
1.Pulse Test : Pulse Width ≤300μs, Duty Cycle ≤2%.

2.These parameters have no way to verify.

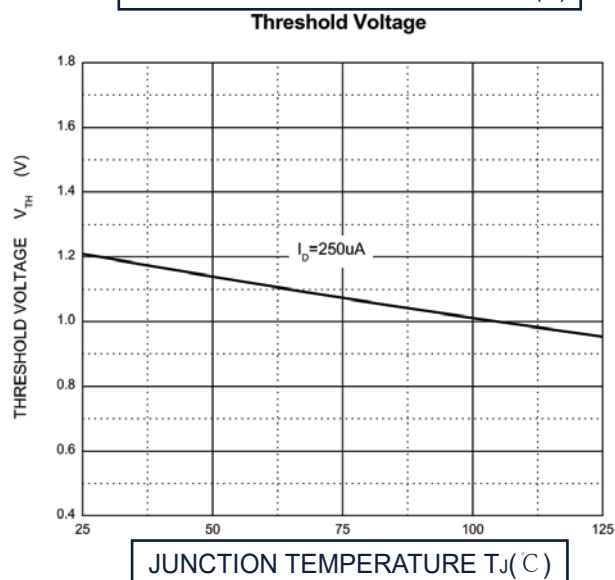
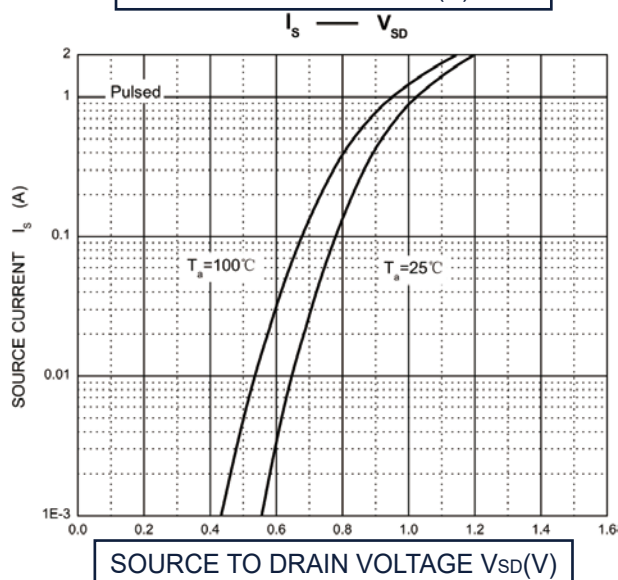
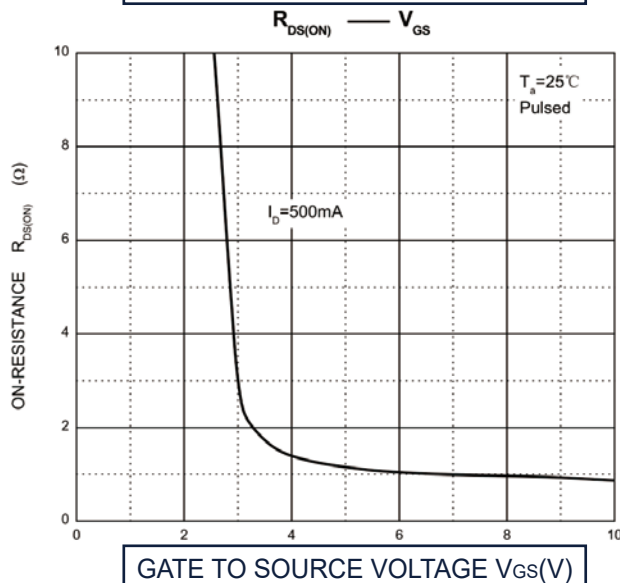
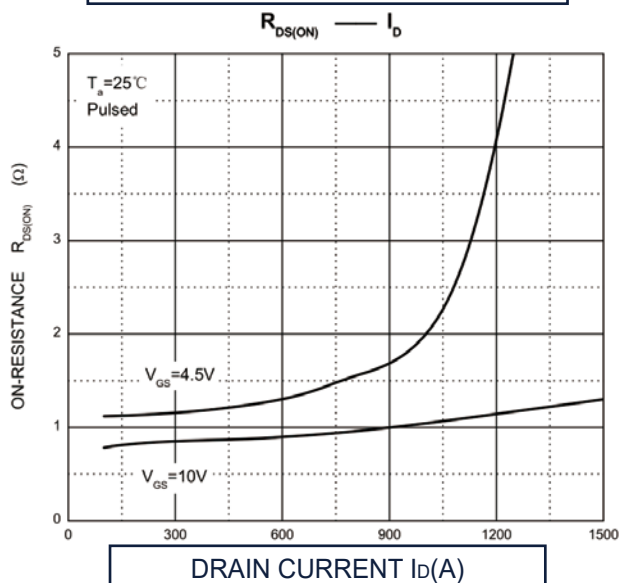
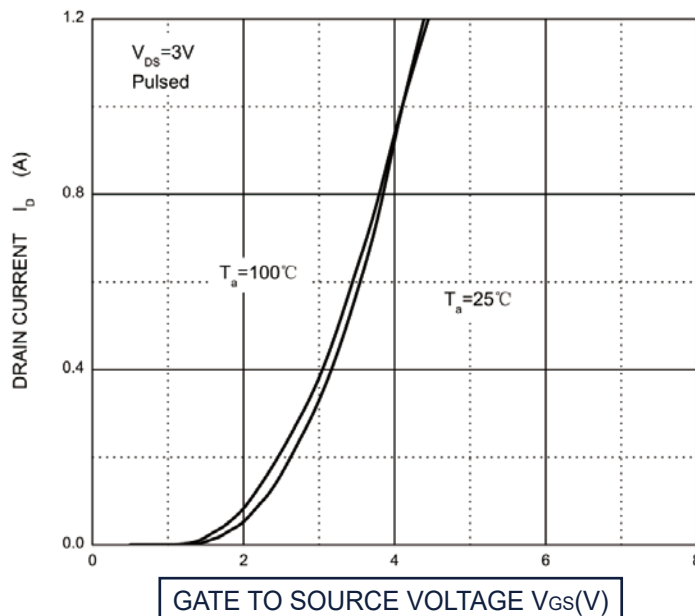


Typical Characteristics

Output Characteristics

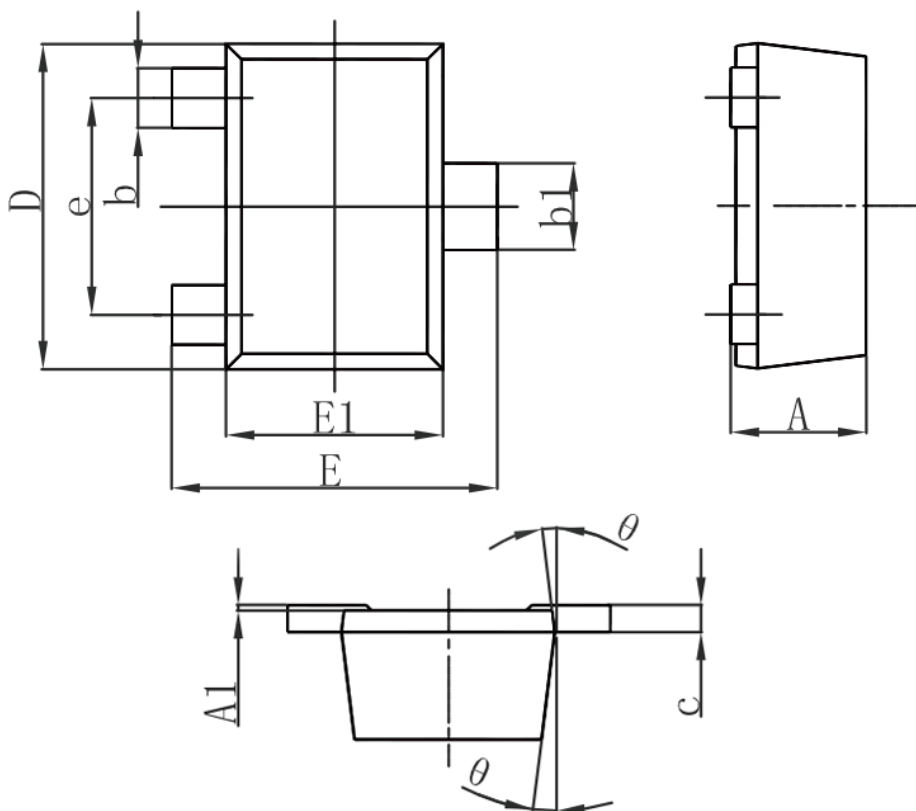


Transfer Characteristics





SOT-723 Package Outline Dimensions



Symbol	Dimensions in Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A		0.500		0.020
A1	0.000	0.050	0.000	0.002
b	0.170	0.270	0.007	0.011
b1	0.270	0.370	0.011	0.015
c		0.150		0.006
D	1.150	1.250	0.045	0.045
E	1.150	1.250	0.045	0.049
E1	0.750	0.850	0.030	0.033
e	0.800TYP.		0.031TYP.	
θ	7° REF.		7° REF.	