

60V N-Channel MOSFET

MOSFET Product Summar

V_{DS}	$R_{DS(ON)}(Max.)$	I_D
60V	$3\Omega @V_{GS}=10V$	115mA
	$3.5\Omega @V_{GS}=5V$	

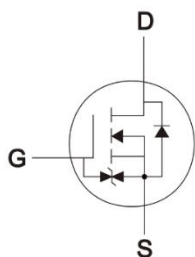
Description

The 2N7002KM uses advanced Trench technology and designs to provide excellent $R_{DS(ON)}$ with low gate charge. This device is suitable for use in PWM, load switching and general purpose applications.

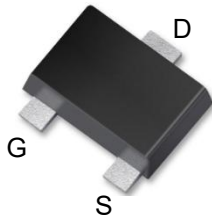
Features

- 60V Trench DMOS technology
- N-Channel Switch with Low $R_{DS(ON)}$
- Fast Switching
- Improved dv/dt capability
- ESD Protected

Dimensions and Pinonfiguration



Circuit diagram



SOT-723(Top view)

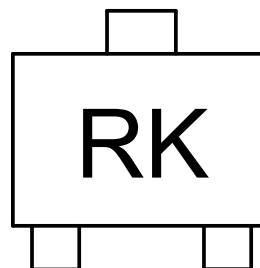
Mechanical Characteristics

- Package: SOT-723
- Case Material: "Green" Molding Compound
- Moisture Sensitivity: Level 1 per J-STD-020
- Marking Information: See Below

Applications

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

Marking Information



RK = Device Making Code

Ordering Information

Part Number	Shipping	Reel Size
2N7002KM	8000/Tape & Reel	7 inch

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

Parameter	Symbol	Value	Unit
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current (note1)	I_D	115	mA

Pulsed Drain Current _(tp=10-s)	I_{DM}	800	mA
Power Dissipation _(note1)	P_D	0.15	W
Thermal Resistance from Junction to Ambient ⁽¹⁾	$R_{\theta JA}$	833	°C/W
Junction Temperature	T_J	125	°C
Storage Temperature	T_{STG}	-50~ +150	°C

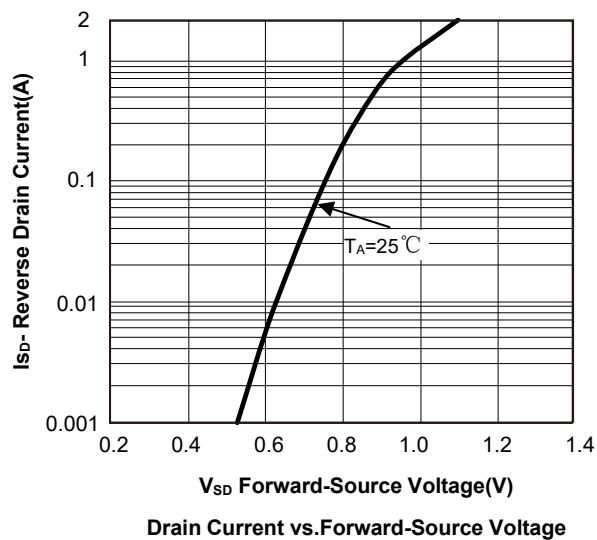
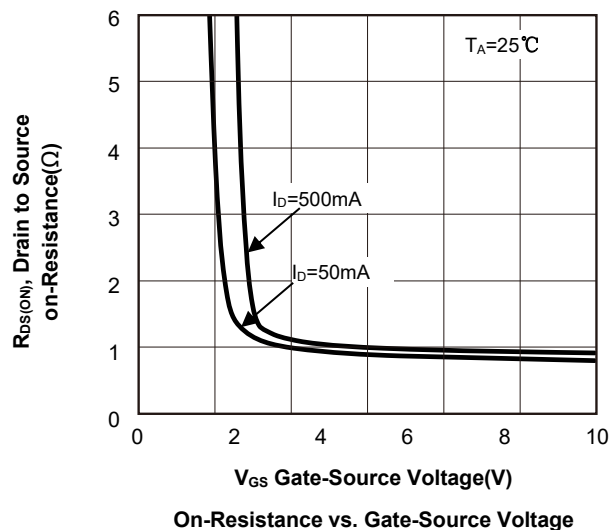
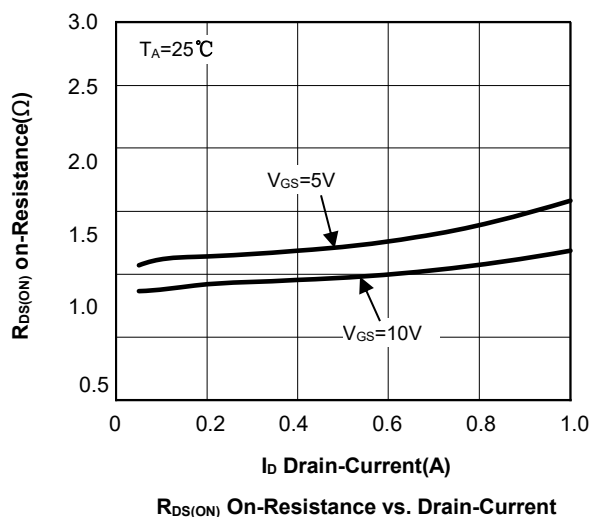
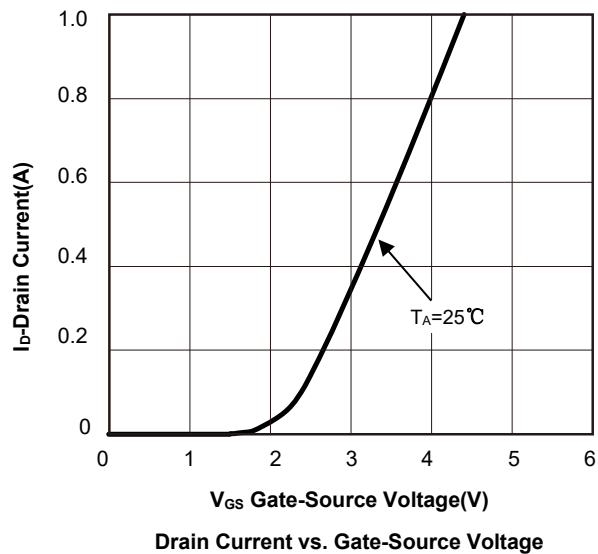
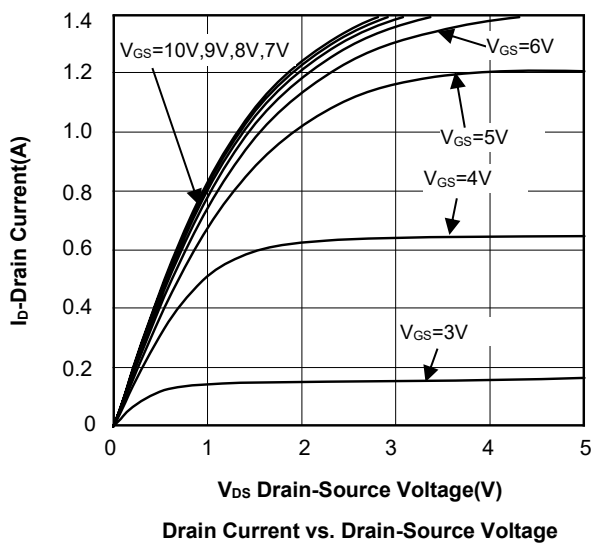
Electrical Characteristics ($T_A=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Static Characteristics						
Drain-source breakdown voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	20	-	-	V
Zero gate voltage drain current	I_{DSS}	$V_{DS} = 48V, V_{GS} = 0V$	-	-	1	μA
Gate-body leakage current _(note2)	I_{GSS}	$V_{GS} = \pm 20V, V_{DS} = 0V$	-	-	± 10	μA
Gate threshold voltage _(note2)	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.0	1.8	2.5	V
Drain-source on-resistance _(note2)	$R_{DS(on)}$	$V_{GS} = 10V, I_D = 0.3A$	-	-	3	Ω
		$V_{GS} = 5V, I_D = 0.3A$	-	-	3.5	
Diode forward voltage	V_{SD}	$I_S = 0.15A, V_{GS} = 0V$	-	-	1.2	V
Dynamic characteristics _(note3)						
Input Capacitance	C_{iss}	$V_{DS} = 10V, V_{GS} = 0V, f = 1MHz$	-	-	40	pF
Output Capacitance	C_{oss}		-	-	30	
Reverse Transfer Capacitance	C_{rss}		-	-	10	
Switching Characteristics _(note3)						
Turn-on delay time	$t_{d(on)}$	$V_{GS} = 10V, V_{DS} = 30V, R_L = 3\Omega, I_D = 200mA$	-	-	10	ns
Turn-on rise time	t_r		-	-	20	
Turn-off delay time	$t_{d(off)}$		-	-	15	
Turn-off fall time	t_f		-	-	10	

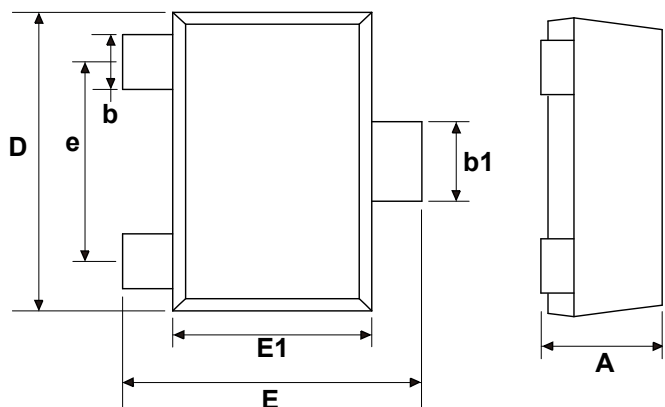
Notes:

1. Surface mounted on FR4 board using the minimum recommended pad size.
2. PulseTest : PulseWidth=300 μ s,Duty Cycle=2%
3. These parameters have no way to verify.

Typical Characteristics ($T_A=25^\circ\text{C}$ unless otherwise specified)

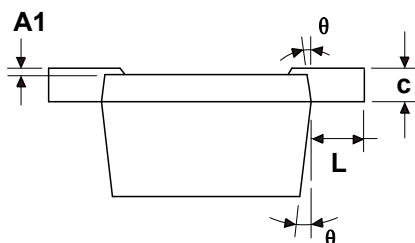


SOT-723 Package Outline Dimensions



Top View

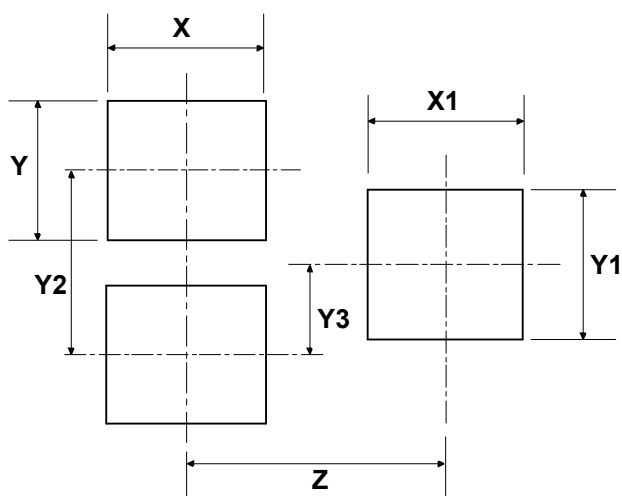
Side View



Side View

SYM	DIMENSIONS					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	0.40	-	0.50	0.0157	-	0.0197
A1	0.00	-	0.10	0.0000	-	0.0039
c	0.06	0.13	0.16	0.0024	0.0051	0.0063
b1	0.20	-	0.30	0.0079	-	0.0118
b	0.15	-	0.25	0.0059	-	0.0098
L	0.20 Ref			0.0079 Ref		
D	1.10	1.20	1.30	0.0433	0.0472	0.0512
E	1.10	1.20	1.30	0.0433	0.0472	0.0512
E1	0.70	0.80	0.90	0.0276	0.0315	0.0354
e	0.80 Ref			0.0315 Ref		
θ	8°	-	10°	8°	-	10°

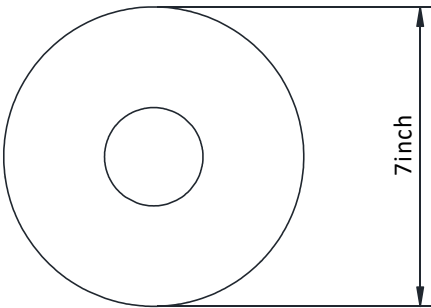
Recommended PCB Layout (Unit: mm)



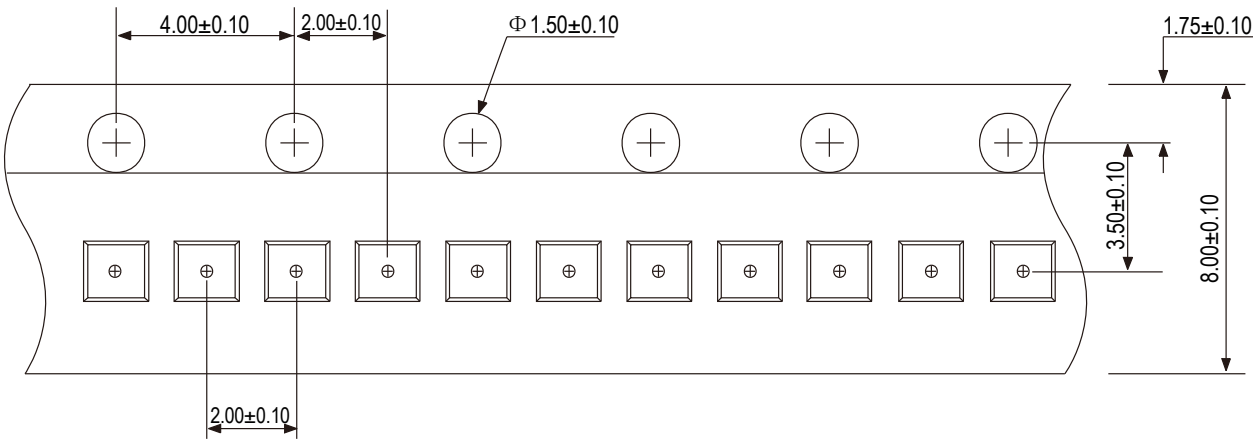
Symbol	Dimensions
X	0.60
X1	0.60
Y	0.60
Y1	0.65
Y2	0.80
Y3	0.40
Z	1.00

TAPE AND REEL INFORMATION

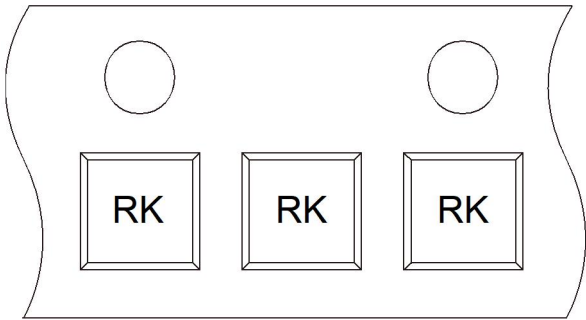
Reel Dimensions



Tape Dimensions



Unit:mm



➡
User Direction of Feed

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