



SOT-23 Plastic-Encapsulate MOSFETS

**2N7002K N-Channel 60-V(D-S) MOSFET**

V(BR)DSS	RDS(on)MAX	ID
60 V	3Ω@10V	300mA
	4Ω@4.5V	

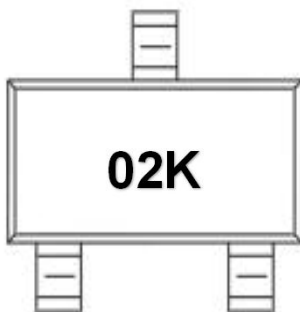
**FEATURE:**

- ※ TrenchFET Power MOSFET
- ※ ESD Protected
- ※ Reliable and Rugged

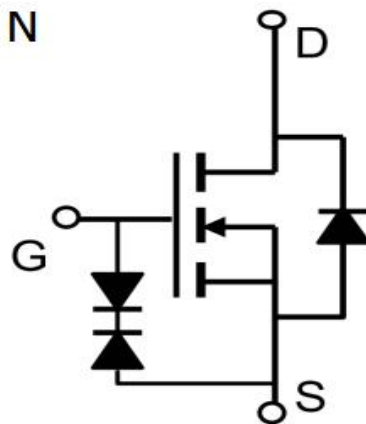
**APPLICATION:**

- ※ Load Switch for Portable Devices
- ※ DC/DC Converter

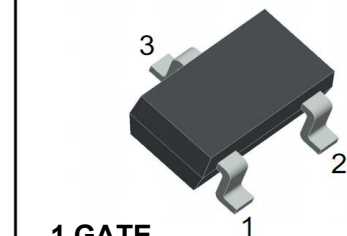
**MARKING**



**Equivalent Circuit**



**SOT-23**



- 1.GATE
- 2.SOURCE
- 3.DRAIN

**Maximum ratings ( Ta=25°C unless otherwise noted)**

Parameter	Symbol	Value	Unit
Drain-Source Voltage	VDS	60	V
Gate-Source Voltage	VGS	±20	
Continuous Drain Current	ID	300	mA
Pulsed Diode Curren	IDM	800	
Continuous Source-Drain Current(Diode Conduction)	IS	500	mA
Power Dissipation	PD	0.45	W
Thermal Resistance from Junction to Ambient (t≤5s)	RθJA	556	°C/W
Operating Junction	TJ	150	°C
Storage Temperature	TSTG	-55~+150	



**MOSFET ELECTRICAL CHARACTERISTICS**

**Static Electrical Characteristics (Ta = 25 °C Unless Otherwise Noted)**

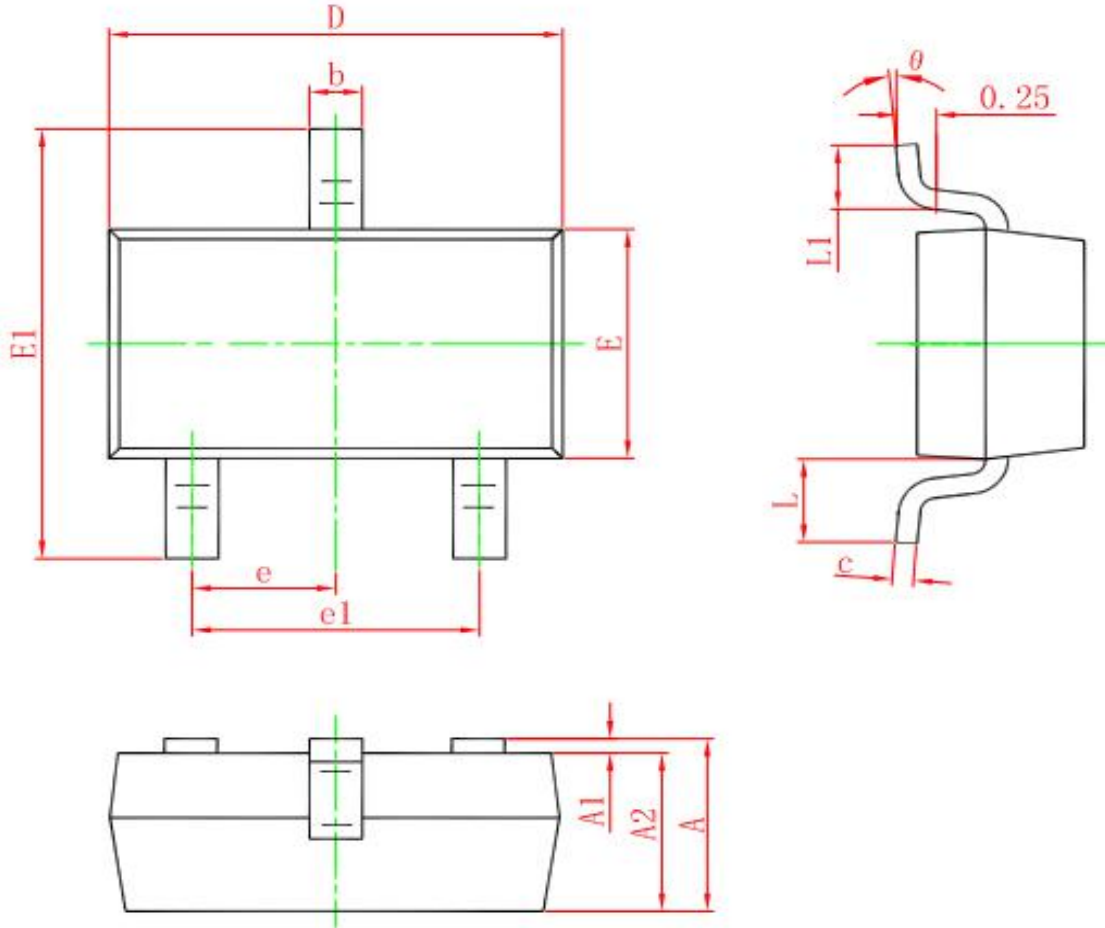
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>Static</b>						
Drain-source breakdown voltage	V(BR)DSS	VGS = 0V, ID = 250μA	60			V
Gate-source threshold voltage	VGS(th)	VDS = VGS, ID = 250μA	1.05		2	V
Gate-source leakage	IGSS	VDS = 0V, VGS = ±20V			±10	μA
Zero gate voltage drain current	IDSS	VDS = 60V, VGS = 0V			1	μA
Drain-source on-state resistancea	RDS(on)	VGS = 10V, ID = 500mA		1.1	3	Ω
		VGS = 4.5V, ID = 200mA		1.2	4	Ω
Forward transconductancea	gfs	VDS = 4.5V, ID = 0.3A	80			mS
Diode forward voltage	VSD	IS=1A,VGS=0V		0.7	1.5	V
<b>Dynamic</b>						
Input capacitance	Ciss	VDS = 10V, VGS = 0V, f=1MHz			50	pF
Output capacitance	Coss				25	pF
Reverse transfer capacitanceb	Crss				5	pF
Total gate charge	Qg	VDS = 10V, VGS = 4.5V, ID = 0.3A		1	1.1	nC
Gate-source charge	Qgs			1		nC
Gate-drain charge	Qgd			1.3		nC
Gate resistance	Rg	f=1MHz		1		Ω
<b>Switchingb</b>						
Turn-on delay time	td(on)	VDD= 10V RL=2Ω, ID ≈ 1A, VGEN= 4.5V,Rg=3Ω			20	ns
Rise time	tr					ns
Turn-off delay time	td(off)				40	ns
Fall time	tf					ns
<b>Drain-source body diode characteristics</b>						
Continuous Source-Drain Diode Current	IS	Tc=25°C			1.5	A
Pulsed Diode forward Curren	ISM				20	A

**Note :**

1. Repetitive Rating : Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t < 5 sec.
3. Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.



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
theta	0°	8°	0°	8°



TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

