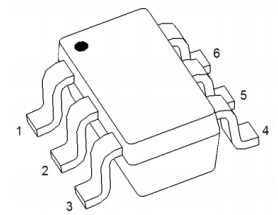
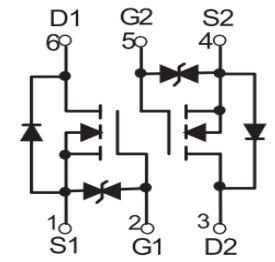




## 2N7002K Plastic-Encapsulate MOSFETS

### N-Channel MOSFET

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



### 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

**MARKING : 72K**

**SOT23-6L**

### 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
$I_D$	Continuous Drain Current	340	mA
$I_{DM}$	Pulsed Drain Current(note1)	800	mA
$P_D$	Power Dissipation	0.2	W
$T_j$	Junction Temperature	150	°C
$T_{stg}$	Storage Temperature	-55~+150	°C
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	625	°C/W



T<sub>a</sub>=25 C unless otherwise specified

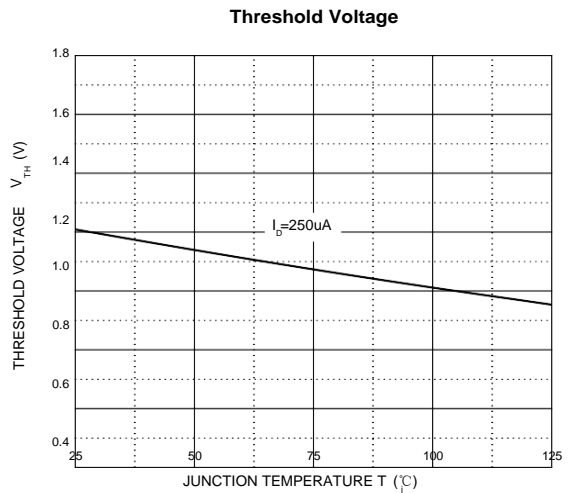
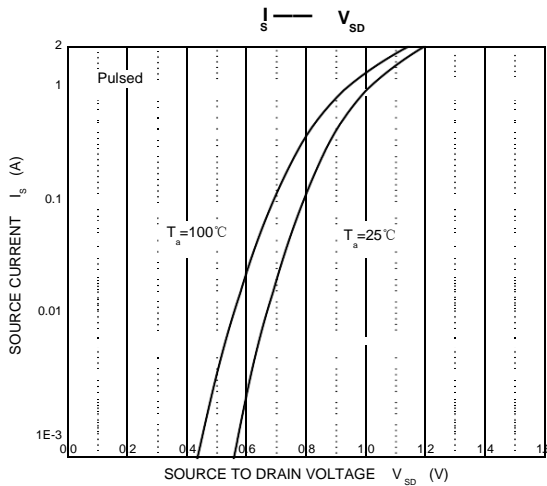
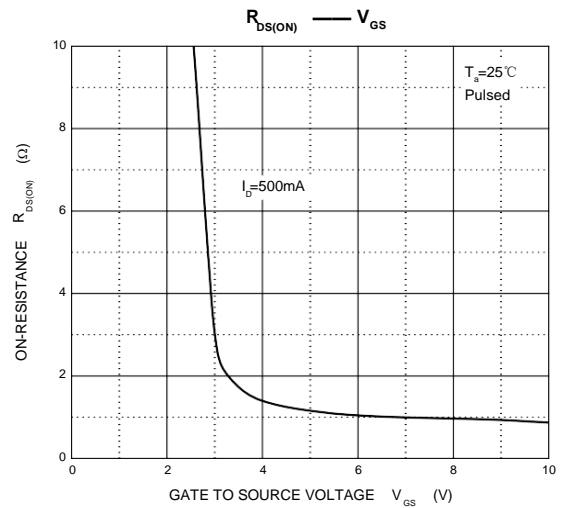
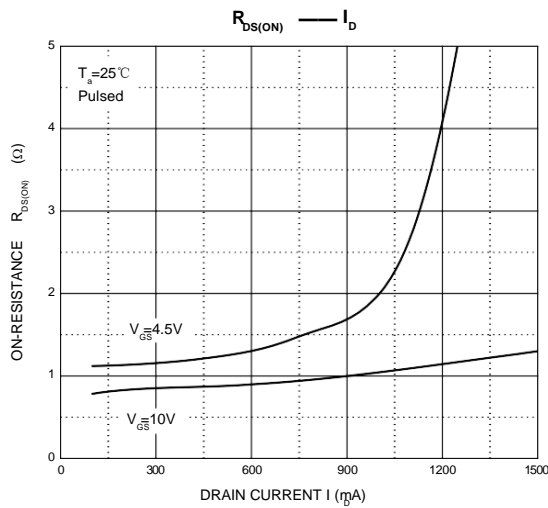
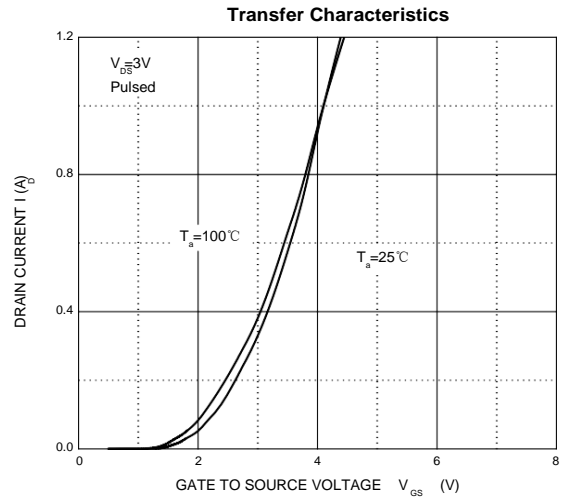
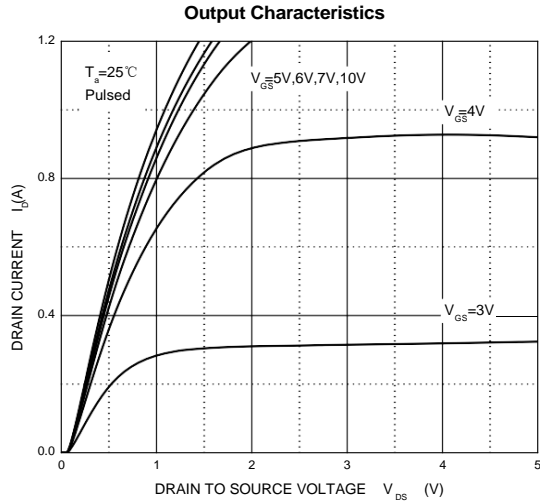
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
<b>STATIC PARAMETERS</b>						
Drain-source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	60			V
GateThreshold Voltage (note 2)	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 1mA	1	1.3	2.5	V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 48V, V <sub>GS</sub> = 0V			1	μA
Gate-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> = ±20V, V <sub>DS</sub> = 0V			±10	μA
Drain-Source On-Resistance (note 2)	R <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 200mA		2.3	5.3	R
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 500mA		1.5	5	R
<b>DYNAMIC PARAMETERS (note 3)</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> = 10V, V <sub>GS</sub> = 0V, f = 1MHz			40	pF
Output Capacitance	C <sub>oss</sub>				30	pF
Reverse Transfer Capacitance	C <sub>rss</sub>				10	pF
<b>SWITCHING PARAMETERS (note 3)</b>						
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>GS</sub> = 10V, V <sub>DD</sub> = 50V, R <sub>G</sub> = 50Ω			10	ns
Turn-off Delay Time	t <sub>d(off)</sub>		R <sub>GS</sub> = 50Ω, R <sub>L</sub> = 250Ω			15
Reverse Recovery Time	t <sub>rr</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA, V <sub>R</sub> = 25V, dI <sub>S</sub> /dt = -100A/μs		30		ns
Recovered Charge	Q <sub>r</sub>	V <sub>GS</sub> = 0V, I <sub>S</sub> = 300mA, V <sub>R</sub> = 25V dI <sub>S</sub> /dt = -100A/μs		30		nC
<b>DRAIN-SOURCE DIODE</b>						
Diode Forward Voltage(note 2)	V <sub>SD</sub>	I <sub>S</sub> = 300mA, V <sub>GS</sub> = 0V			1.5	V
Continuous Diode Forward Current	I <sub>S</sub>				0.2	A
Pulsed Diode Forward Current(note1)	I <sub>SM</sub>				0.53	A

**Notes :**

1. Repetitive rating - Pulse width limited by junction temperature.
2. Pulse Test : Pulse width ≤ 300μs, duty cycle ≤ 2%.
3. Guaranteed by design, not subject to production testing.

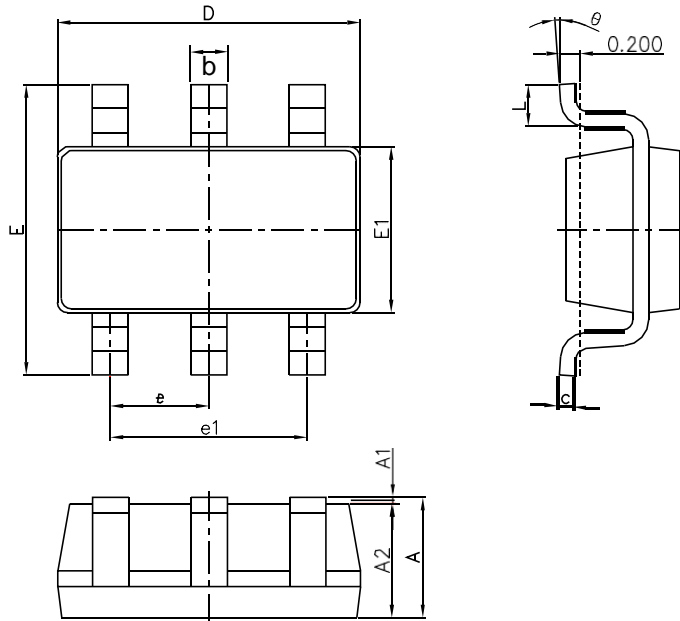


## Typical Characteristics



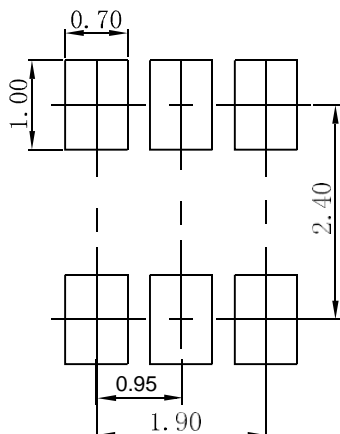


### SOT-23-6L Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E1	1.500	1.700	0.059	0.067
E	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

### SOT-23-6L Suggested Pad Layout



- Note:
1. Controlling dimension: in millimeters.
  2. General tolerance:  $\pm 0.05\text{mm}$ .
  3. The pad layout is for reference purposes only.