

## HIGH SPEED SWITCHING APPLICATIONS

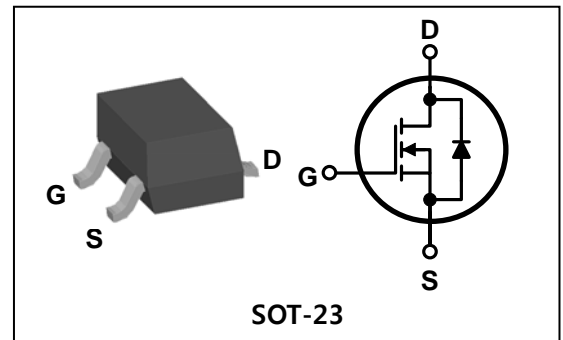
### Features

- Low Gate Threshold Voltage
- Low  $C_{RSS}$  :  $C_{RSS}=2.0\text{pF(Typ.)}$
- Voltage controlled small signal switch
- Low  $R_{DS(on)}$  :  $R_{DS(on)}=5\Omega(\text{Max.})$

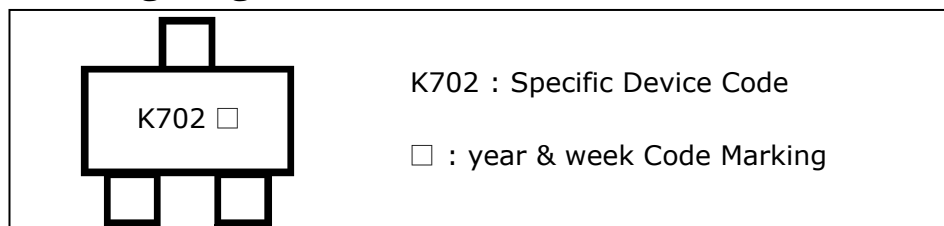
### Ordering Information

Type No.	Marking	Package Code
STK7002	<u>K702</u> □ ① ②	SOT-23

### PIN Connection



### Marking Diagram



### Absolute maximum ratings ( $T_A=25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Rating	Unit
Drain-source voltage	$V_{DSS}$	60	V
Gate-source voltage	$V_{GSS}$	$\pm 20$	V
Drain current (DC) *	$I_D$	115	mA
Drain current (Pulsed) *	$I_{DM}$	800	mA
Junction temperature	$T_J$	150	°C
Storage temperature range	$T_{stg}$	-55~150	

\* Limited by maximum junction temperature

### Thermal Characteristics

Characteristic	Symbol	Rating	Unit
Power dissipation	$P_D$	350	mW
Thermal resistance, Junction-Ambient *	$R_{th(J-A)}$	357	°C/W

\* Device mounted on FR-4 PCB, 99.5% Alumina 10 x 8 x 0.6mm. Minimum land pad size

## Electrical Characteristics (T<sub>A</sub>=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
<b>Off Characteristics (Note1)</b>						
Drain-source breakdown voltage	BV <sub>DSS</sub>	I <sub>D</sub> =10uA, V <sub>GS</sub> =0	60	-	-	V
Drain-source cut-off current	I <sub>DSS</sub>	V <sub>DS</sub> =60V, V <sub>GS</sub> =0	-	-	1.0	uA
		V <sub>DS</sub> =60V, V <sub>GS</sub> =0, @T <sub>C</sub> =125°C	-	-	200	
Gate leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V	-	-	±100	nA
<b>On Characteristics (Note1)</b>						
Gate threshold voltage	V <sub>GS(th)</sub>	I <sub>D</sub> =250uA, V <sub>DS</sub> =V <sub>GS</sub>	1.0	2.0	2.5	V
Drain-source on-resistance	R <sub>DS(ON)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =500mA	-	2.4	5.0	Ω
		V <sub>GS</sub> =5V, I <sub>D</sub> =50mA	-	3.2	5.0	
Forward transfer conductance	g <sub>fs</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =100mA	80	-	-	mS
<b>Dynamic Characteristics</b>						
Input capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =25V, f=1MHz	-	22	-	pF
Output capacitance	C <sub>oss</sub>		-	11	-	
Reverse transfer capacitance	C <sub>rss</sub>		-	2	-	
<b>Switching Characteristics</b>						
Turn-on delay time	t <sub>D(ON)</sub>	V <sub>DD</sub> =30V, I <sub>D</sub> =100mA V <sub>GS</sub> =10V, R <sub>G</sub> =25Ω	-	7	-	ns
Turn-off delay time	t <sub>D(OFF)</sub>		-	11	-	

Note1 : Short duration test pulse used to minimize self-heating effect.

Electrical Characteristic Curves

Fig. 1  $I_D - V_{DS}$

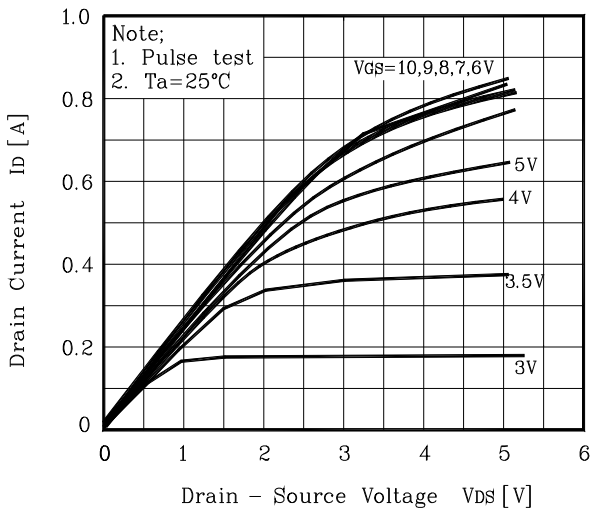


Fig. 2  $I_D - V_{GS}$

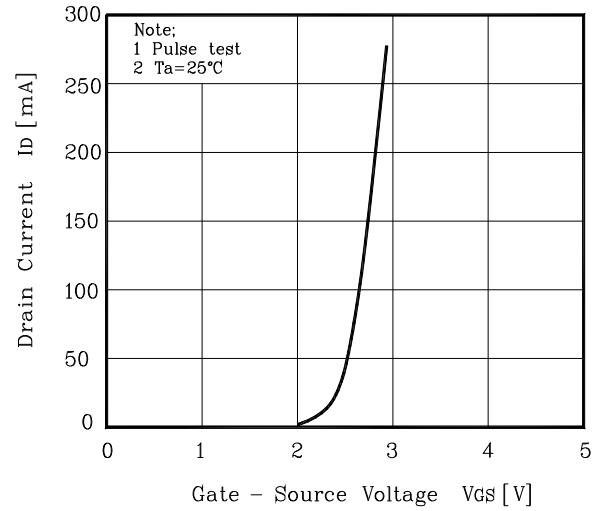


Fig. 3  $R_{DS(on)} - I_D$

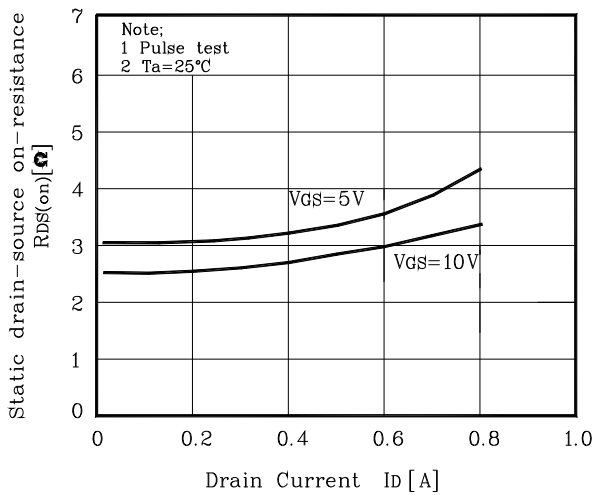


Fig. 4  $R_{DS(on)} - V_{GS}$

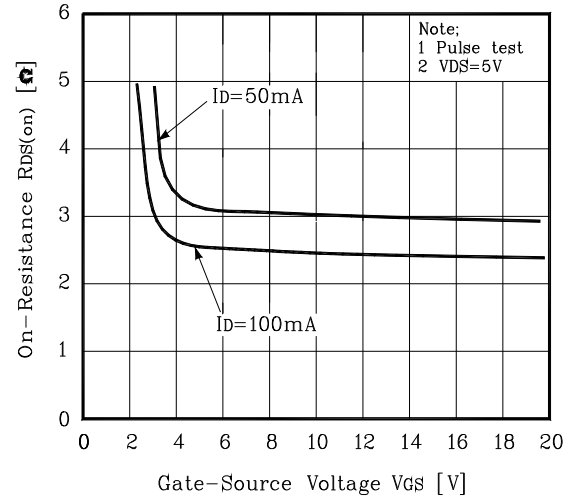


Fig. 5 Capacitance -  $V_{DS}$

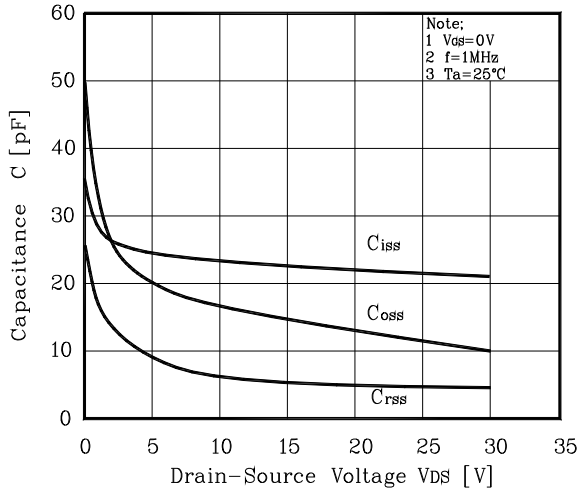
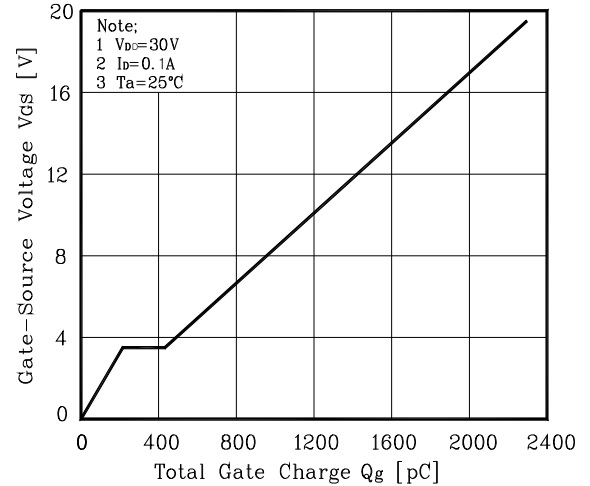


Fig. 6  $V_{GS} - Q_g$



Electrical Characteristic Curves

Fig. 7  $I_s - V_{SD}$

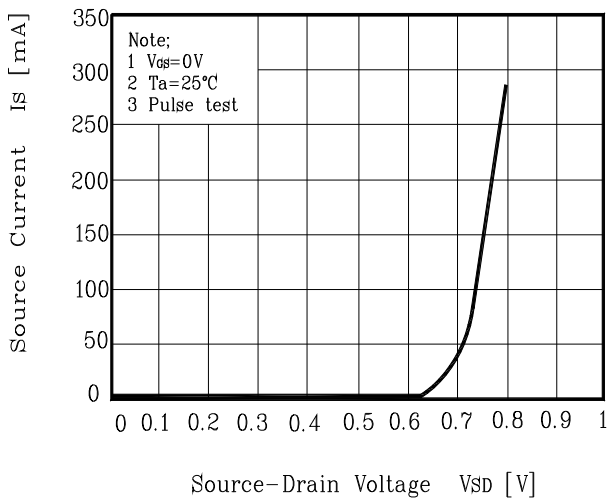
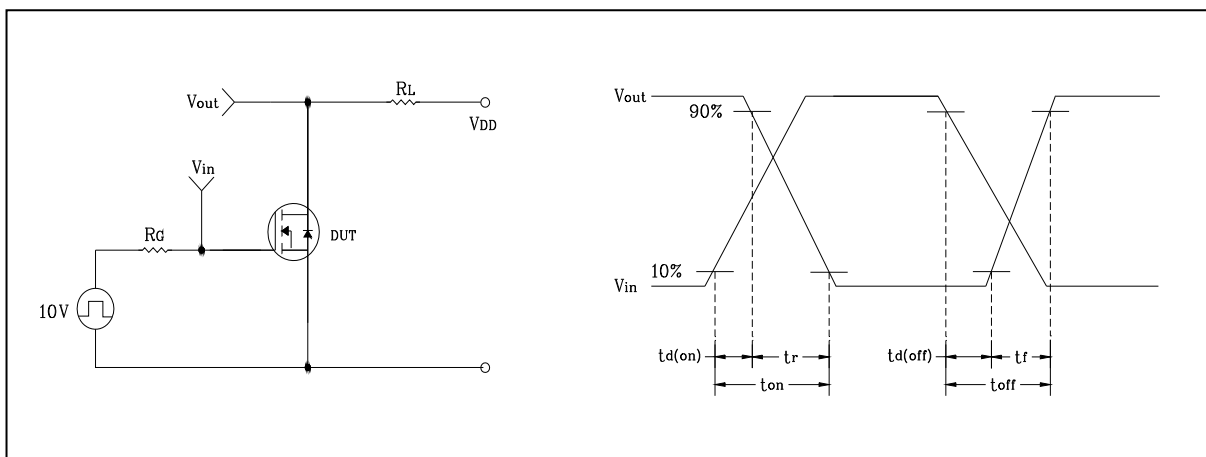
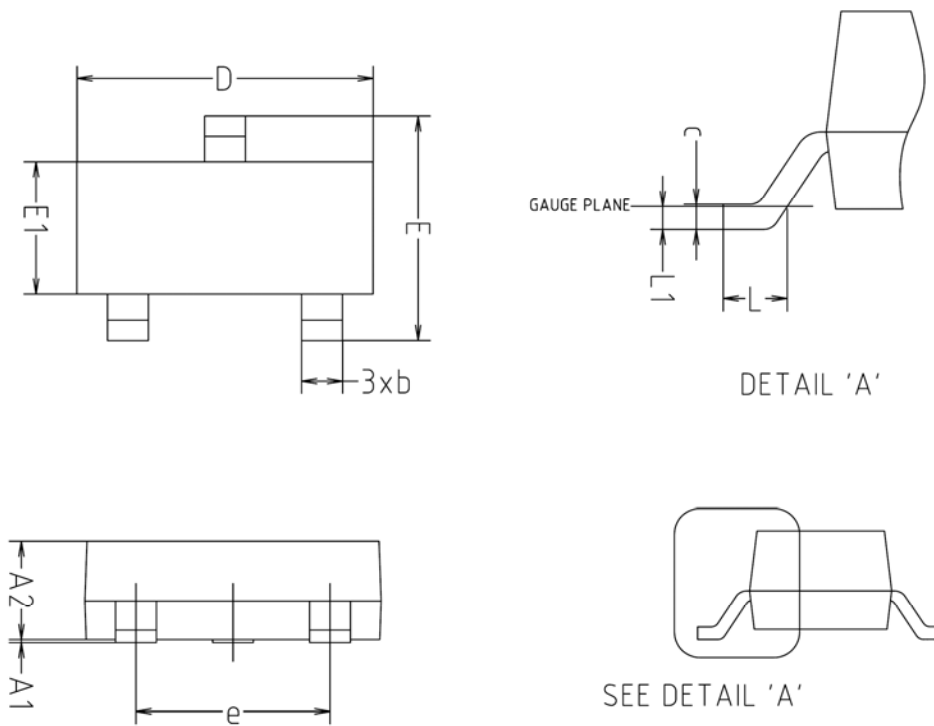


Fig. 8 Resistive Switching Test Circuit & Waveform



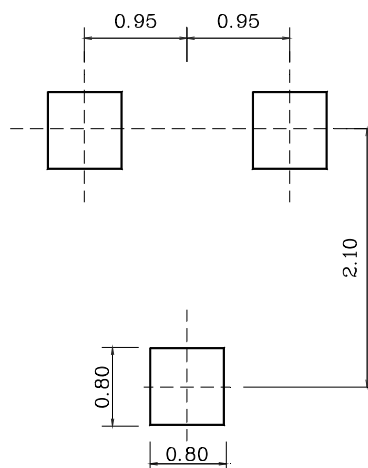
## Outline Dimension

unit: mm



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A1	0.00	-	0.10	
A2	0.82	-	1.02	
b	0.39	0.42	0.45	
c	0.09	0.12	0.15	
D	2.80	2.90	3.00	
E	2.20	2.40	2.60	
E1	1.20	1.30	1.40	
e	1.90BSC			
L	0.20	-	-	
L1	0.12BSC			

### ※ Recommended Land Pattern [unit: mm]



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