

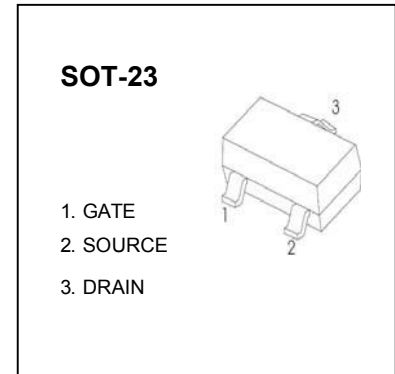
## Plastic-Encapsulate MOSFETS

N-channel MOSFET

### FEATURES

- Low on-resistance
- Fast switching speed
- Low voltage drive makes this device ideal for portable equipment
- Easily designed drive circuits
- Easy to parallel

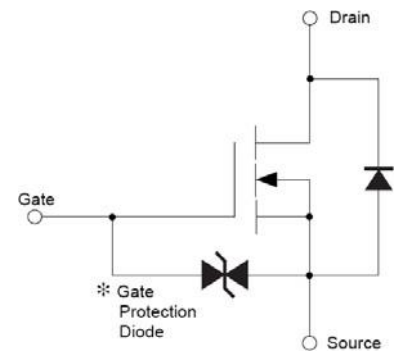
Marking: KN



### MOSFET MAXIMUM RATINGS ( $T_a = 25^\circ\text{C}$ unless otherwise noted)

Symbol	Parameter	Value	Units
$V_{DS}$	Drain-Source Voltage	30	V
$V_{GS}$	Gate-Source Voltage	$\pm 20$	V
$I_D$	Continuous Drain Current	0.1	A
$P_D$	Power Dissipation	0.35	W
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage Temperature	$-55 \sim +150$	$^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	$^\circ\text{C/W}$

### Equivalent circuit



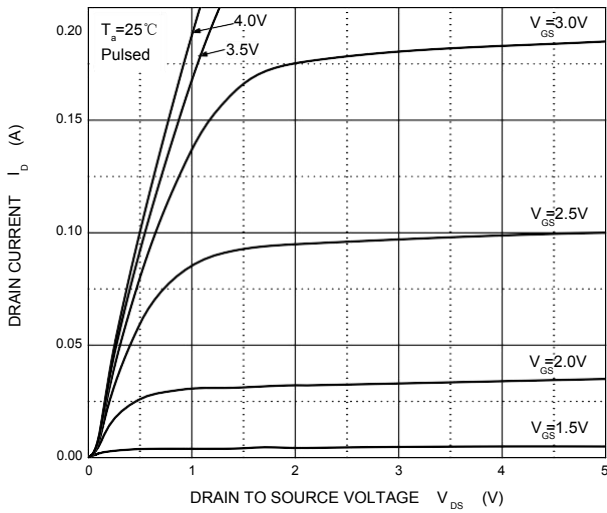
### MOSFET ELECTRICAL CHARACTERISTICS ( $T_a = 25^\circ\text{C}$ unless otherwise noted)

Parameter	Symbol	Test Condition	Min	Typ	Max	Units
<b>Off Characteristics</b>						
Drain-Source Breakdown Voltage	$V_{DS}$	$V_{GS} = 0V, I_D = 10\mu\text{A}$	30			V
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V, V_{GS} = 0V$			0.2	$\mu\text{A}$
Gate -Source leakage current	$I_{GSS}$	$V_{GS} = \pm 20V, V_{DS} = 0V$			$\pm 2$	$\mu\text{A}$
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = 3V, I_D = 100\mu\text{A}$	0.8		1.5	V
Drain-Source On-Resistance	$R_{DS(on)}$	$V_{GS} = 4V, I_D = 10\text{mA}$			8	$\Omega$
		$V_{GS} = 2.5V, I_D = 1\text{mA}$			13	$\Omega$
Forward Transconductance	$g_{FS}$	$V_{DS} = 3V, I_D = 10\text{mA}$	20			mS
<b>Dynamic Characteristics*</b>						
Input Capacitance	$C_{iss}$	$V_{DS} = 5V, V_{GS} = 0V, f = 1\text{MHz}$		13		pF
Output Capacitance	$C_{oss}$		9		pF	
Reverse Transfer Capacitance	$C_{rss}$		4		pF	
<b>Switching Characteristics*</b>						
Turn-On Delay Time	$t_{d(on)}$	$V_{GS} = 5V, V_{DD} = 5V, I_D = 10\text{mA}, R_g = 10\Omega, R_L = 500\Omega,$		15		ns
Rise Time	$t_r$		35		ns	
Turn-Off Delay Time	$t_{d(off)}$		80		ns	
Fall Time	$t_f$		80		ns	

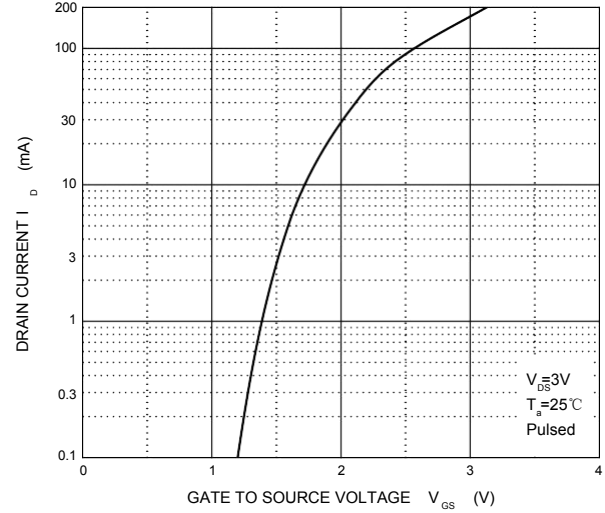
\* These parameters have no way to verify.

## Typical Characteristics

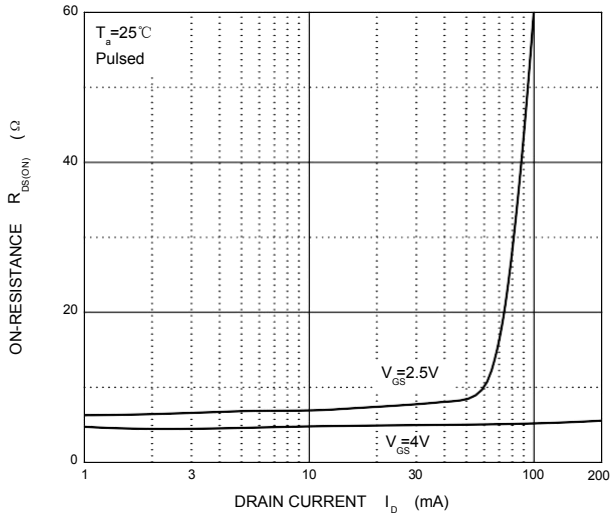
Output Characteristics



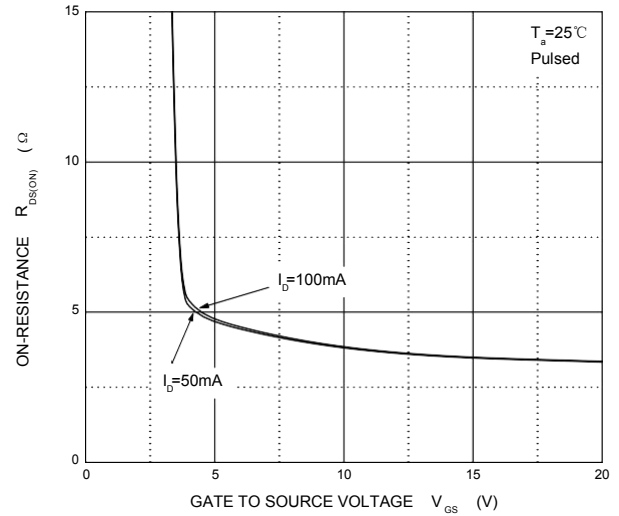
Transfer Characteristics



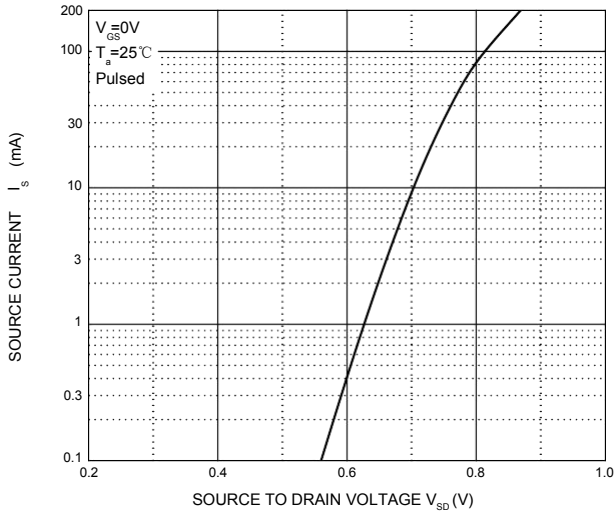
$R_{DS(ON)}$  —  $I_D$



$R_{DS(ON)}$  —  $V_{GS}$

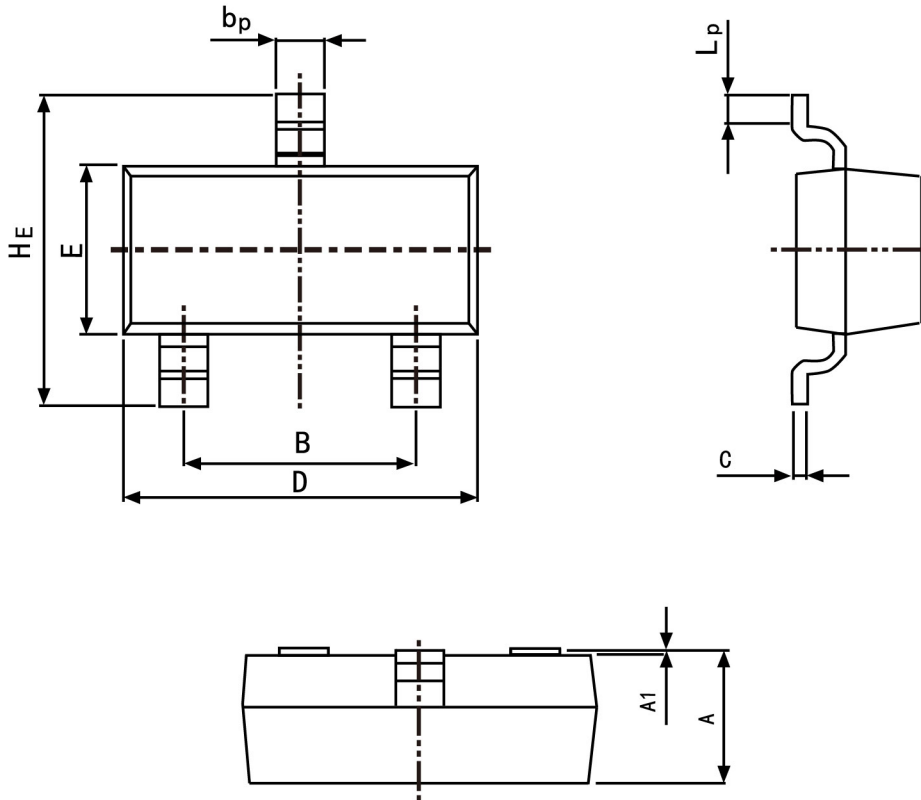


$I_S$  —  $V_{SD}$





## SOT-23 Package Outline Dimensions



Symbol	Dimension in Millimeters	
	Min	Max
A	0.95	1.40
B	1.78	2.04
bp	0.35	0.50
C	0.08	0.19
D	2.70	3.10
E	1.20	1.65
HE	2.20	3.00
A1	0.100	0.013
Lp	0.20	0.50