2SK3018

30V N-CHANNEL MOSFET

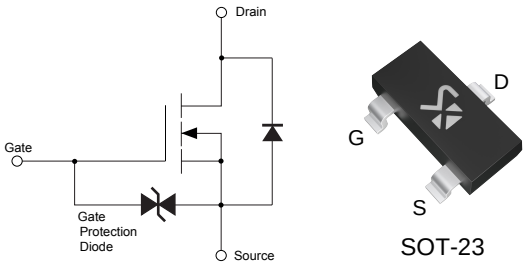
BV_{DSS}	$R_{DS(ON),typ.}$	I_D
30V	5Ω	100mA

Description

- Low on-resistance
- Fast switching speed
- Silicon N-channel MOSFET
- Drive circuits can be simple

Features

- BV_{DSS} ≧30V
- I_D = 100mA
- $R_{DS(ON)}$ ≦ 8Ω@VGS=4V
- $R_{DS(ON)}$ ≦ 13Ω@VGS=2.5V



SOT-23

Package No to Scale

Marking

Marking	KN

Ordering Information

Part Number	Package
2SK3018	SOT-23

Absolute Maximum Ratings

T_A=25℃ unless otherwise specified

Symbol	Parameter		2SK3018	Unit
V_{DSS}	Drain-to-Source Voltage		30	V
V_{GSS}	Gate-to-Source Voltage		±20	V
I_D	Continuous Drain Current		100	mA
I_{DM}	Pulsed Drain Current [1]		400	mA
P_D	Power Dissipation [2]	T_A= 25°C	200	mW
T_J & T_{STG}	Operating and Storage Temperature Range		-55 to +150	℃

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

Thermal Characteristics

Symbol	Parameter	2SK3018	Unit
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient [2]	625	℃/W

Electrical Characteristics

OFF Characteristics

T_J =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
BV_{DSS}	Drain-to-Source Breakdown Voltage	30	--	--	V	V_{GS}=0V, I_D=10uA
I_{DSS}	Drain-to-Source Leakage Current	--	--	1	uA	V_{DS}=30V, V_{GS}=0V
I_{GSS}	Gate-to-Source Leakage Current	--	--	+1	uA	V_{GS}=+20V, V_{DS}=0V
		--	--	-1		V_{GS}=-20V, V_{DS}=0V

ON Characteristics

T_J =25℃ unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$R_{DS(ON)}$	Static Drain-to-Source On-Resistance	--	5	8	Ω	V_{GS}=4V, I_D=10mA
		--	7	13	Ω	V_{GS}=2.5V, I_D=1mA
$V_{GS(TH)}$	Gate Threshold Voltage	0.8	--	1.5	V	V_{DS}=3V, I_D=100uA
gfs	Forward Transconductance	20	--	--	mS	V_{DS}=3V,I_D=10mA

Dynamic Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
Rg	Gate Resistance	--	13	--	Ω	
C_{iss}	Input Capacitance	--	13	--	pF	V_{GS}=0V, V_{DS}=5V, f=1MHz
C_{rss}	Reverse Transfer Capacitance	--	4	--		
C_{oss}	Output Capacitance	--	9	--		
Q_g	Total Gate Charge	--	0.9	--	nC	V_{DS}=30V, I_D=0.5A, V_{GS}=10V
Q_{gs}	Gate-to-Source Charge	--	0.06	--		
Q_{gd}	Gate-to-Drain (Miller) Charge	--	0.36	--		

Resistive Switching Characteristics

Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Unit	Test Conditions
$td_{(ON)}$	Turn-on Delay Time	--	15	--	ns	V_{DD}=5V, I_D=10mA, V_{GS}=5V, R_G=10Ω, R_L=500Ω
t_{rise}	Rise Time	--	35	--		
$td_{(OFF)}$	Turn-Off Delay Time	--	80	--		
t_{fall}	Fall Time	--	80	--		

Source-Drain Body Diode Characteristics

T_J=25℃ unless otherwise specified

Symbol	Parameter	Min	Typ.	Max.	Unit	Test Conditions
V_{SD}	Diode Forward Voltage	--	--	1.2	V	I_S=0.5A, V_{GS}=0V

Note: [1]Pw ≤ 10μs, duty cycle ≤ 1%.
[2]With each pin mounted on the recommended lands.

Typical Characteristics

Figure 1.On-Region Characteristics

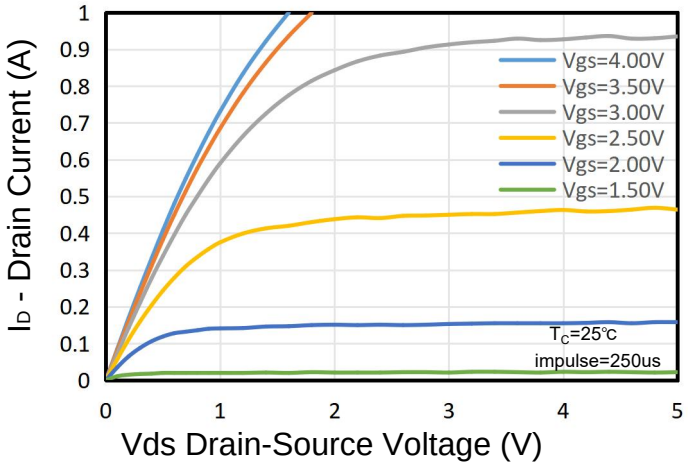


Figure 2.Transfer Characteristics

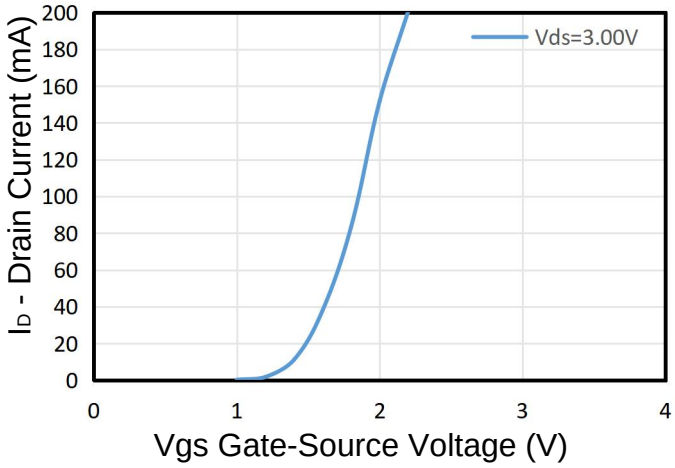


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

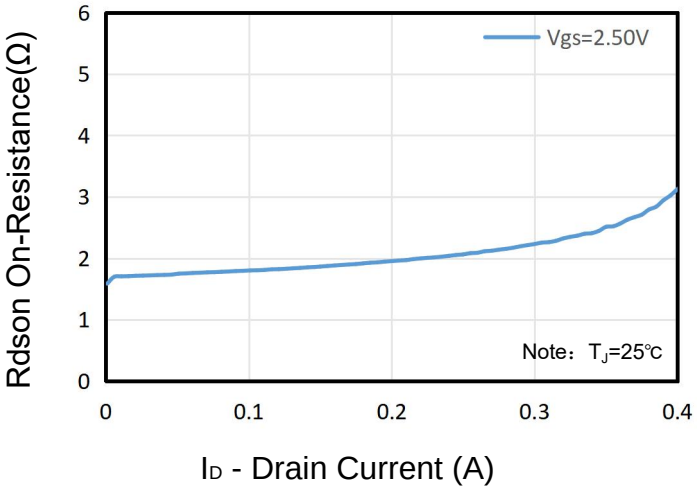
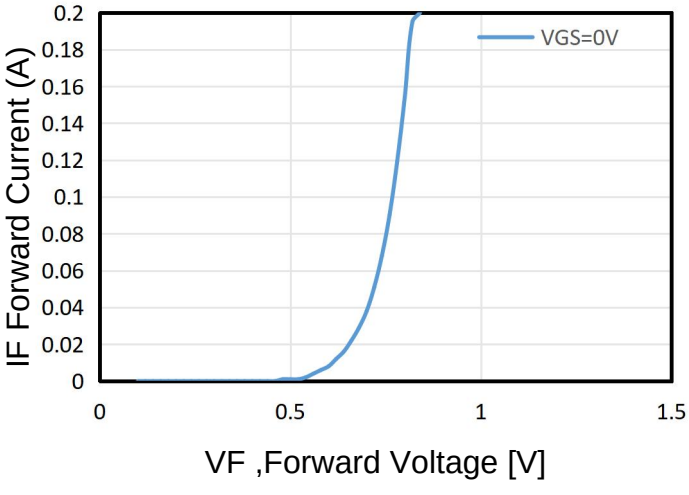


Figure 4. Body Diode Forward Voltage Variation with Source Current



Typical Characteristics

Figure 5. Capacitance Characteristics

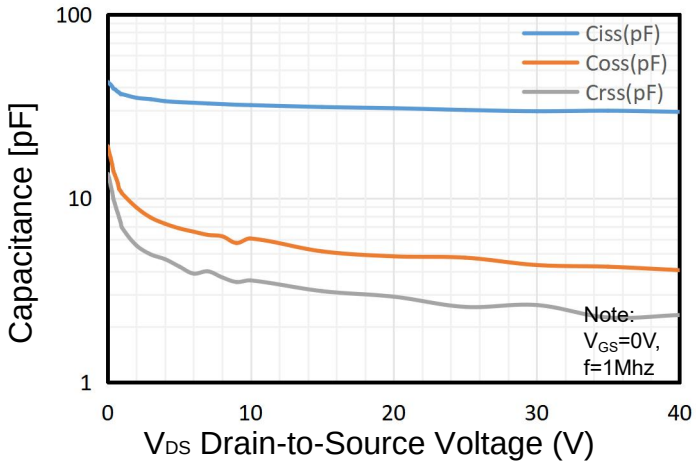


Figure 6. Gate Charge Characteristics

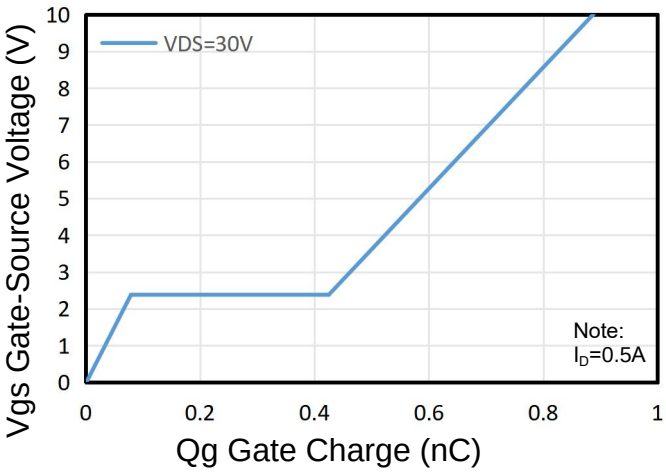


Figure 7. Vds Drain-Source Voltage vs Gate Voltage

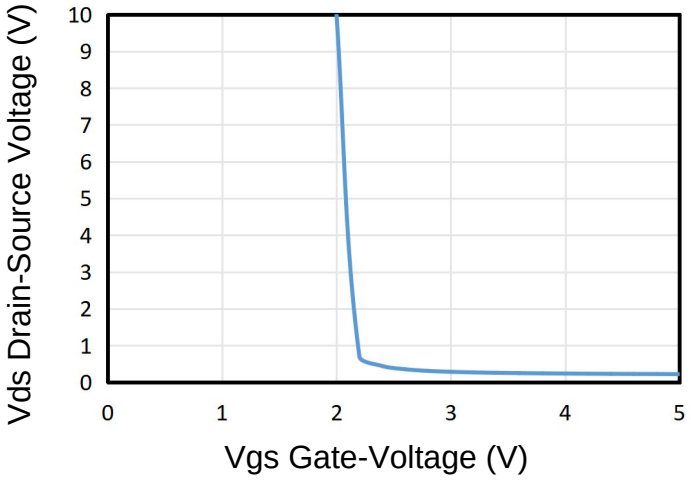
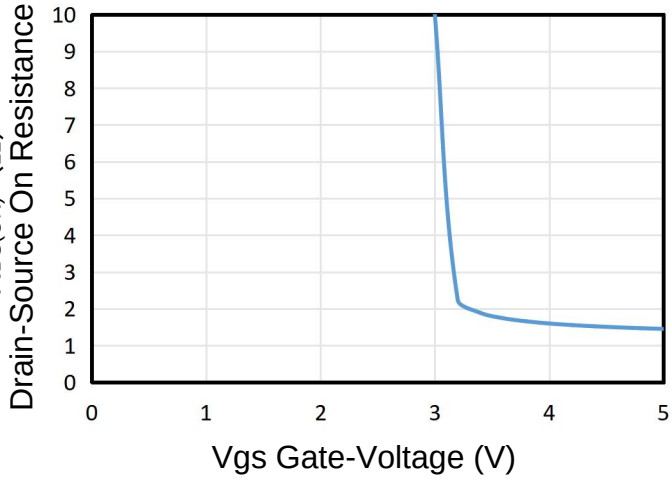
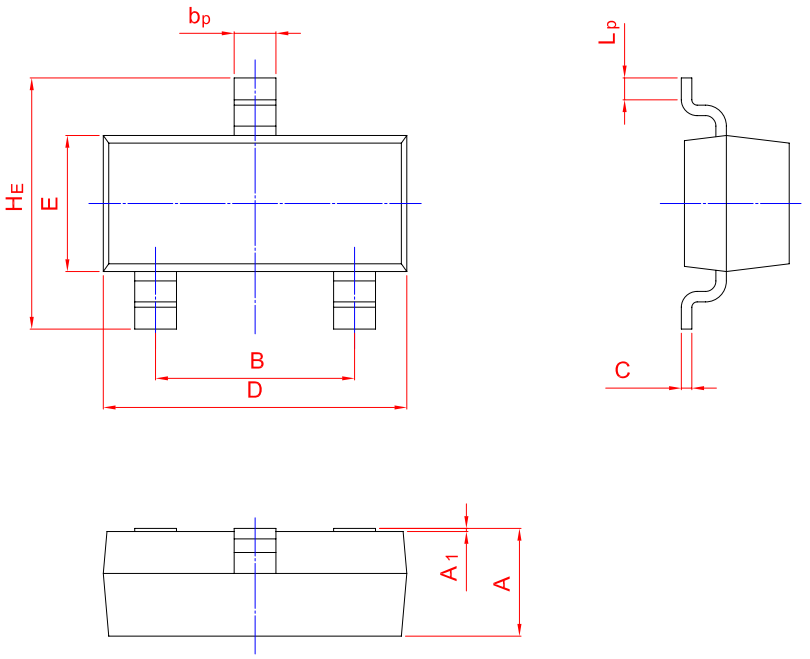


Figure 8. On-Resistance vs Gate Voltage



Package Outline

SOT-23



UNIT	A	B	bp	C	D	E	HE	A1	Lp
mm	1.40 0.95	2.04 1.78	0.50 0.35	0.19 0.08	3.10 2.70	1.65 1.20	3.00 2.20	0.100 0.013	0.50 0.20