

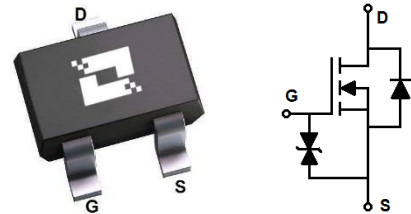
Features

- Low $R_{DS(on)}$ @ $V_{GS}=10V$
- 5V Logic Level Control
- N Channel SOT523 Package
- Pb-Free, RoHS Compliant

$V_{(BR)DSS}$	$R_{DS(ON)}$ Typ	I_D Max
50V	1.3Ω @ 10V	0.3A
	1.5Ω @ 4.5V	

Applications

- LED Lighting Application,
- ON/OFF switch
- Networking


SOT523
Order Information

Product	Package	Marking	Packing
2SK3019B	SOT523	KN	3000PCS/Reel

Absolute Maximum Ratings

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{GS}	Gate-Source Voltage		±12	V
V _{(BR)DSS}	Drain-Source Breakdown Voltage		50	V
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-50 to 150	°C
Mounted on Large Heat Sink				
I _{DM}	Pulse Drain Current Tested①	T _A =25°C	0.8	A
I _D	Continuous Drain Current	T _A =25°C	0.3	A
		T _A =70°C	0.24	
P _D	Maximum Power Dissipation	T _A =25°C	0.3	W
		T _A =70°C	0.2	
R _{ΘJA}	Thermal Resistance Junction-Ambient		400	°C/W

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
V _{(BR)DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V I _D =250μA	50	–	–	V
I _{DSS}	Zero Gate Voltage Drain Current(T _A =25°C)	V _{DS} =50V, V _{GS} =0V	–	–	1	μA
	Zero Gate Voltage Drain Current(T _A =125°C)	V _{DS} =40V, V _{GS} =0V	–	–	100	uA
I _{GSS}	Gate-Body Leakage Current	V _{GS} =±12V, V _{DS} =0V	–	–	±10	uA
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250μA	0.6	1.2	1.5	V
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =10V, I _D =0.3A	–	1.3	4	Ω
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =4.5V, I _D =0.2A	–	1.5	5	Ω
R _{DS(ON)}	Drain-Source On-State Resistance②	V _{GS} =3.3V, I _D =0.1A	–	1.8	6	Ω
Dynamic Electrical Characteristics @ T _J = 25°C (unless otherwise stated)						
C _{iss}	Input Capacitance	V _{DS} =30V, V _{GS} =0V, f=1MHz	–	12	–	pF
C _{oss}	Output Capacitance		–	3.2	–	pF
C _{rss}	Reverse Transfer Capacitance		–	0.8	–	pF
Q _g	Total Gate Charge	V _{DS} =30V I _D =0.3A, V _{GS} =4.5V	–	0.58	–	nC
Q _{gs}	Gate Source Charge		–	0.12	–	nC
Q _{gd}	Gate Drain Charge		–	0.21	–	nC
Switching Characteristics						
t _{d(on)}	Turn on Delay Time	V _{DD} =30V, I _D =0.3A, R _G =3.3Ω, V _{GS} =10V	–	4.5	–	ns
t _r	Turn on Rise Time		–	3.1	–	ns
t _{d(off)}	Turn Off Delay Time		-	15	–	ns
t _f	Turn Off Fall Time		–	3.3	–	ns
Source Drain Diode Characteristics						
I _{SD}	Source drain current(Body Diode)	T _A =25°C	–	–	0.2	A
V _{SD}	Forward on voltage②	T _J =25°C, I _{SD} =0.2A, V _{GS} =0V	–	0.87	1.2	V

Notes:

① Pulse width limited by maximum allowable junction temperature

②Pulse test ; Pulse width≤300μs, duty cycle≤2%.

Typical Characteristics

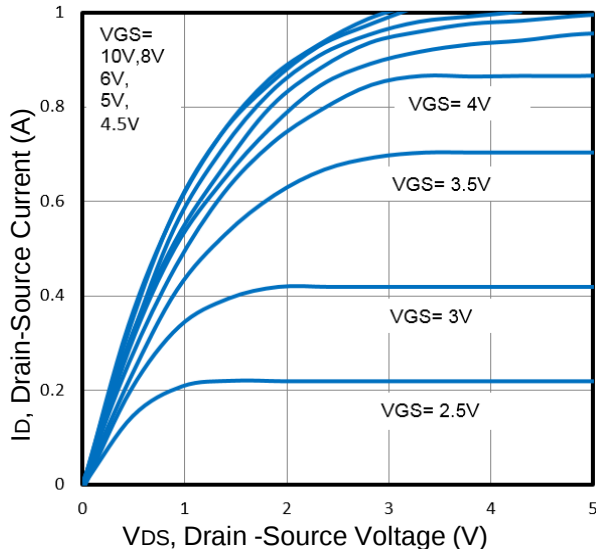


Fig1. Typical Output Characteristics

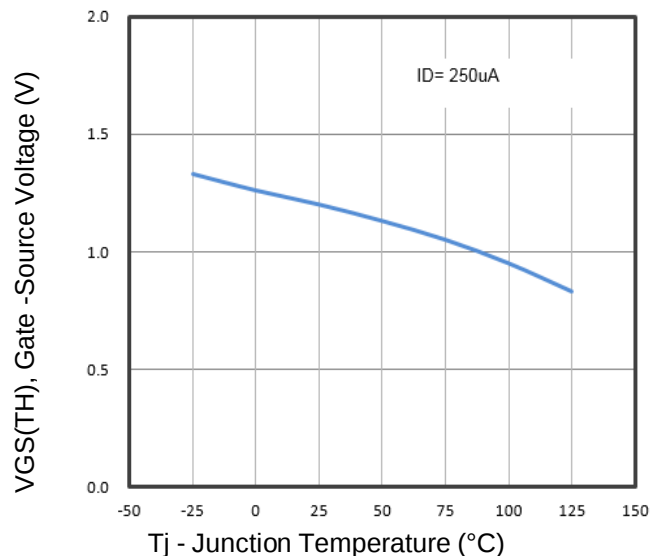


Fig2. Normalized Threshold Voltage Vs. Temperature

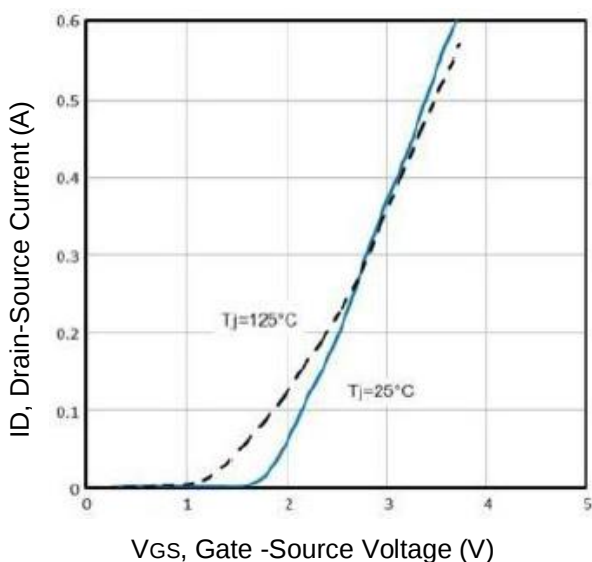


Fig3. Typical Transfer Characteristics

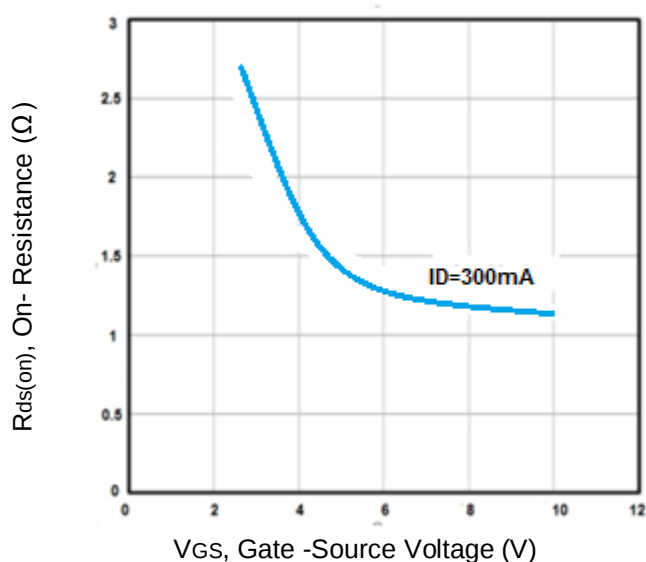


Fig4. $R_{ds(on)}$ vs Gate-Source Voltage

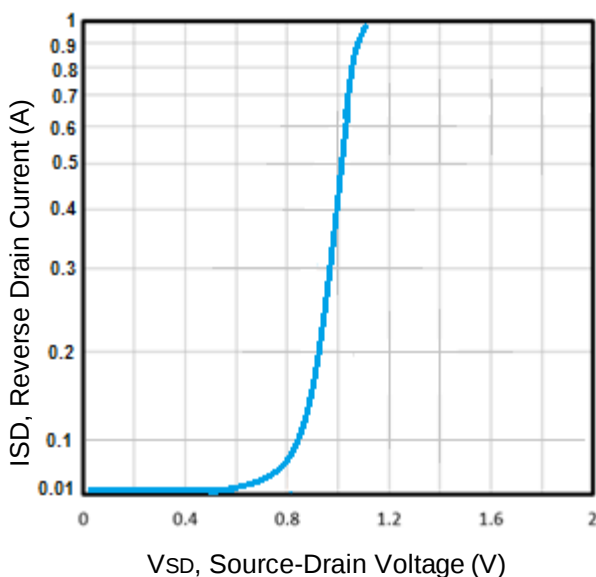


Fig5. Typical Source-Drain Diode Forward Voltage

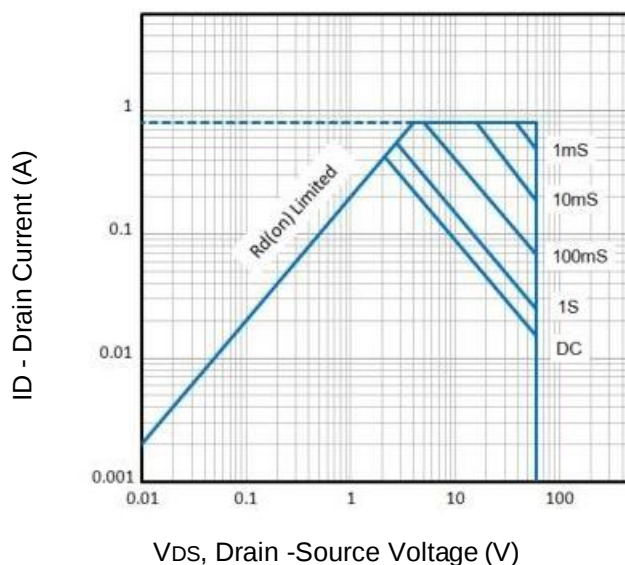


Fig6. Maximum Safe Operating Area

Typical Characteristics

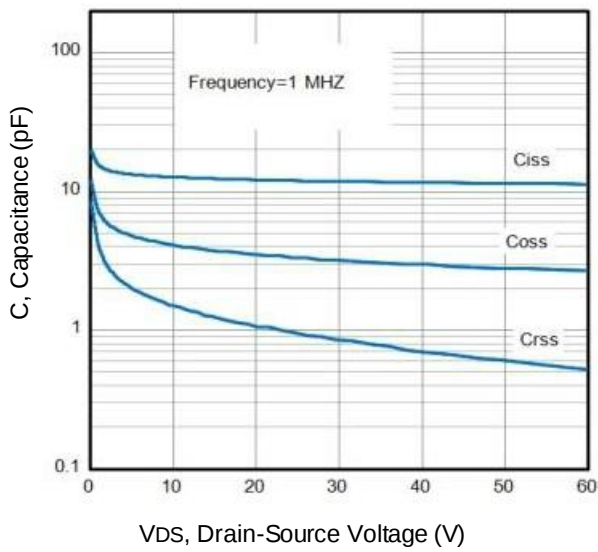


Fig7. Typical Capacitance Vs. Drain-Source Voltage

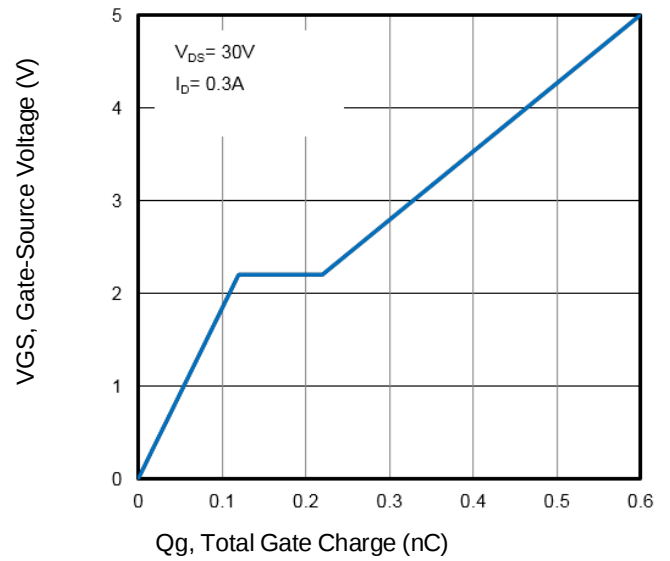


Fig8. Typical Gate Charge Vs. Gate-Source Voltage

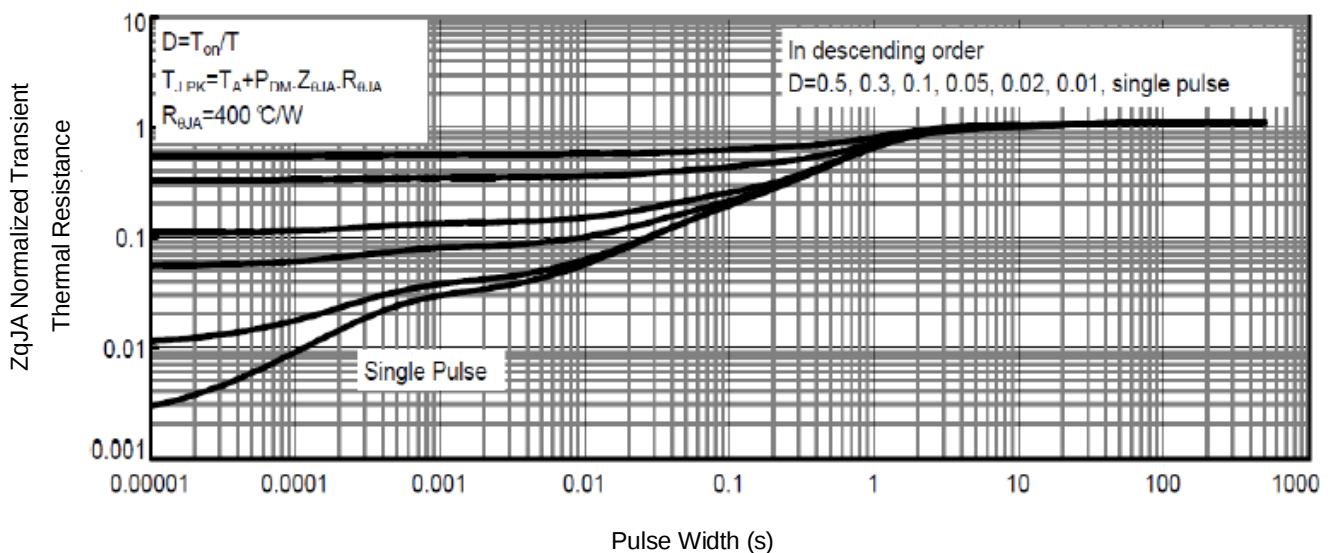


Fig9. Normalized Maximum Transient Thermal Impedance

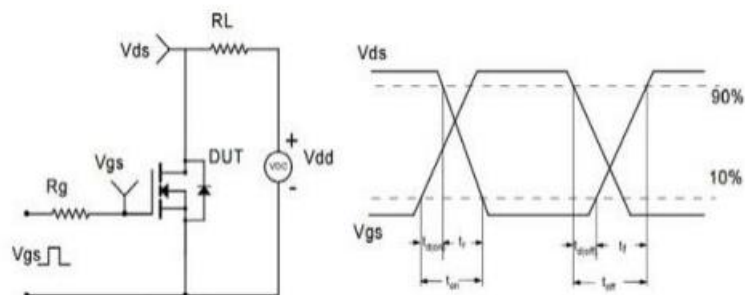
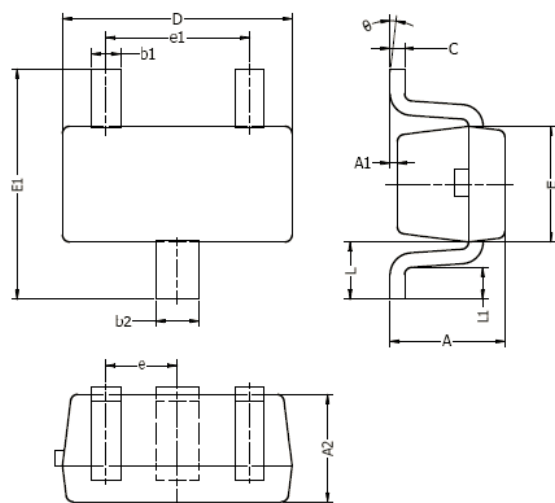
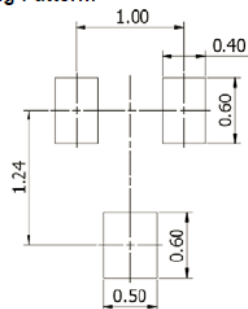


Fig10. Switching Time Test Circuit and waveforms

SOT523 Mechanical Data

Typical Soldering Pattern:


DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	0.70	0.90	0.028	0.035
A1	0.00	0.10	0.000	0.004
A2	0.70	0.80	0.028	0.031
b1	0.15	0.25	0.006	0.010
b2	0.25	0.35	0.010	0.014
c	0.10	0.20	0.004	0.008
D	1.50	1.70	0.059	0.067
E	0.70	0.90	0.028	0.035
E1	1.45	1.75	0.057	0.069
e	0.50 TYP.		0.020 TYP.	
e1	0.90	1.10	0.035	0.043
L	0.40 REF.		0.016 REF.	
L1	0.10	0.30	0.004	0.012
θ	0°	8°	0°	8°

NOTES:

1. Above package outline conforms to JEITA EAIJ ED-7500A SC-75A.
2. Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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