

DN3018K N-Channel Enhancement MOSFET

General description

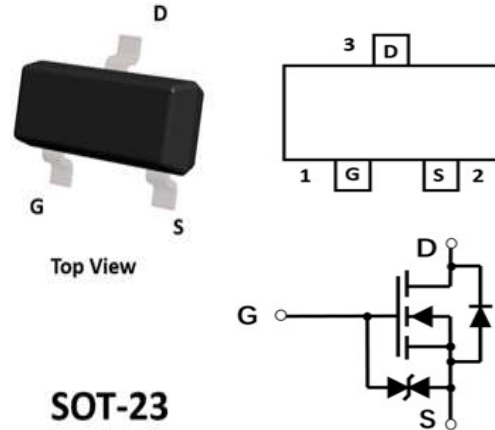
N-Channel Enhancement Mode Field Effect Transistor

FEATURES

- ESD Protected Up to 2.5KV (HBM)
- Trench Power MV MOSFET technology
- Voltage controlled small signal switch
- Low input Capacitance
- Fast Switching Speed
- Low Input / Output Leakage

APPLICATIONS

- Interfacing
- Switching(30V,100mA)



SOT-23

Device Marking Code:

Device Type	Device Marking
DN3018K	KN

Maximum Ratings (Ratings at 25°C ambient temperature unless otherwise specified.)

Parameter	Symbol	Limit	Unit
Drain-source Voltage	V_{DS}	30	V
Gate-source Voltage	V_{GS}	± 20	V
Drain Current	I_D	100	mA
Pulsed Drain Current	I_{DM}	200	mA
Total Power Dissipation @ $T_A=25^\circ\text{C}$	P_D	200	mW
Junction and Storage Temperature Range	T_J, T_{STG}	-55~+150	$^\circ\text{C}$

Electrical Characteristics (Ratings at 25°C ambient temperature unless otherwise specified).

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I _{GSS}	----	----	±1	μA	V _{GS} =±20V, V _{DS} =0V
Drain-source breakdown voltage	V _{(BR)DS}	30	----	----	V	I _D =10μA, V _{GS} =0V
Zero gate voltage drain current	I _{DSS}	----	----	1	μA	V _{DS} =30V, V _{GS} =0V
Gate threshold Voltage	V _{GS(th)}	0.8	----	1.5	V	V _{DS} =3V, I _D =100μA
Static drain-source on-state resistance	R _{DS(ON)}	----	5	8	Ω	I _D =10mA, V _{GS} = 4V
	R _{DS(ON)}	----	7	13	Ω	I _D =1mA, V _{GS} =2.5V
Forward transfer admittance	Y _{fs}	20	----	----	mS	V _{DS} =3V, I _D =10mA
Input capacitance	C _{iss}	----	13	----	pF	V _{DS} =5V V _{GS} =0V F=1 MHz
Output capacitance	C _{oss}	----	9	----	pF	
Reverse transfer capacitance	C _{rss}	----	4	----	pF	
Turn-on delay time	t _{d(on)}	----	15	----	ns	I _D =10 mA, V _{DO} =5V V _{GS} = 5V R _L =500 Ω R _{GS} =10 Ω
Rise time	t _r	----	35	----	ns	
Turn-off delay time	t _{d(off)}	----	80	----	ns	
Fall time	t _f	----	80	----	ns	

Typical Characteristics

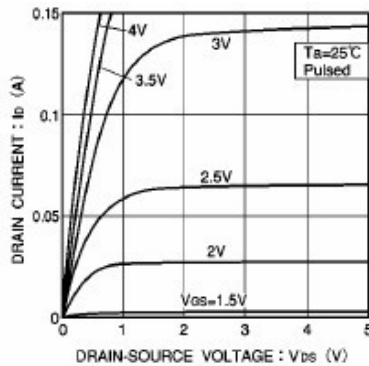


Fig.1 Typical output characteristics

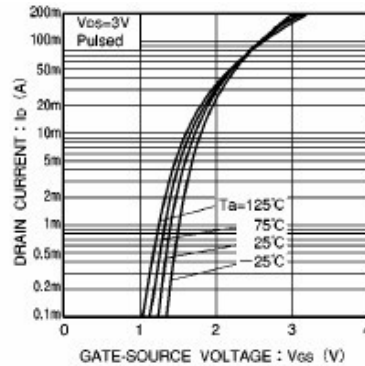


Fig.2 Typical transfer characteristics

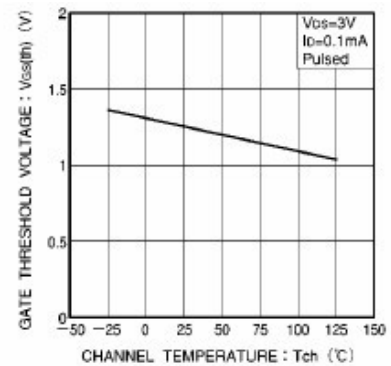


Fig.3 Gate threshold voltage vs. channel temperature

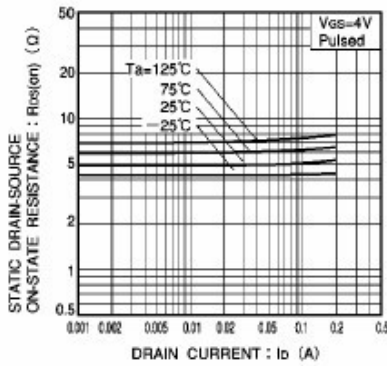


Fig.4 Static drain-source on-state resistance vs. drain current (I)

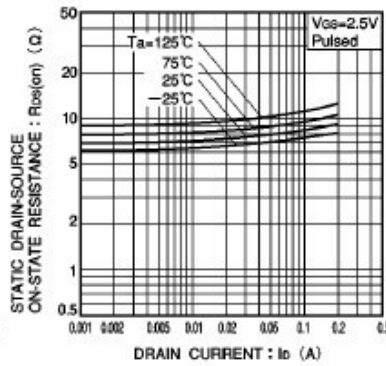


Fig.5 Static drain-source on-state resistance vs. drain current (II)

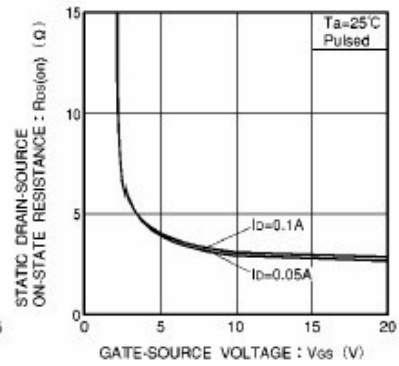


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

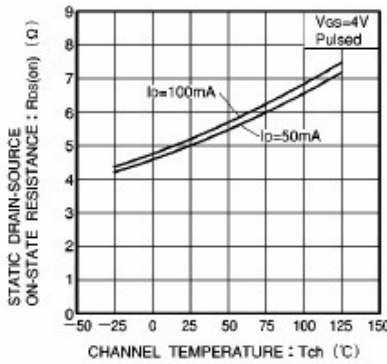


Fig.7 Static drain-source on-state resistance vs. channel temperature

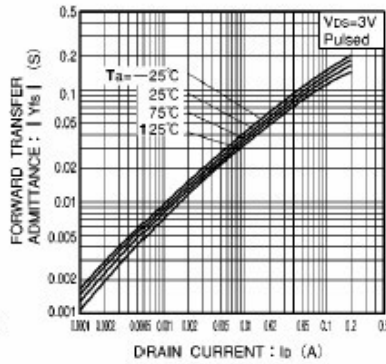


Fig.8 Forward transfer admittance vs. drain current

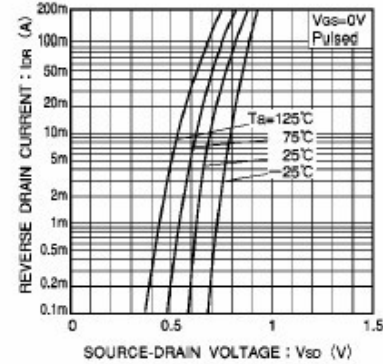


Fig.9 Reverse drain current vs. source-drain voltage (I)

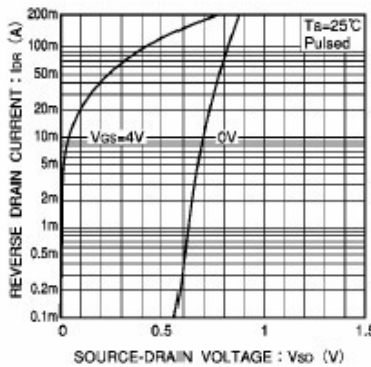


Fig.10 Reverse drain current vs. source-drain voltage (II)

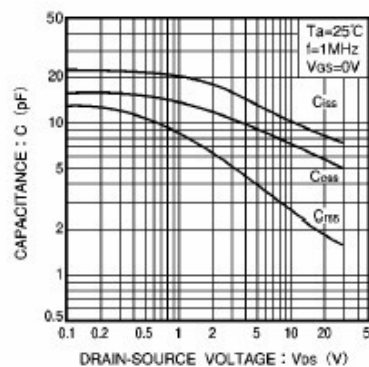


Fig.11 Typical capacitance vs. drain-source voltage

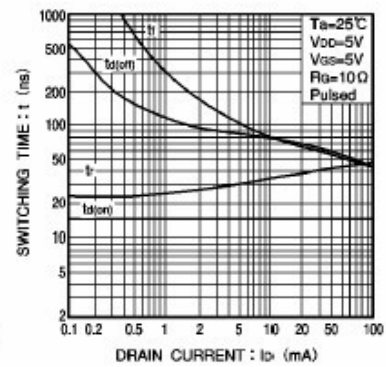


Fig.12 Switching characteristics (See Figures. 13 and 14 for the measurement circuit and resultant waveforms)

Switching characteristics measurement circuit

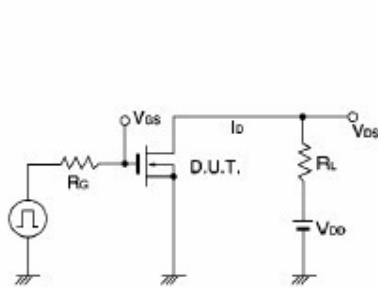


Fig.13 Switching time measurement circuit

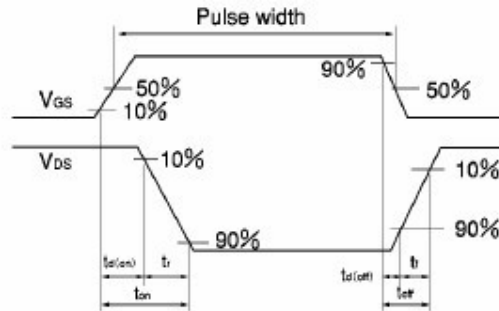
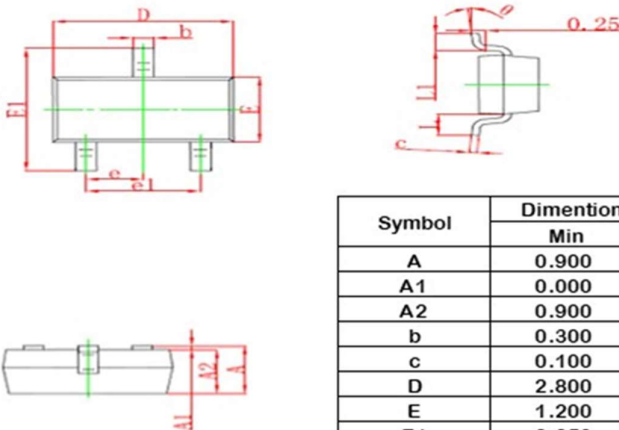


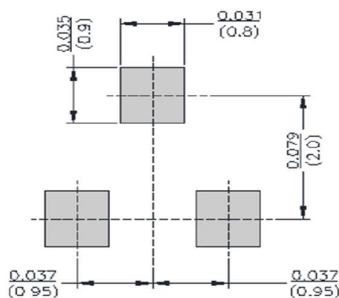
Fig.14 Switching time waveforms

SOT-23 Package information



Symbol	Dimensions in Millimeter		Dimensions in Inches	
	Min	Max	Min	Max
A	0.900	1.150	0.035	0.045
A1	0.000	0.100	0.000	0.004
A2	0.900	1.050	0.035	0.041
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.800	3.000	0.110	0.118
E	1.200	1.400	0.047	0.055
E1	2.250	2.550	0.089	0.100
e	0.950Type		0.037Type	
e1	1.800	2.000	0.071	0.079
L	0.550REF		0.220REF	
L1	0.300	0.500	0.012	0.020
θ	0°	8°	0°	8°

SOT-23 Suggested Pad Layout



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