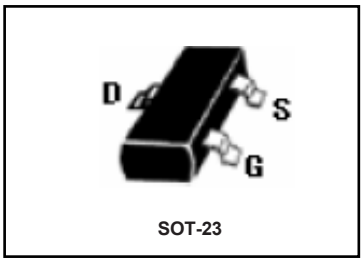
Silicon N-channel MOSFET
300 mA, 30 V



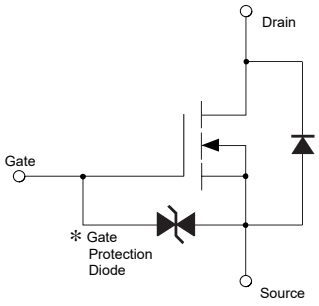
SOT-23

- **Features**

1) Low on-resistance.
2) Fast switching speed.
3) Low voltage drive (2.5V) makes this device ideal for portable equipment.
4) Easily designed drive circuits.
5) Easy to parallel.

- ESD>500V
- We declare that the material of product compliance with RoHS requirements.
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

N - Channel



*A protection diode is included between the gate and the source terminals to protect the diode against static electricity when the product is in use. Use a protection circuit when the fixed voltages are exceeded.

MAXIMUM RATINGS

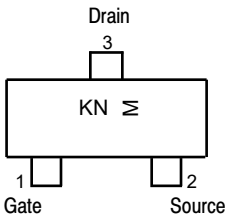
Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	±300	mA
	Pulsed	I_{DP}*1	±600	mA
Total power dissipation (Tc=25°C)		P_D*2	200	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

*1 Pw≤10μs, Duty cycle≤1%
*2 With each pin mounted on the recommended lands.

ORDERING INFORMATION

Device	Marking	Shipping
HM3018KR	6C	3000/Tape&Reel

MARKING DIAGRAM & PIN ASSIGNMENT



KN = Device Code
M = Month Code

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I_{GSS}	–	–	±1	μA	V_{GS} = ±20V, V_{DS} = 0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	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	$V_{GS(th)}$	1.0	1.5	2.0	V	V_{DS} = 3V, I_D = 100μA
Static drain-source on-state resistance	$R_{DS(on)}$	–	1.2	1.6	Ω	I_D = 10mA, V_{GS} = 4V
	$R_{DS(on)}$	–	2.5	2.9	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
Output capacitance	C_{oss}	–	9	–	pF	V_{GS} = 0V
Reverse transfer capacitance	C_{rss}	–	4	–	pF	f = 1MHz
Turn-on delay time	$t_{d(on)}$	–	15	–	ns	I_D = 10mA, V_{DD} ≒ 5V
Rise time	t_r	–	35	–	ns	V_{GS} = 5V
Turn-off delay time	$t_{d(off)}$	–	80	–	ns	R_L = 500Ω
Fall time	t_r	–	80	–	ns	R_G = 10Ω

TYPICAL ELECTRICAL CHARACTERISTICS

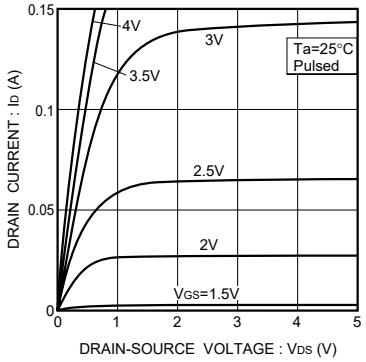


Fig.1 Typical output characteristics

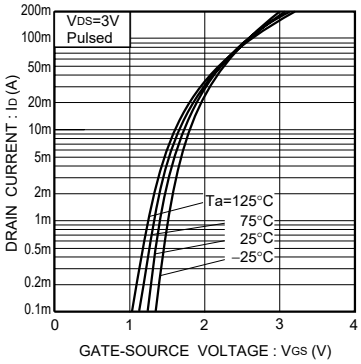


Fig.2 Typical transfer characteristics

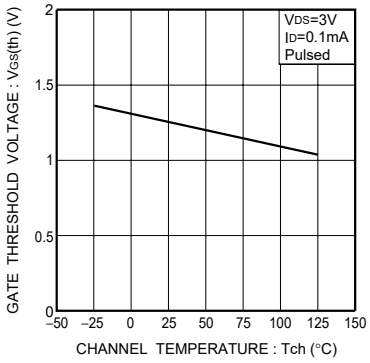


Fig.3 Gate threshold voltage vs. channel temperature

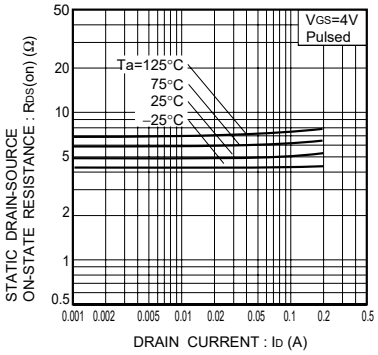


Fig.4 Static drain-source on-state resistance vs. drain current (I)

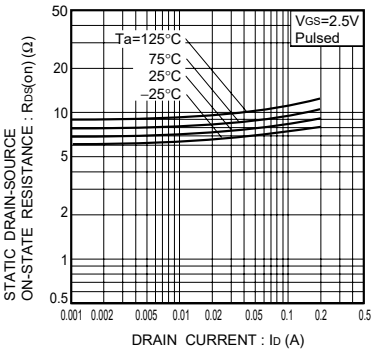


Fig.5 Static drain-source on-state resistance vs. drain current (II)

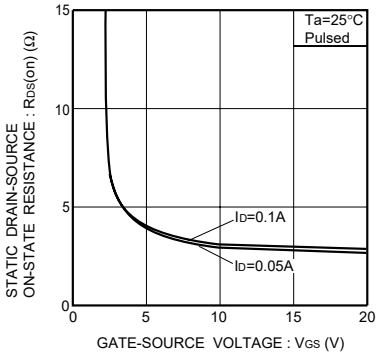


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

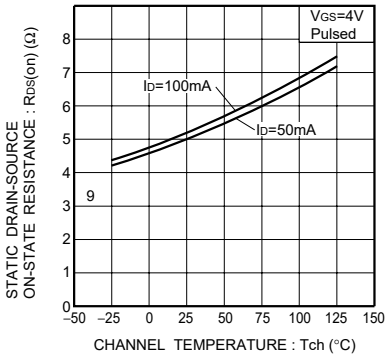


Fig.7 Static drain-source on-state resistance vs. channel temperature

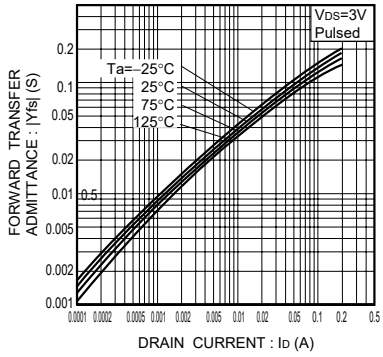


Fig.8 Forward transfer admittance vs. drain current

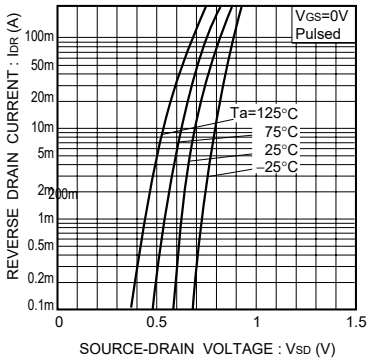


Fig.9 Reverse drain current vs. source-drain voltage (I)

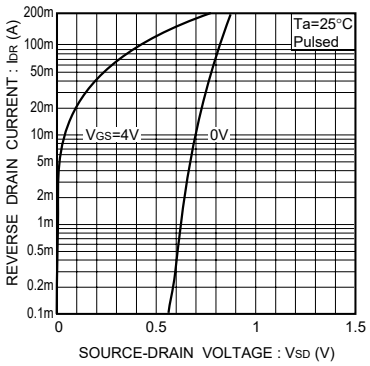


Fig.10 Reverse drain current vs. source-drain voltage (II)

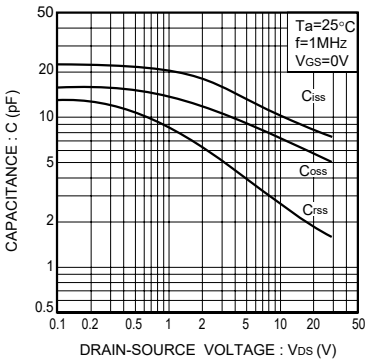


Fig.11 Typical capacitance vs. drain-source voltage

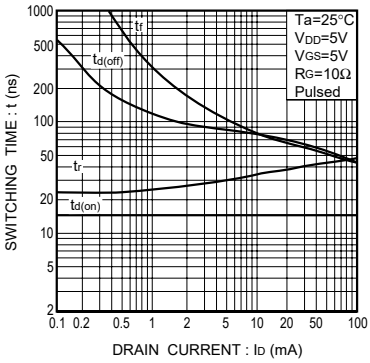


Fig.12 Switching characteristics (See Figures 13 and 14 for the measurement circuit and resultant waveforms)

●Switching characteristics measurement circuit

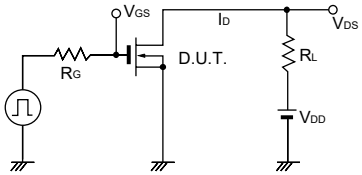


Fig.13 Switching time measurement circuit

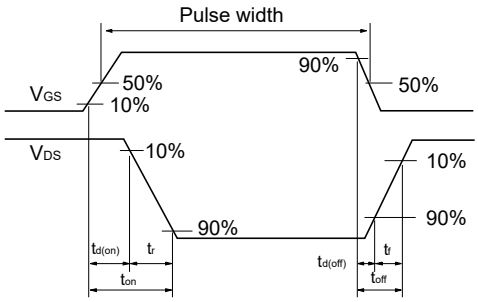
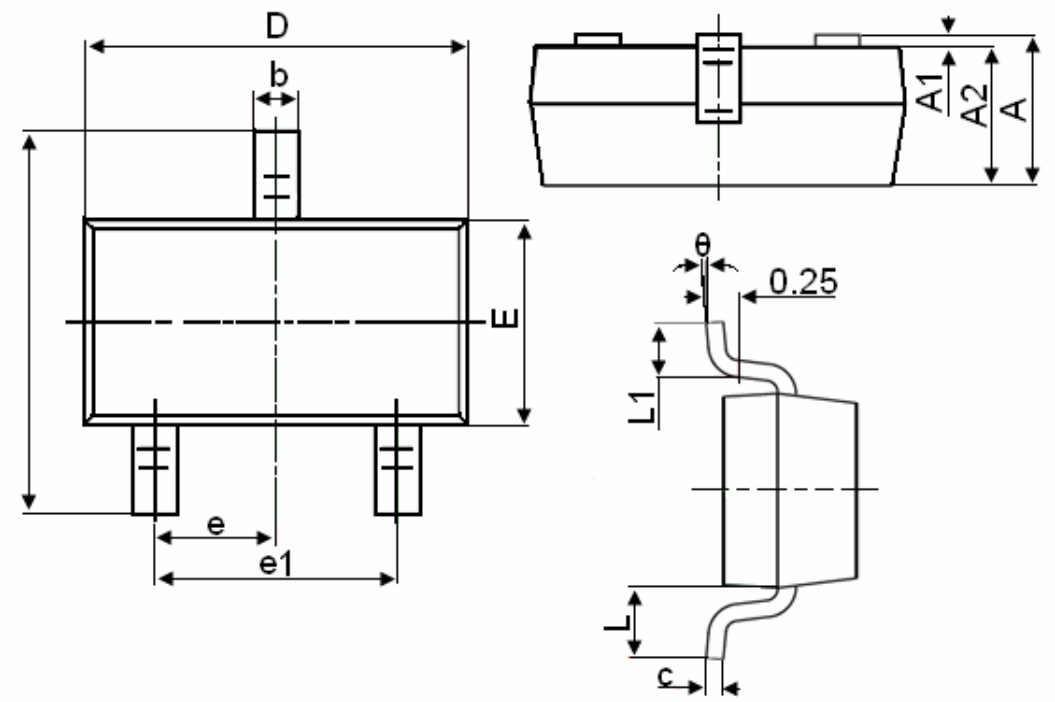


Fig.14 Switching time waveforms

SOT-23 Package Information



Symbol	Dimensions in Millimeters	
	MIN.	MAX.
A	0.900	1.150
A1	0.000	0.100
A2	0.900	1.050
b	0.300	0.500
c	0.080	0.150
D	2.800	3.000
E	1.200	1.400
E1	2.250	2.550
e	0.950TYP	
e1	1.800	2.000
L	0.550REF	
L1	0.300	0.500
θ	0°	8°

Notes

1. All dimensions are in millimeters.
2. Tolerance ±0.10mm (4 mil) unless otherwise specified
3. Package body sizes exclude mold flash and gate burrs. Mold flash at the non-lead sides should be less than 5 mils.
4. Dimension L is measured in gauge plane.
5. Controlling dimension is millimeter, converted inch dimensions are not necessarily exact.