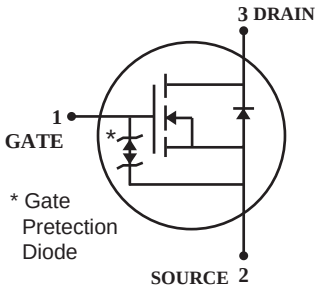
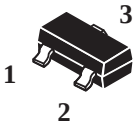
WEITRON

2N7002K

N-Channel Enhancement Mode Power MOSFET

Lead(Pb)-Free





SOT-23

Features:

* Low on-resistance.
* Fast switching speed.
* Low-voltage drive.
* Easily designed drive circuits.
* Easy to parallel.
* Pb-Free package is available.
* Esd Protected:2000V

Maximum Ratings (T_A= 25℃ Unless Otherwise Specified)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	115	mA
	Pulsed	I_{DP}*1	0.8	A
Drain reverse current	Continuous	I_{DR}	115	mA
	Pulsed	I_{DRP}*1	0.8	A
Total power dissipation		P_D*2	225	mW
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55~+150	°C

1. Pw ≤ 10μs, Duty cycle ≤ 1%.
2. When mounted on a 1×0.75×0.062 inch glass epoxy board.

Device Marking

2N7002K = RK

Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit
Gate-source leakage current V_{GS}=±20V, V_{DS}=0V	I_{GSS}	–	–	±10	μA
Drain-source breakdown voltage I_D=10μA, V_{GS}=0V	$V_{(BR)\ DSS}$	60	–	–	V
Zero gate voltage drain current V_{DS}=60V, V_{GS}=0V	I_{DSS}	–	–	1	μA
Gate threshold voltage V_{DS}=V_{GS} , I_D=250uA	$V_{GS\ (th)}$	1	1.85	2.5	V
Drain-source on-state resistance I_D=0.5A, V_{GS}=10V I_D=0.05A, V_{GS}=5V	$R_{DS\ (on)}$*	– –	– –	7.5 7.5	Ω
Forward transfer admittance V_{DS}=10V, I_D=0.2A	$\lvert Y_{fs} \rvert$*	80	–	–	mS
Input capacitance V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{iss}	–	25	50	pF
Output capacitance V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{oss}	–	10	25	pF
Reverse transfer capacitance V_{DS}=25V, V_{GS}=0V, f=1MHz	C_{rss}	–	3.0	5.0	pF
Turn-on delay time I_D=200mA, V_{DD}≒30V, V_{GS}=10V, R_L=150Ω ,R_{GS}=10Ω	$t_{d\ (on)}$*	–	12	20	ns
Turn-off delay time I_D=200mA, V_{DD}≒30V, V_{GS}=10V, R_L=150Ω ,R_{GS}=10Ω	$t_{d\ (off)}$*	–	20	30	ns

* PW ≤ 300μs, Duty cycle ≤ 1%

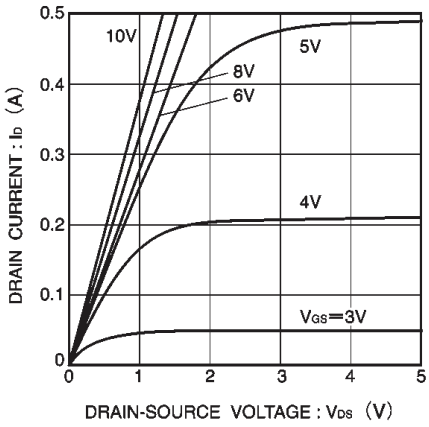


Fig.1 Typical output characteristics

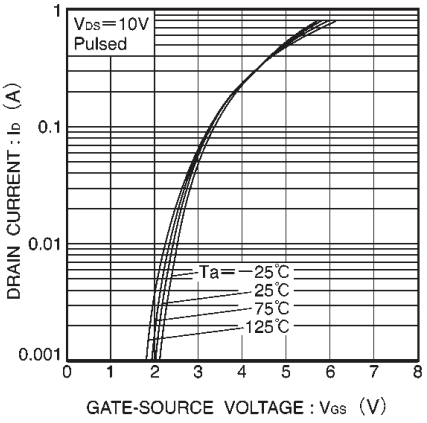


Fig.2 Typical transfer characteristics

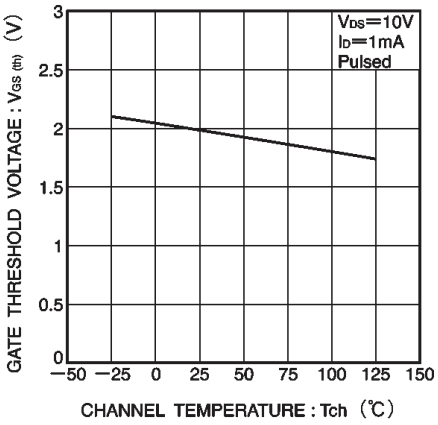


Fig.3 Gate threshold voltage vs. channel temperature

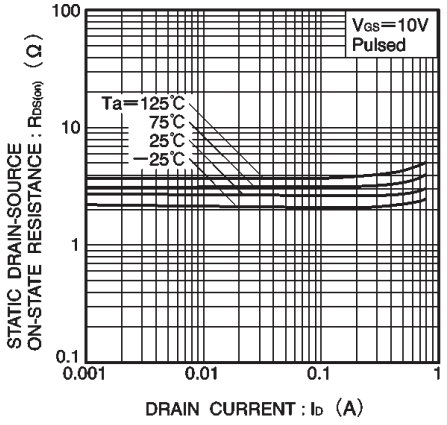


Fig.4 Static drain-source on-state resistance vs. drain current (Ⅰ)

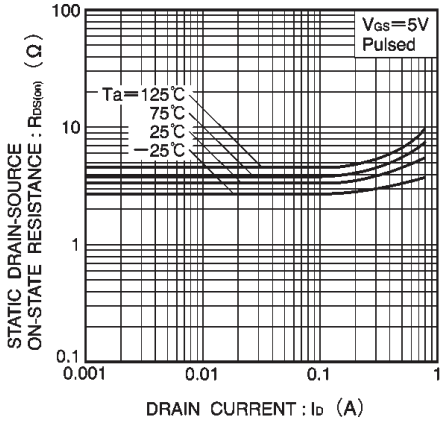


Fig.5 Static drain-source on-state resistance vs. drain current (Ⅱ)

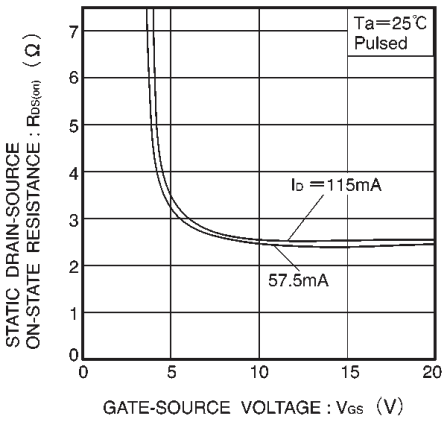


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

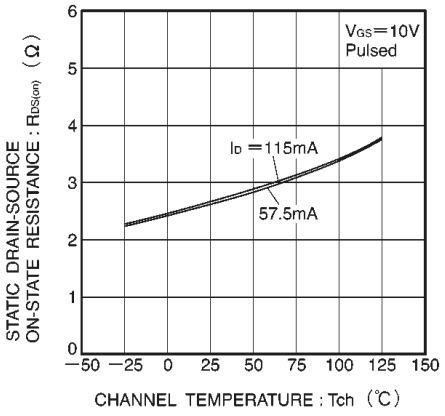


Fig.7 Static drain-source on-state resistance vs. channel temperature

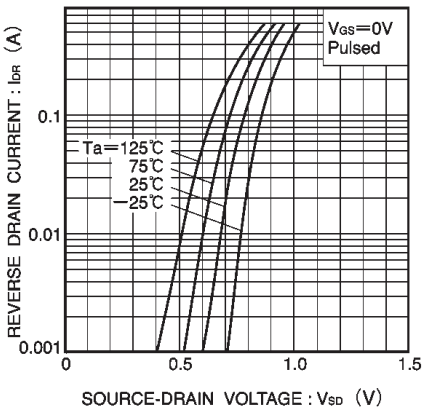


Fig.8 Reverse drain current vs. source-drain voltage (Ⅰ)

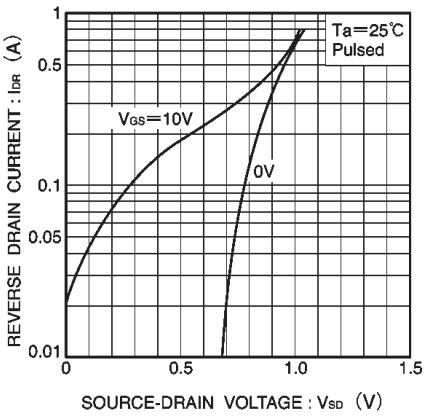


Fig.9 Reverse drain current vs. source-drain voltage (Ⅱ)

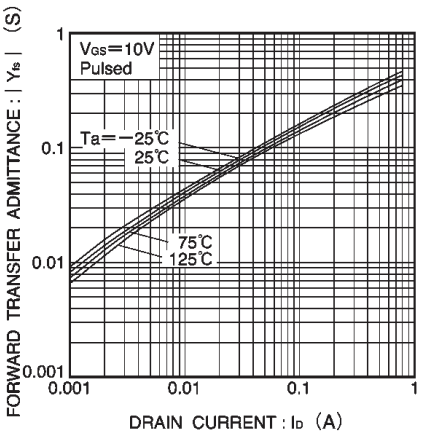


Fig.10 Forward transfer admittance vs. drain current

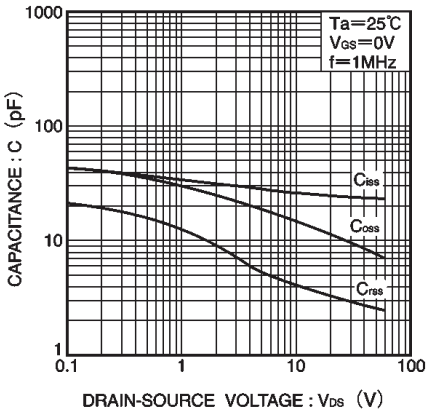


Fig.11 Typical capacitance vs. drain-source voltage

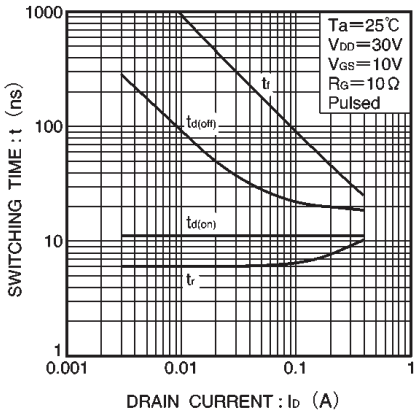


Fig.12 Switching characteristics
(See Figures 13 and 14 for the measurement circuit and resultant waveforms)

Switching characteristics measurement circuit

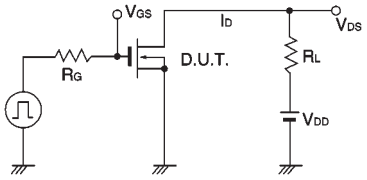


Fig.13 Switching time measurement circuit

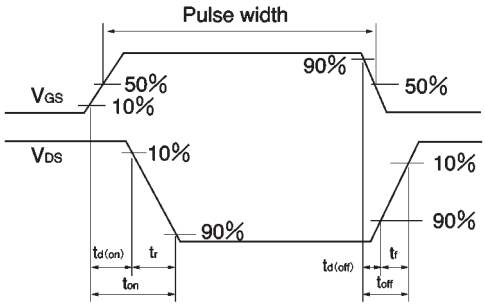
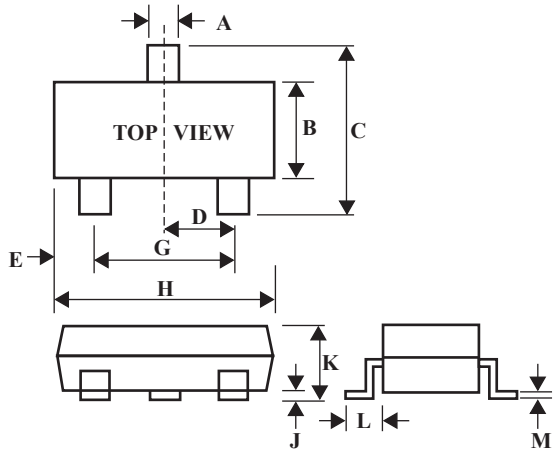


Fig.14 Switching time waveforms

SOT-23 Outline Dimension



SOT-23		
Dim	**Min**	**Max**
A	0.35	0.51
B	1.19	1.40
C	2.10	3.00
D	0.85	1.05
E	0.46	1.00
G	1.70	2.10
H	2.70	3.10
J	0.01	0.13
K	0.89	1.10
L	0.30	0.61
M	0.076	0.25