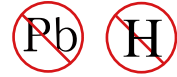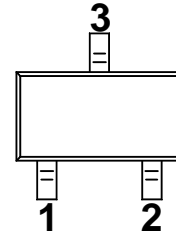# DATA SHEET

SEMICONDUCTOR

SRK7002

Small Signal MOSFET
Silicon N-Channel

Pb H

SOT–23 (TO–236AB)

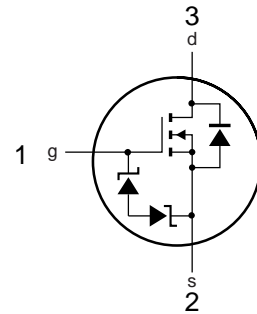### ●Features

1) Low on-resistance.
2) Fast switching speed.
3) Low-voltage drive.
4) Easily designed drive circuits.
5) Easy to parallel.
6) Pb-Free package is available.
7) Esd Protected:2000V

●Device Marking and Ordering Information

Device	Marking	Minimum Q'ty
SRK7002	RK	3000/TR

●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	300	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	350	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 CHARACTERISTICS

SRK7002

● **Electrical characteristics** (Ta=25°C)

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

∗ Pw≤300μs, Duty cycle≤1%
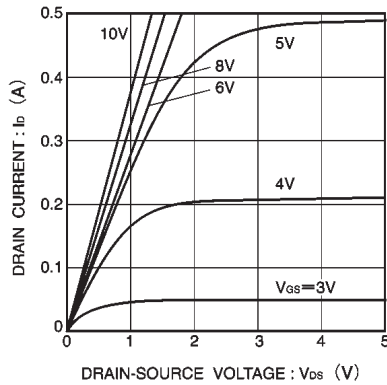
● **Electrical characteristic curves**

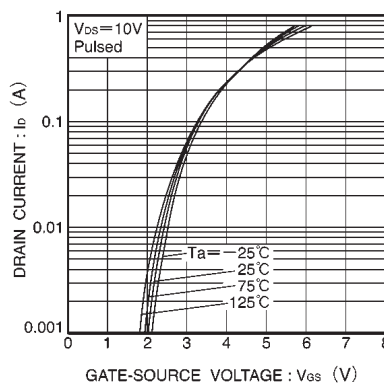Fig.1 Typical output characteristics

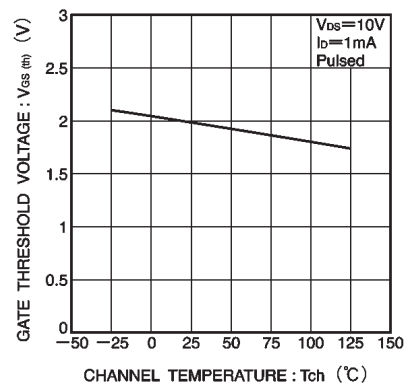Fig.2 Typical transfer characteristics

Fig.3 Gate threshold voltage vs. channel temperature
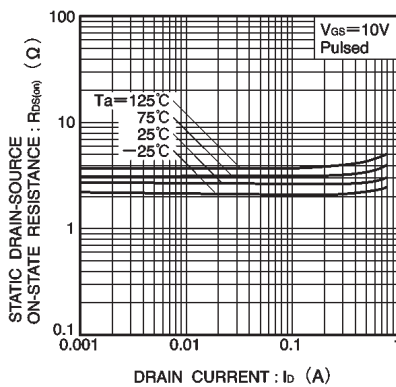

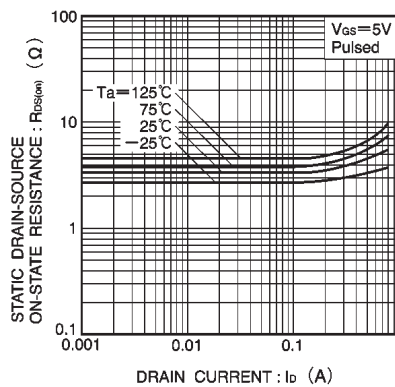Fig.4 Static drain-source on-state resistance vs. drain current (Ⅰ)

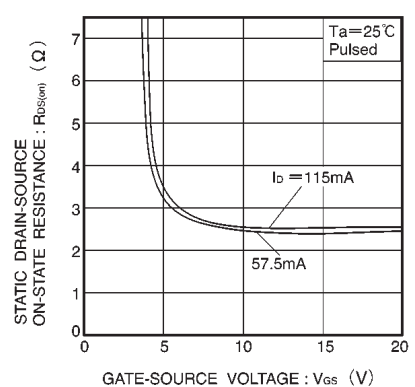Fig.5 Static drain-source on-state resistance vs. drain current (Ⅱ)

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

DEVICE CHARACTERISTICS

SRK7002

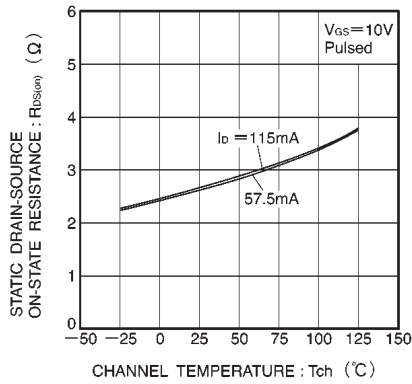● **Electrical characteristic curves** (continues)

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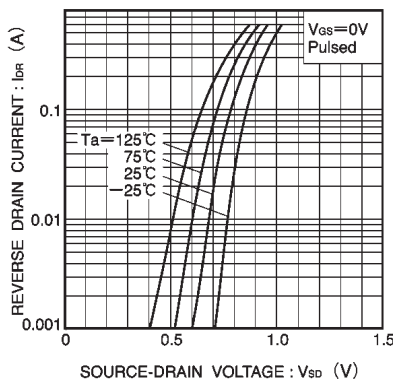on-state resistance
vs. channel temperature

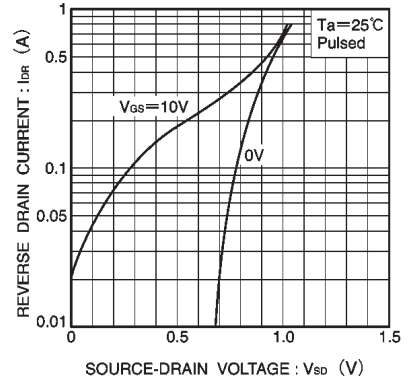Fig.8 Reverse drain current
vs. source-drain voltage (I)

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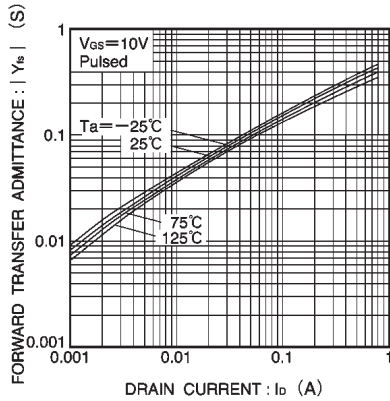vs. source-drain voltage (II)

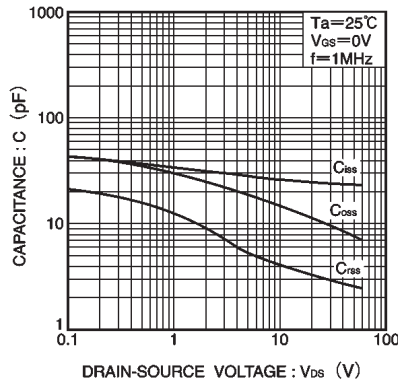Fig.10 Forward transfer admittance
vs. drain current

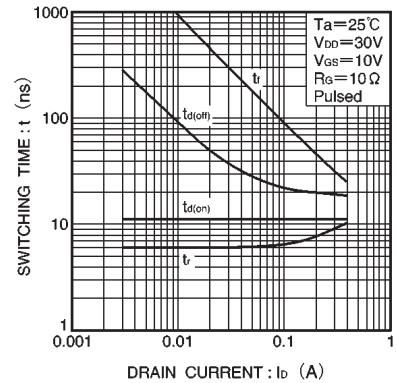Fig.11 Typical capacitance
vs. drain-source voltage

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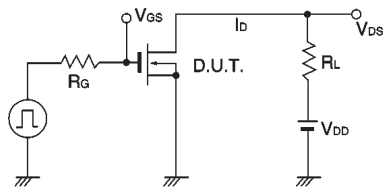
● **Switching characteristics measurement circuit**
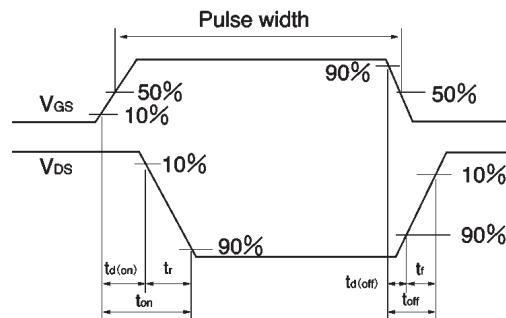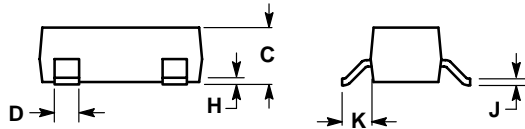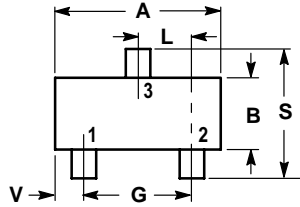

Fig.13 Switching time measurement circuit

Fig.14 Switching time waveforms

PACKAGE OUTLINE & DIMENSIONS

SRK7002

SOT-23

NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60