Small switching (30V, 2A)

2SK2103

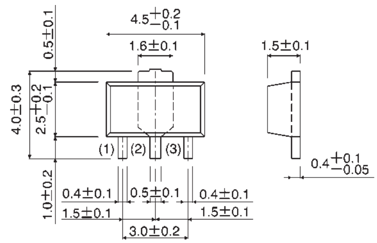
●Features

1) Low on-resistance.
2) Fast switching speed.
3) Wide SOA (safe operating area).
4) Low-voltage drive (4V).
5) Easily designed drive circuits.
6) Easy to use in parallel.

●Structure

Silicon N-channel
MOSFET

●External dimensions (Units: mm)



ROHM : MPT3
E I A J : SC-62

Abbreviated symbol: KA

(1) Gate
(2) Drain
(3) Source

●Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	30	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	2	A
	Pulsed	I_{DP} *1	8	A
Reverse drain current	Continuous	I_{DR}	2	A
	Pulsed	I_{DRP} *1	8	A
Total power dissipation		P_D	0.5 2 *2	W
Channel temperature		Tch	150	℃
Storage temperature		Tstg	−55～+150	℃

*1 Pw≦10 μs, Duty cycle≦1% *2 When mounted on a 40 × 40 × 0.7 mm alumina board.

●Packaging specifications

Type		Taping
	Package	Taping
	Code	T100
	Basic ordering unit (pieces)	1000
2SK2103		○

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage	I_{GSS}	—	—	±100	nA	V_{GS}=±20V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	30	—	—	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	—	—	10	μA	V_{DS}=30V, V_{GS}=0V
Gate threshold voltage	$V_{GS(th)}$	1.0	—	2.5	V	V_{DS}=10V, I_D=1mA
Static drain-source on-state resistance	$R_{DS(on)}$	—	0.25	0.4	Ω	I_D=1A, V_{GS}=10V
		—	0.38	0.6		I_D=1A, V_{GS}=4V
Forward transfer admittance	$\|Y_{fs}\|$*	1.0	—	—	S	I_D=1A, V_{DS}=10V
Input capacitance	C_{iss}	—	230	—	pF	V_{DS}=10V
Output capacitance	C_{oss}	—	120	—	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	—	60	—	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	I_D=1A, V_{DD}≒15V
Rise time	t_r	—	25	—	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	R_L=15Ω
Fall time	t_f	—	60	—	ns	R_G=10Ω
Reverse recovery time	t_{rr}	—	70	—	ns	I_{DR}=2A, V_{GS}=0V, di/dt=50A/μs

* Pw≦300μs, Duty cycle≦1%

●Electrical characteristic curves

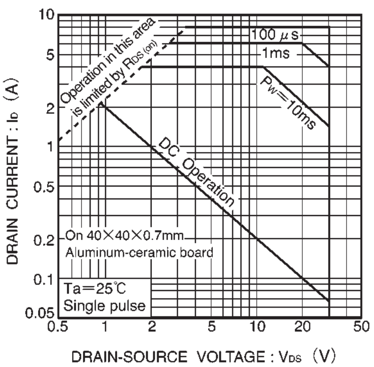


Fig.1 Maximum safe operating area

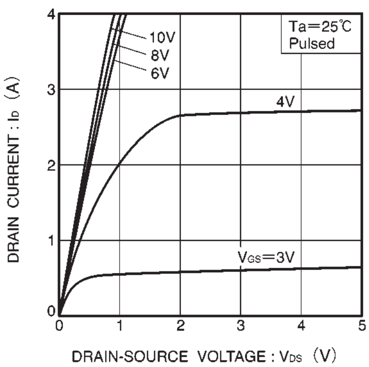


Fig.2 Typical output characteristics

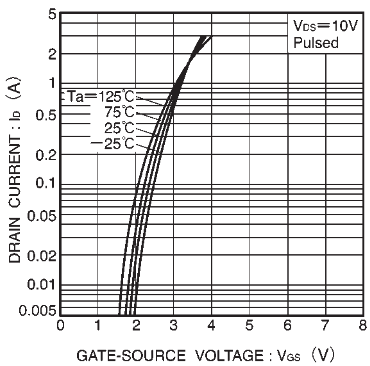


Fig.3 Typical transfer characteristics

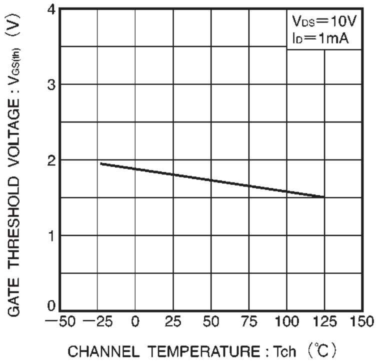


Fig.4 Gate threshold voltage vs. channel temperature

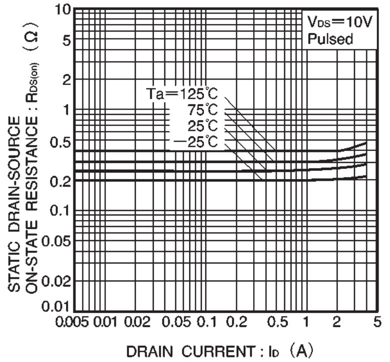


Fig.5 Static drain-source on-state resistance vs. drain current (Ⅰ)

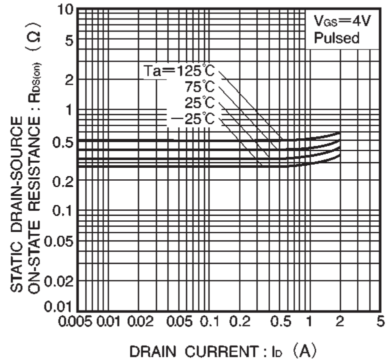


Fig.6 Static drain-source on-state resistance vs. drain current (Ⅱ)

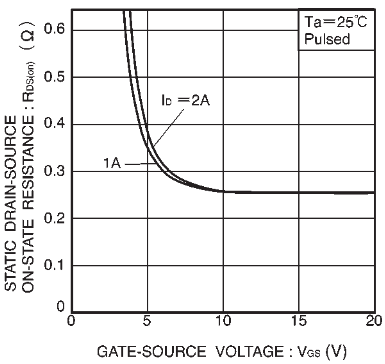


Fig.7 Static drain-source on-state resistance vs. gate-source voltage

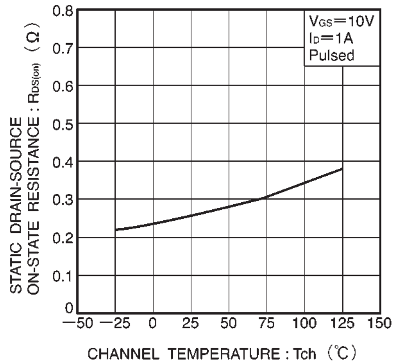


Fig.8 Static drain-source on-state resistance vs. channel temperature

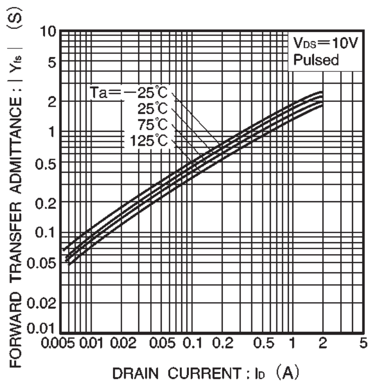


Fig.9 Forward transfer admittance vs. drain current

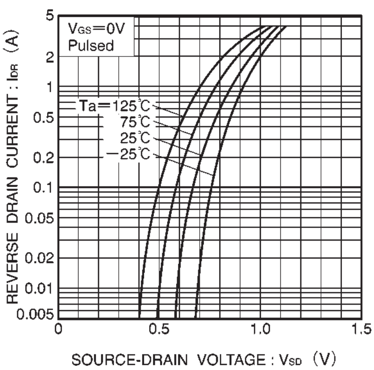


Fig.10 Reverse drain current vs. source-drain voltage (Ⅰ)

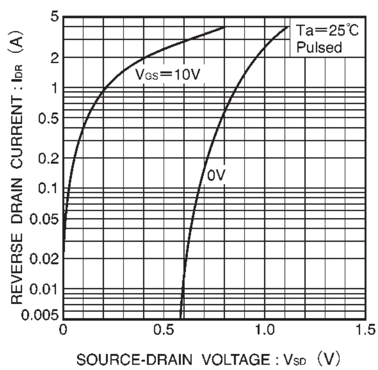


Fig.11 Reverse drain current vs. source-drain voltage (Ⅱ)

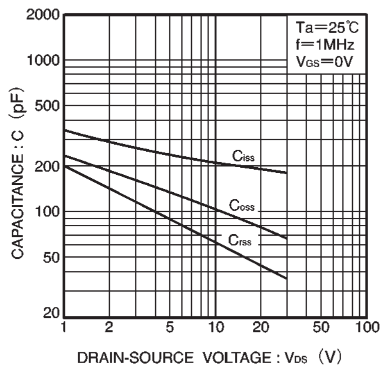


Fig.12 Typical capacitance vs. drain-source voltage

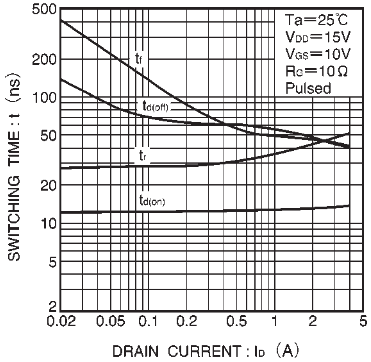


Fig.13 Switching characteristics
(See Figurse 15 and 16 for the measurement circuit and resultant waveforms)

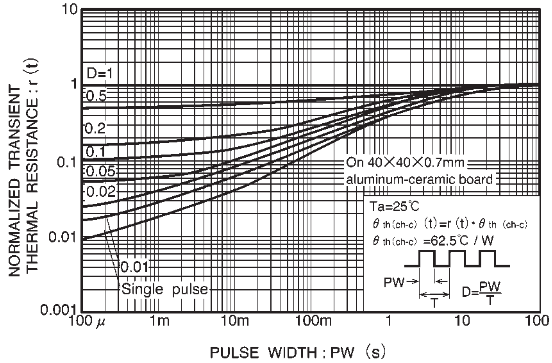


Fig.14 Normalized transient thermal resistance vs. pulse width

●Switching characteristics measurement circuit

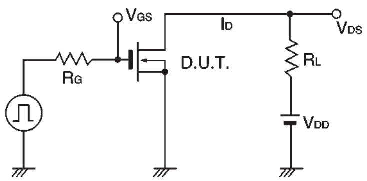


Fig.15 Switching time measurement circuit

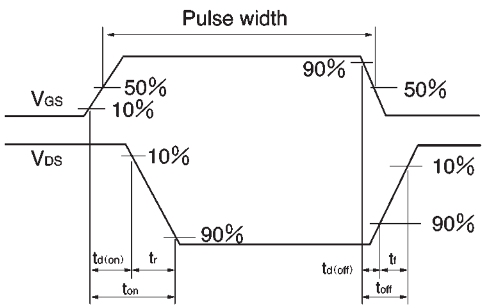


Fig.16 Switching time waveforms