# Small switching (30V, 2A) 2SK2103

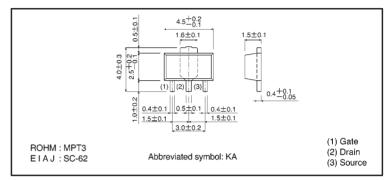
#### Features

- 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)



## ● Absolute maximum ratings (Ta = 25°C)

Parameter		Symbol Limits		Unit
Drain-source voltage		VDSS	30	٧
Gate-source voltage		Vgss	±20	٧
Drain current	Continuous	ΙD	2	Α
	Pulsed	lop*1	IDP*1 8	
Reverse drain current	Continuous	IDR	2	Α
	Pulsed	IDRP*1	8	Α
Total power dissipation		Po	0.5 2*2	W
Channel temperature		Tch	150	င
Storage temperature		Tstg	-55~+150	°C

<sup>\*1</sup> Pw $\leq$ 10  $\mu$ s, Duty cycle $\leq$ 1% \*2 When mounted on a 40  $\times$  40  $\times$  0.7 mm alumina board.

### Packaging specifications

	Package	Taping
Type	Code	T100
	Basic ordering unit (pieces)	1000
2SK2103		0



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

Parameter	Symbol	Min.	Тур.	Max.	Unit	Test Conditions
Gate-source leakage	I <sub>GSS</sub>	_	_	±100	nA	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V(BR) DSS	30	_	_	٧	ID=1mA, VGS=0V
Zero gate voltage drain current	loss	_	_	10	μΑ	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V
Gate threshold voltage	Vgs (th)	1.0	_	2.5	٧	V <sub>DS</sub> =10V, I <sub>D</sub> =1mA
Static drain-source on-state	RDS (on)	_	0.25	0.4	Ω	I <sub>D</sub> =1A, V <sub>GS</sub> =10V
resistance		_	0.38	0.6		ID=1A, VGS=4V
Forward transfer admittance	Y <sub>fs</sub>  *	1.0	_	_	S	I <sub>D</sub> =1A, V <sub>DS</sub> =10V
Input capacitance	Ciss	_	230	_	pF	V <sub>DS</sub> =10V
Output capacitance	Coss	_	120	_	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	Crss	_	60	_	pF	f=1MHz
Turn-on delay time	td (on)	_	10	_	ns	I <sub>D</sub> =1A, V <sub>DD</sub> ≒15V
Rise time	tr	_	25	_	ns	V <sub>GS</sub> =10V
Turn-off delay time	td (off)	_	60	_	ns	RL=15Ω
Fall time	tr	_	60	_	ns	R <sub>G</sub> =10Ω
Reverse recovery time	trr	_	70	_	ns	I <sub>DR</sub> =2A, V <sub>GS</sub> =0V, di/dt=50A/μs

<sup>\*</sup> Pw≦300 μs, Duty cycle≦1%

### Electrical characteristic curves

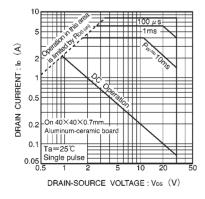


Fig.1 Maximum safe operating area

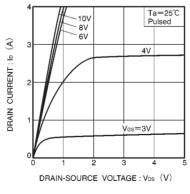


Fig.2 Typical output characteristics

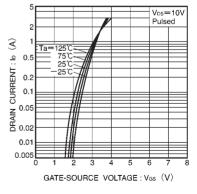
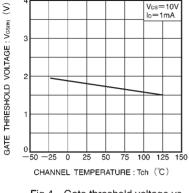


Fig.3 Typical transfer characteristics

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CG 5 PRAIN CURRENT: lb (A)

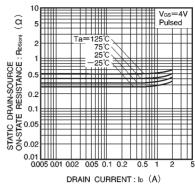
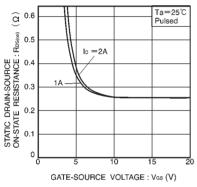
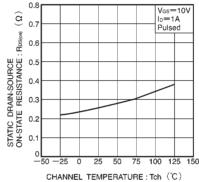


Fig.4 Gate threshold voltage vs. channel temperature

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

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





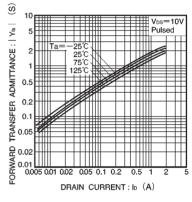
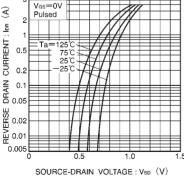


Fig.7 Static drain-source on-state resistance vs. gate-source voltage

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

Fig.9 Forward transfer admittance vs. drain current



SOURCE-DRAIN VOLTAGE: Vso (V)

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

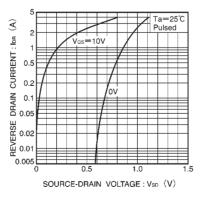


Fig.11 Reverse drain current vs. source-drain voltage (II)

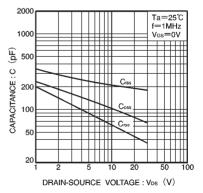


Fig.12 Typical capacitance vs. drain-source voltage



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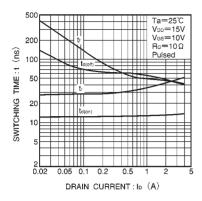


Fig.13 Switching characteristics (See Figurse 15 and 16 for the measurement circuit and resultant waveforms)

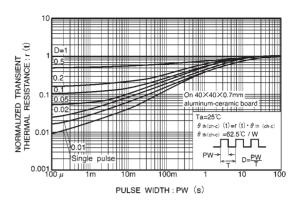


Fig.14 Normalized transient thermal resistance vs. pulse width

Switching characteristics measurement circuit

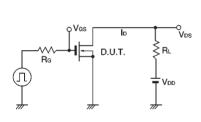


Fig.15 Switching time measurement circuit

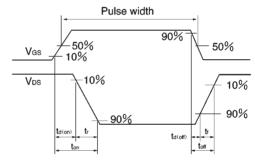


Fig.16 Switching time waveforms

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