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Small switching (60V, 10A)

2SK2095N

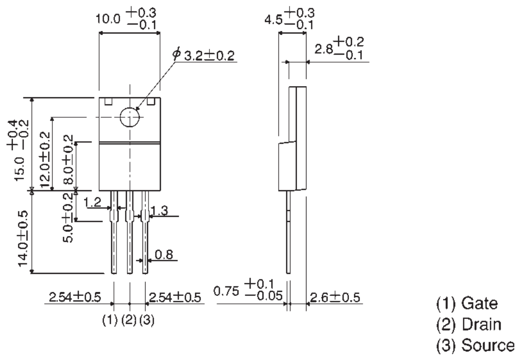
●Features

1) Low on-resistance.
2) Fast switching speed.
3) Wide SOA (safe operating area).
4) Easily designed drive circuits.
5) Low $V_{GS(th)}$.
6) Easy to parallel.

●Structure

Silicon N-channel
MOSFET

●External dimensions (Units: mm)



●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	10	A
	Pulsed	I_{DP}*	40	A
Reverse drain current	Continuous	I_{DR}	10	A
	Pulsed	I_{DRP}*	40	A
Total power dissipation (Tc=25℃)		P_D	30	W
Channel temperature		Tch	150	℃
Storage temperature		Tstg	−55～+150	℃

＊ Pw≦10 μs, Duty cycle≦1%

●Packaging specifications

Type		
	Package	Bulk
	Code	—
	Basic ordering unit (pieces)	500
2SK2095N		○

●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	$V_{(BR)DSS}$	60	—	—	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	—	—	100	μA	V_{DS}=60V, 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	$R_{DS(on)}$	—	0.080	0.095	Ω	I_D=5A, V_{GS}=10V
		—	0.11	0.14		I_D=5A, V_{GS}=4V
Forward transfer admittance	$\|Y_{fs}\|$*	5.0	—	—	S	I_D=5A, V_{DS}=10V
Input capacitance	C_{iss}	—	1600	—	pF	V_{DS}=10V
Output capacitance	C_{oss}	—	600	—	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	—	150	—	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$	—	30	—	ns	I_D=5A, V_{DD}≒30V
Rise time	t_r	—	80	—	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$	—	300	—	ns	R_L=6Ω
Fall time	t_f	—	100	—	ns	R_G=10Ω

* Pw≦300μs, Duty cycle≦1%

●Electrical characteristic curves

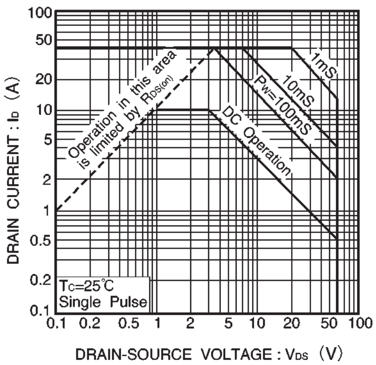


Fig.1 Maximum safe operating area

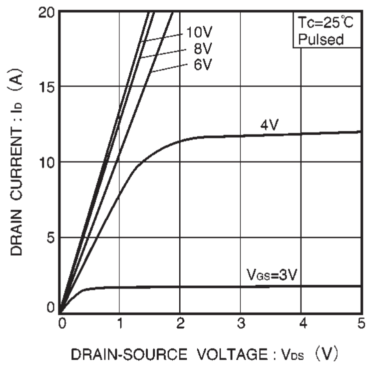


Fig.2 Typical output characteristics

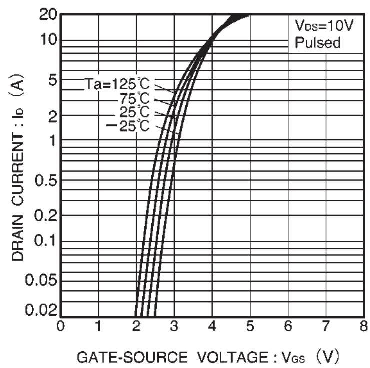


Fig.3 Typical transfer characteristics

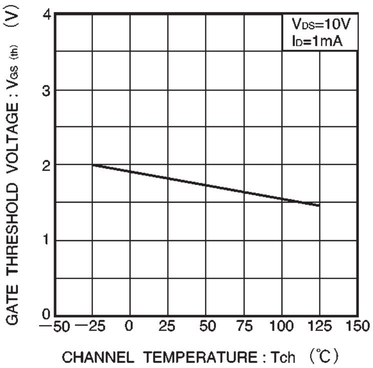


Fig.4 Gate threshold voltage vs. channel temperature

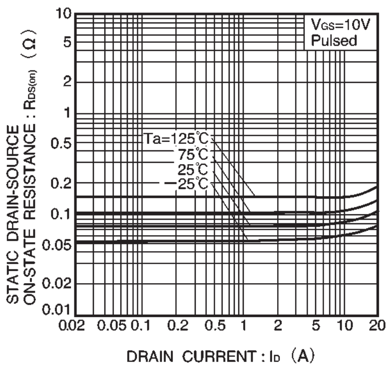


Fig.5 Static drain-source on-state resistance vs. drain current (Ⅰ)

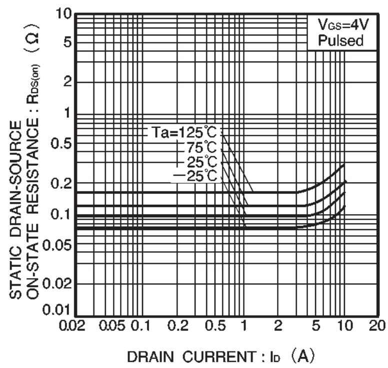


Fig.6 Static drain-source on-state resistance vs. drain current (Ⅱ)

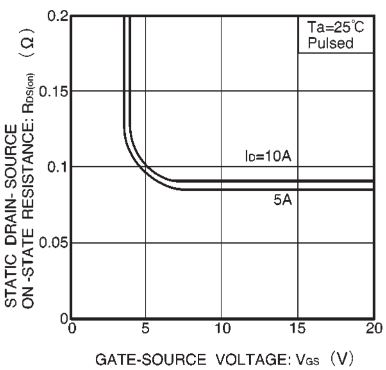


Fig.7 Static drain-source on-state resistance vs. gate-source voltage

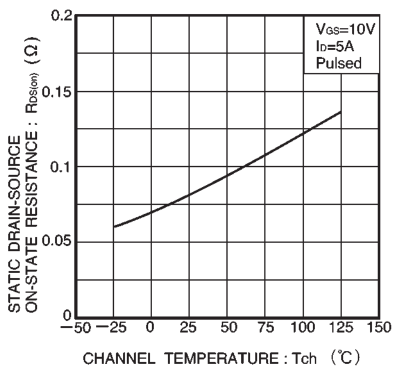


Fig.8 Static drain-source on-state resistance vs. channel temperature

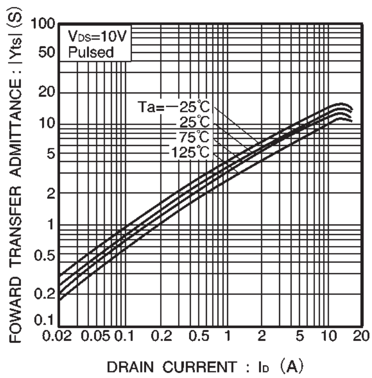


Fig.9 Forward transfer admittance vs. drain current

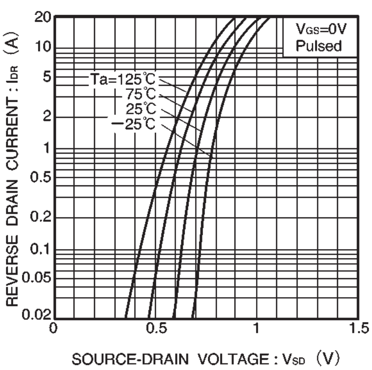


Fig.10 Reverse drain current vs. source-drain voltage (Ⅰ)

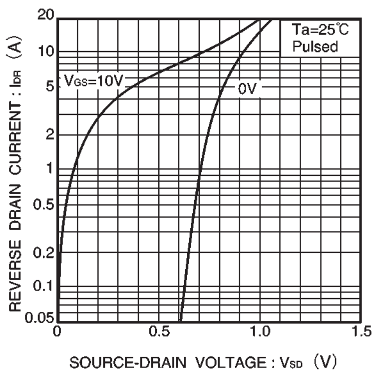


Fig.11 Reverse drain current vs. source-drain voltage (Ⅱ)

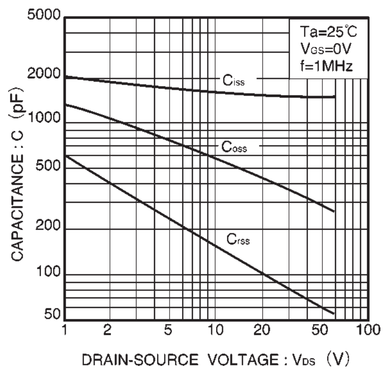


Fig.12 Typical capacitance vs. drain-source voltage

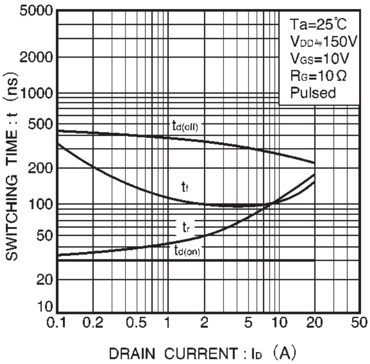


Fig.13 Switching characteristics (See Figures 15 and 16 for the measurement circuit and resultant waveforms.)

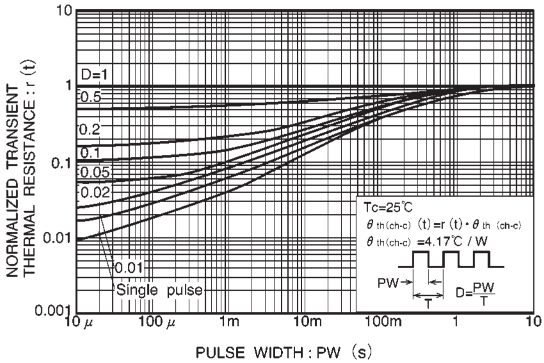


Fig.14 Normalized transient thermal resistance vs. pulse width

●Switching characteristics measurement circuit

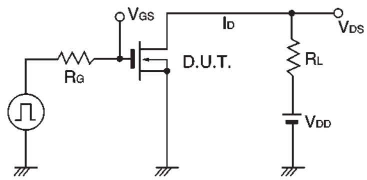


Fig.15 Switching time measurement circuit

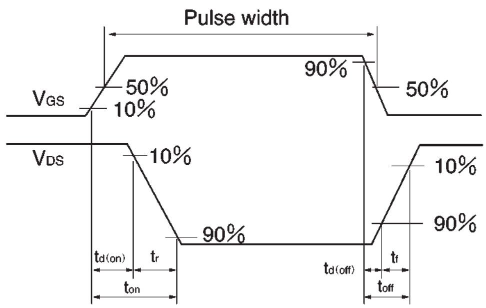


Fig.16 Switching time waveforms

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