

Switching (60V, 10A)

2SK2095N

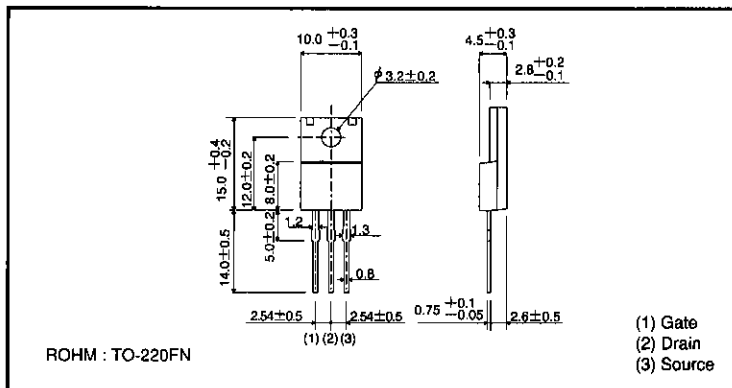
●Features

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

●Structure

Silicon N-channel
MOSFET transistor

●External dimensions (Units: mm)



MOS FET

●Absolute maximum ratings ($T_a = 25^\circ\text{C}$)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Drain current	Continuous	I_D	10
	Pulsed	I_{DP}^*	40
Drain reverse current	Continuous	I_{DR}	10
	Pulsed	I_{DRP}^*	40
Total power dissipation ($T_c=25^\circ\text{C}$)	P_D	30	W
Channel temperature	T_{ch}	150	$^\circ\text{C}$
Storage temperature	T_{stg}	$-55 \sim 150$	$^\circ\text{C}$

* $P_w \leq 10 \mu\text{s}$, Duty cycle $\leq 1\%$

●Packaging specifications

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

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate leakage current	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
Drain cutoff current	I _{DSS}	—	—	100	μA	V _{DS} =60V, V _{GS} =0V
Gate threshold voltage	V _{GS(th)}	1	—	2.5	V	V _{DS} =10V, I _D =1mA
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 propagation admittance	Y _{fs} *	5	—	—	S	V _{DS} =10V, I _D =5A
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≦300 μs, Duty cycle≦1%

●Electrical characteristic curves

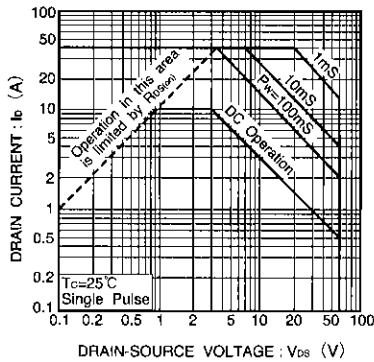


Fig.1 Maximum Safe Operating Area

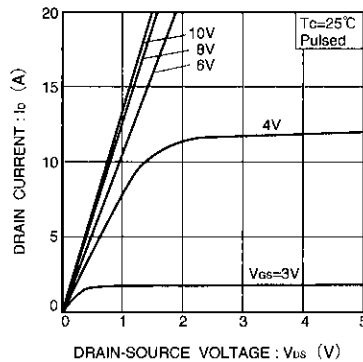


Fig.2 Typical Output Characteristics

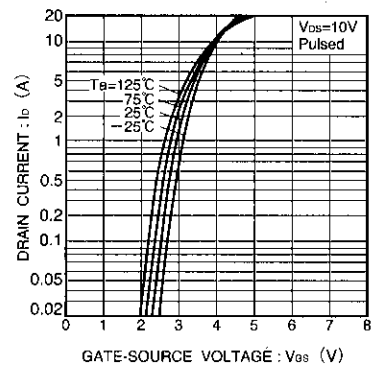


Fig.3 Typical Transfer Characteristics

●Electrical characteristic curves

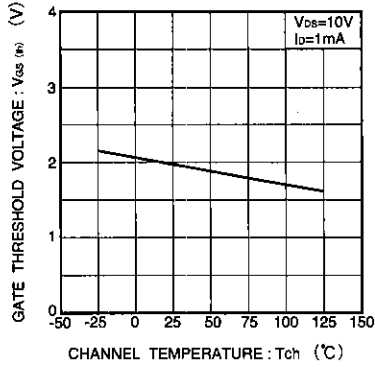


Fig.4 Gate Threshold Voltage vs. Channel Temperature

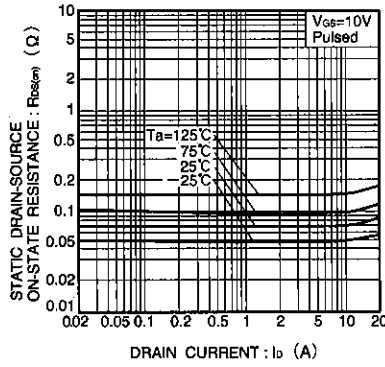


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (I)

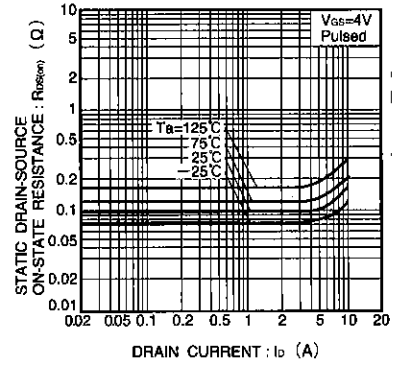


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (II)

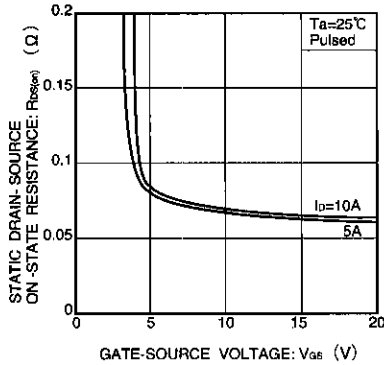


Fig.7 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

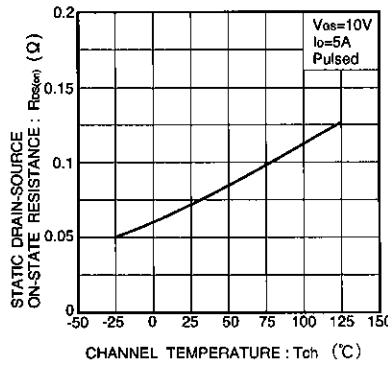


Fig.8 Static Drain-Source On-State Resistance vs. Channel Temperature

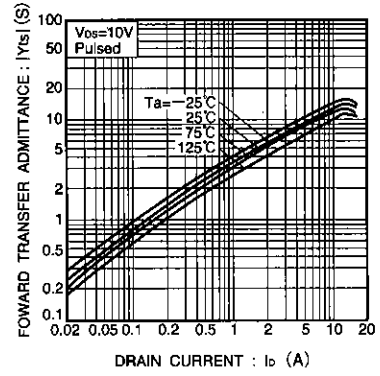


Fig.9 Forward Transfer Admittance vs. Drain Current

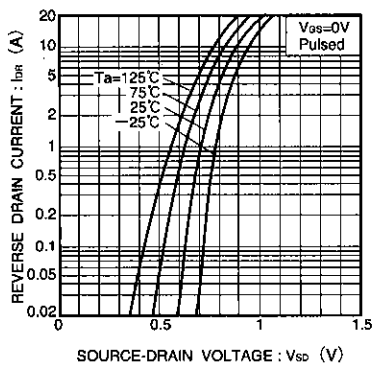


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (I)

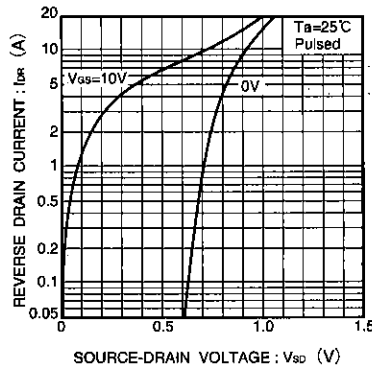


Fig.11 Reverse Drain Current vs. Source-Drain Voltage (II)

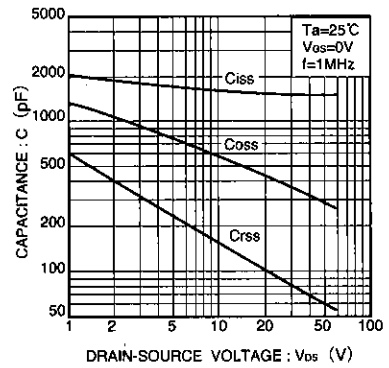


Fig.12 Typical Capacitance vs. Drain-Source Voltage

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●Electrical characteristic curves

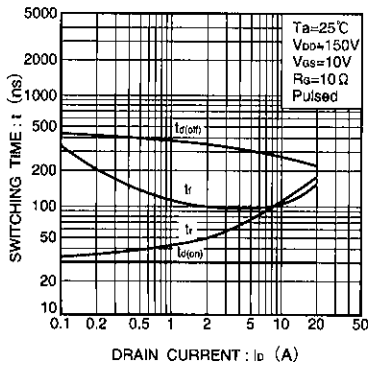


Fig.13 Switching Characteristics
(See Figure. 15 and 16 for measurement circuits)

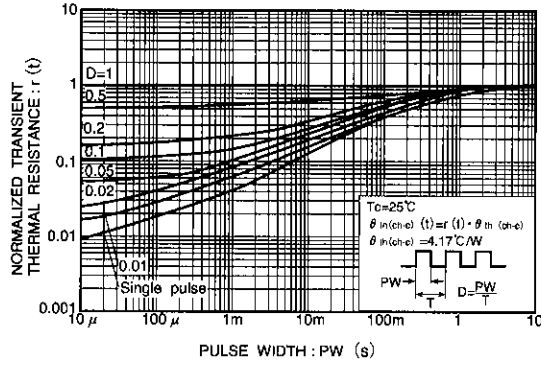


Fig.14 Normalized Transient Thermal Resistance vs.Pulse Width

●Switching characteristics measurement circuit

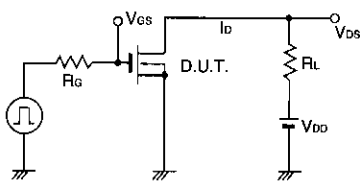


Fig.15 Switching Time Measurement Circuit

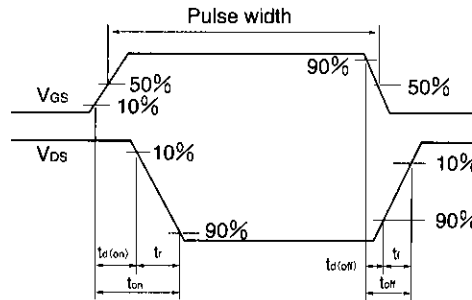


Fig.16 Switching Time Waveforms

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