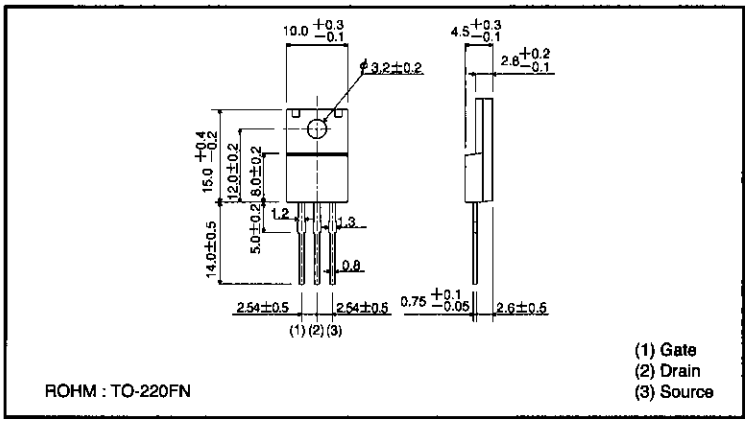
Switching (450V, 7A)
2SK2299N

●Features
1) Low on-resistance.
2) High-speed switching.
3) Wide SOA (safe operating area).
4) Gate-source voltage guaranteed at V_{GSS}= ±30V.
5) Easily designed drive circuits.
6) Easy to use in parallel.

●Structure
Silicon N-channel
MOSFET transistor

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25℃)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	450	V
Gate-source voltage		V_{GSS}	±30	V
Drain current	Continuous	I_D	7	A
	Pulsed	I_{DP}*	28	A
Drain reverse current	Continuous	I_{DR}	7	A
	Pulsed	I_{DRP}*	28	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
2SK2299N		○

●Electrical characteristics (Ta = 25℃)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate leakage current	I_{GSS}	—	—	±100	nA	V_{GS}=±30V, V_{DS}=0V
Drain-source breakdown voltage	$V_{(BR)DSS}$	450	—	—	V	I_D=1mA, V_{GS}=0V
Drain cutoff current	I_{DSS}	—	—	100	μA	V_{DS}=450V, V_{GS}=0V
Gate threshold voltage	$V_{GS(th)}$	2	—	4	V	V_{DS}=10V, I_D=1mA
Drain-source on-resistance	$R_{DS(on)}$	—	0.85	1.1	Ω	I_D=4.0A, V_{GS}=10V
Forward propagation admittance	$\|Y_{fs}\|$*	3	5.5	—	S	V_{DS}=10V, I_D=4.0A
Input capacitance	C_{iss}	—	870	—	pF	V_{DS}=10V
Output capacitance	C_{oss}	—	180	—	pF	V_{GS}=0
Return capacitance	C_{rss}	—	40	—	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$	—	15	—	ns	I_D=4A, V_{DD}≒150V
Rise time	t_r	—	18	—	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$	—	60	—	ns	R_L=37.5Ω
Fall time	t_f	—	35	—	ns	R_G=10Ω
Reverse recovery time	t_{rr}	—	400	—	ns	I_{DR}=7A, V_{GS}=0V
Reverse recovery load	Q_{rr}	—	2.5	—	μC	di/dt=100A/μs

* Pw≦300μs, Duty cycle≦1%

●Electrical characteristic curves

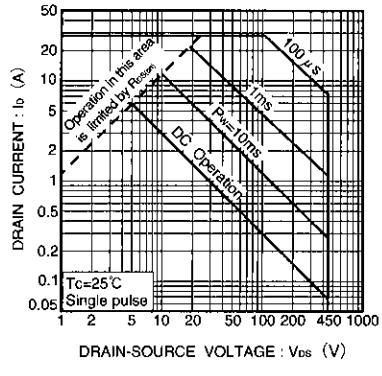


Fig.1 Maximum Safe Operating Area

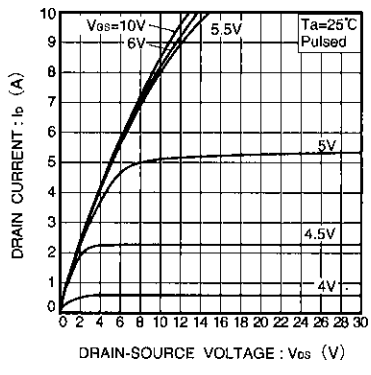


Fig.2 Typical Output Characteristics

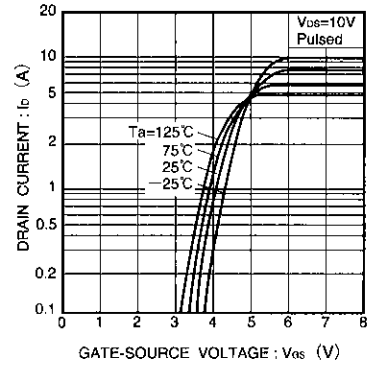


Fig.3 Typical Transfer Characteristics

●Electrical characteristic curves

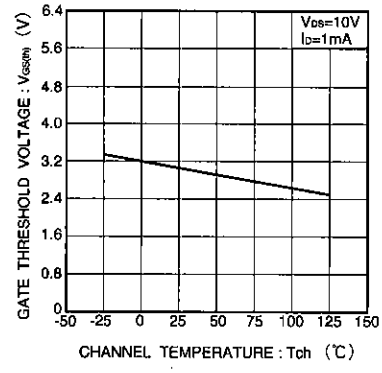


Fig.4 Gate Threshold Voltage vs. Channel Temperature

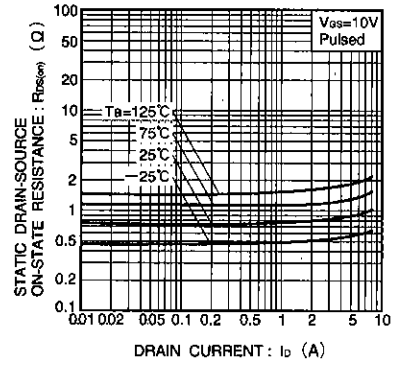


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

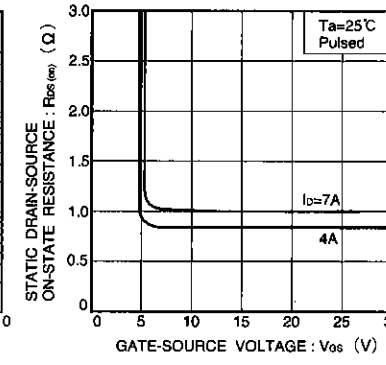


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

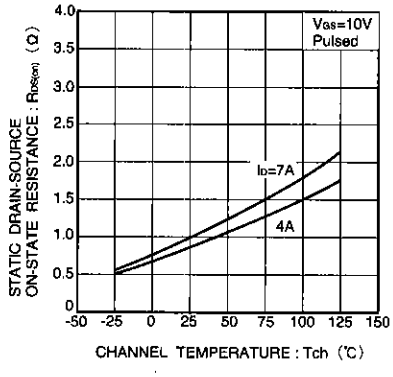


Fig.7 Static Drain-Source On-State Resistance vs. Channel Temperature

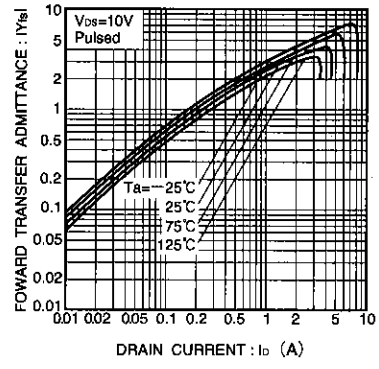


Fig.8 Forward Transfer Admittance vs. Drain Current

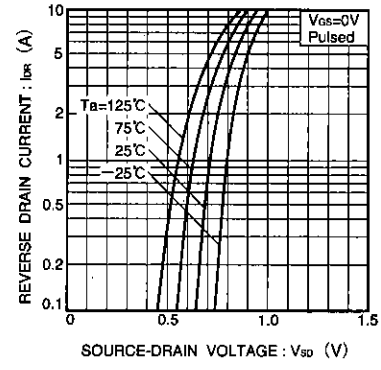


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (I)

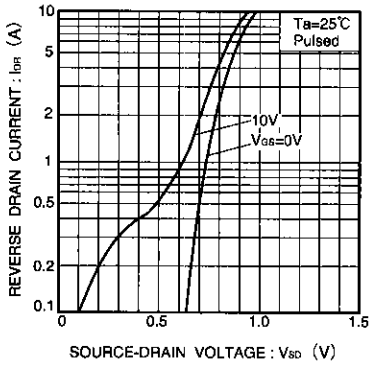


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (Ⅱ)

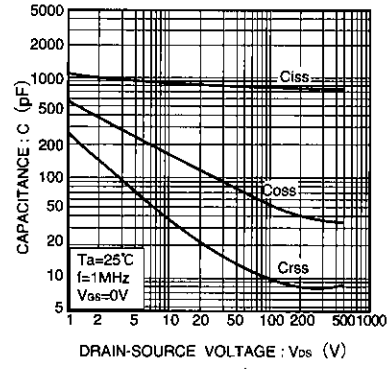


Fig.11 Typical Capacitance vs. Drain-Souce Voltage

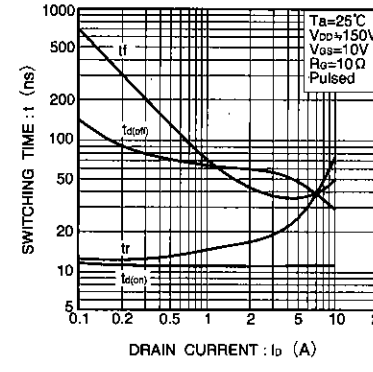


Fig.12 Switching Characteristics (See Figure. 16 and 17 for measurement circuits)

MOS FET

●Electrical characteristic curves

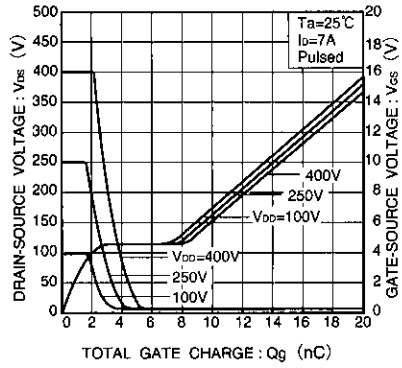


Fig.13 Dynamic Input Characteristics (See Fig. 18 for measurement circuit)

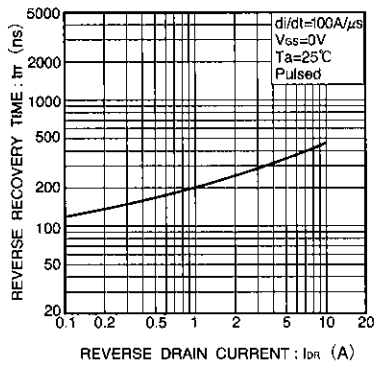


Fig.14 Reverse Recovery Time vs. Reverse Drain Current

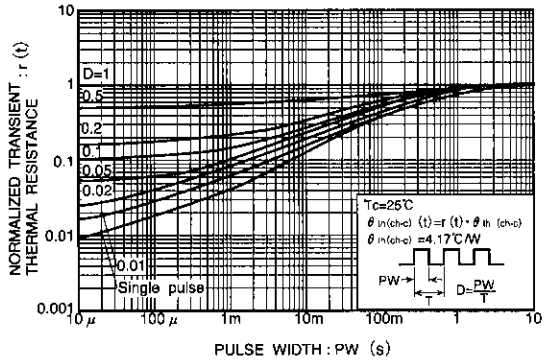


Fig.15 Normalized Transient Thermal Resistance Vs. Pulse Width

●Switching characteristics measurement circuit

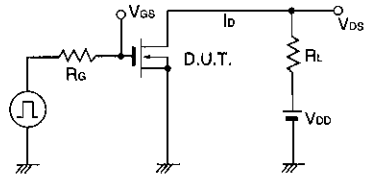


Fig.16 Switching Time Measurement Circuit

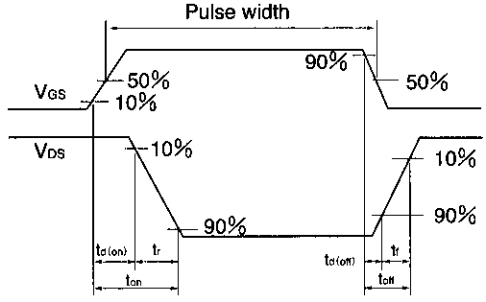


Fig.17 Switching Time Waveforms

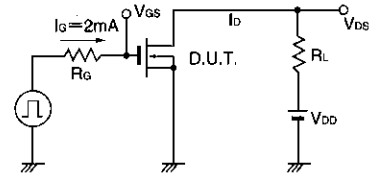


Fig.18 Gate Charge Measurement Circuit

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