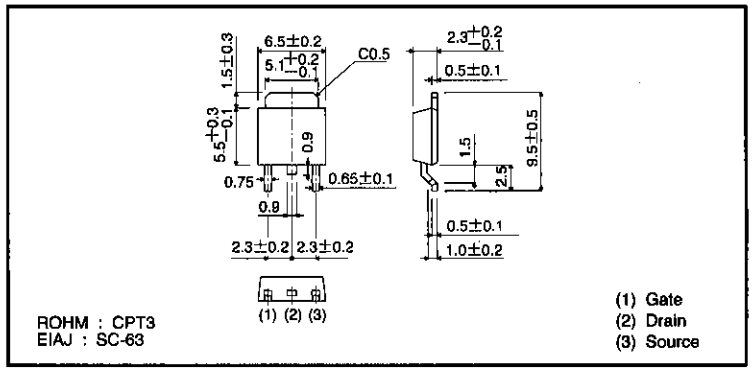
Small switching (60V, 5A)
2SK2503

●Features
1) Low on-resistance.
2) High-speed switching.
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 transistor

●External dimensions (Units: mm)



●Absolute maximum ratings (Ta = 25℃)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	60	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	5	A
	Pulsed	I_{DP}*	20	A
Drain reverse current	Continuous	I_{DR}	5	A
	Pulsed	I_{DRP}*	20	A
Total power dissipation (Tc=25℃)		P_D	20	W
Channel temperature		Tch	150	℃
Storage temperature		Tstg	−55~150	℃

* Pw≦10 μs, Duty cycle≦1%

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	2500
2SK2503		○

●Electrical characteristics (Ta = 25℃)

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}	—	—	10	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	$R_{DS(on)}$	—	0.11	0.135	Ω	I_D=2.5A, V_{GS}=10V
		—	0.17	0.20		I_D=2.5A, V_{GS}=4V
Forward propagation admittance	$\|Y_{fs}\|$*	4	—	—	S	V_{DS}=10V, I_D=2.5A
Input capacitance	C_{iss}	—	520	—	pF	V_{DS}=10V
Output capacitance	C_{oss}	—	240	—	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	—	100	—	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$	—	5	—	ns	I_D=2.5A, V_{DD}≒30V
Rise time	t_r	—	20	—	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$	—	50	—	ns	R_L=12Ω
Fall time	t_f	—	20	—	ns	R_G=10Ω

* Pw≦300 μs, Duty cycle≦1%

●Electrical characteristic curves

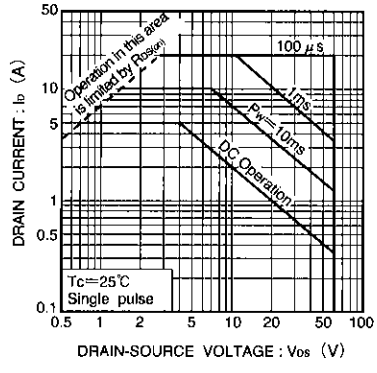


Fig.1 Maximum Safe Operating Area

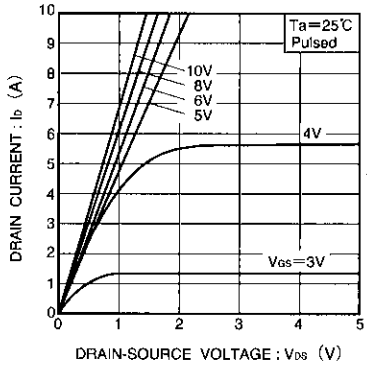


Fig.2 Typical Output Characteristics

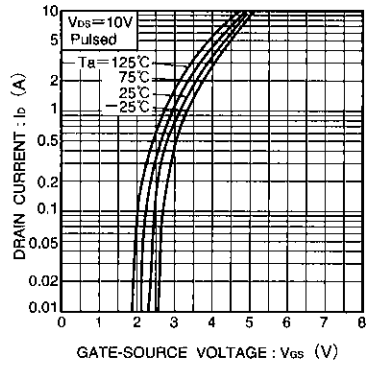


Fig.3 Typical Transfer Characteristics

●Electrical characteristic curves

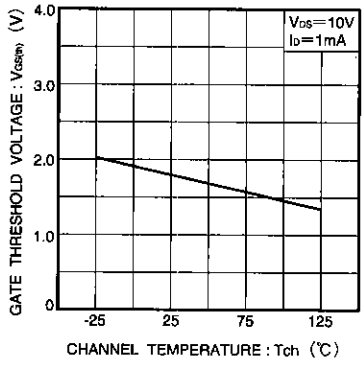


Fig.4 Gate Threshold Voltage vs. Channel Temperature

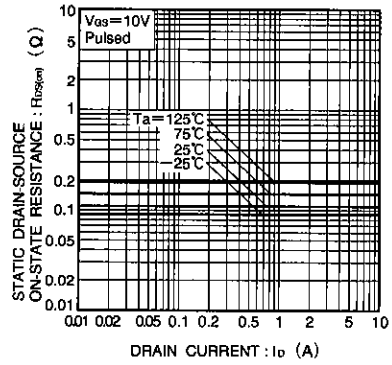


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (Ⅰ)

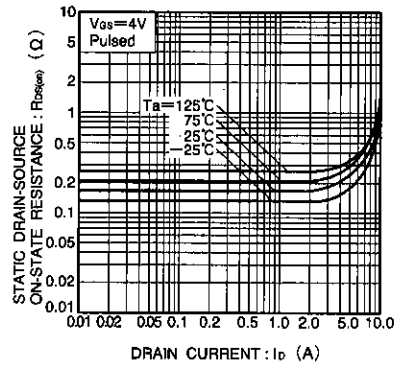


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (Ⅱ)

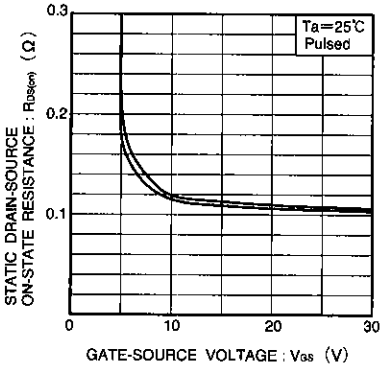


Fig.7 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

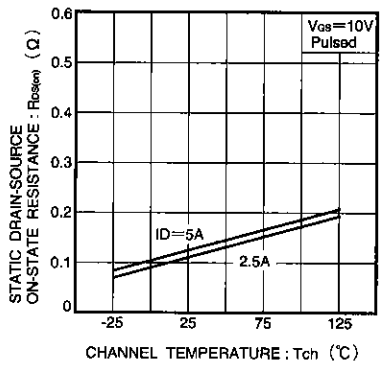


Fig.8 Static Drain-Source On-State Resistance vs. Channel Temperature

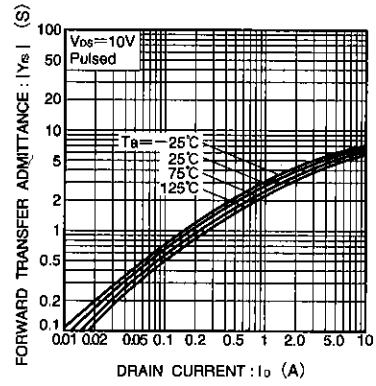


Fig.9 Forward Transfer Admittance vs. Drain Current

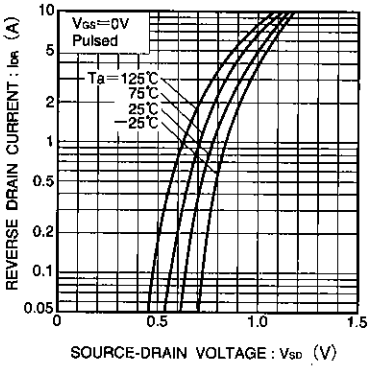


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (Ⅰ)

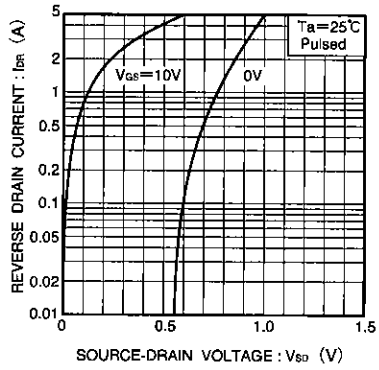


Fig.11 Reverse Drain Current vs. Source-Drain Voltage (Ⅱ)

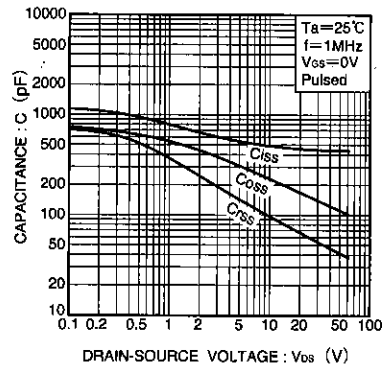


Fig.12 Typical Capacitance vs. Drain-Source Voltage

●Electrical characteristic curves

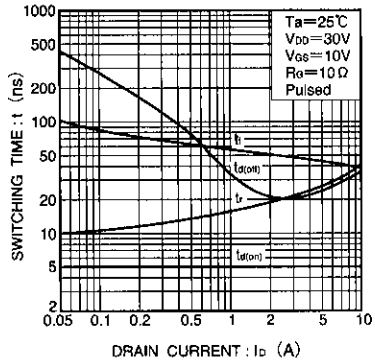


Fig.13 Switching Characteristics (See Figure. 15 and 16 for measurement circuits)

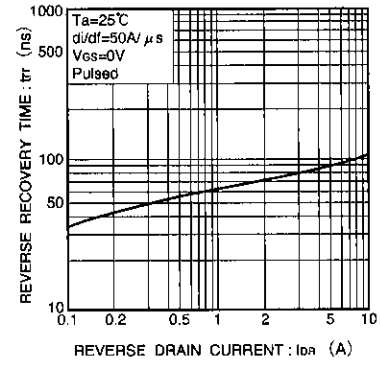


Fig.14 Reverse Recovery Time vs. Reverse Drain Current

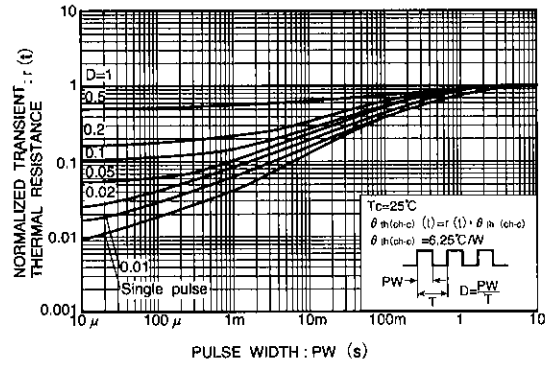


Fig.15 Normalized Transient Thermal Resistance vs. Pulse Width

●Switching characteristics measurement circuit

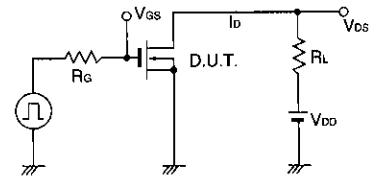


Fig.15 Switching Time Measurement Circuit

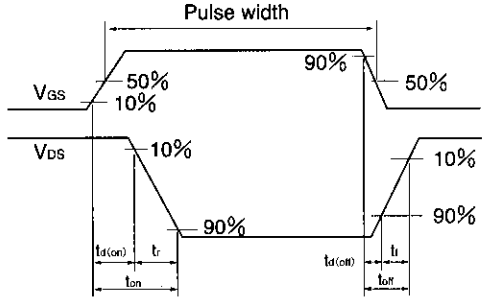


Fig.16 Switching Time Waveforms

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