Transistors

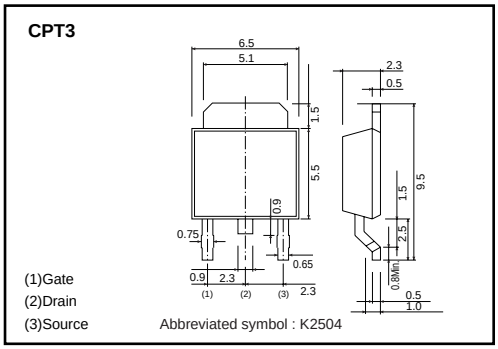
4V Drive Nch MOS FET

2SK2504

●Structure
Silicon N-channel MOS FET

●External dimensions (Unit : mm)

CPT3



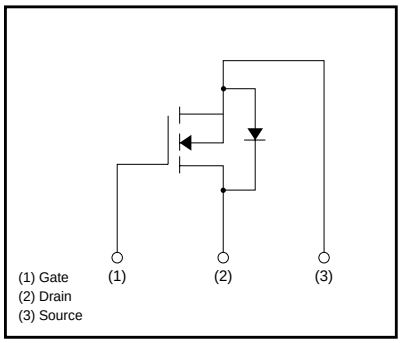
●Features
1) Low On-resistance.
2) Fast switching speed.
3) Wide SOA (safe operating area).
4) 4V drive.
5) Drive circuits can be simple.
6) Parallel use is easy.

●Applications
Switching

●Packaging specifications

Type	Package	Taping
	Code	TL
	Basic ordering unit (pieces)	2500
2SK2504		○

●Inner circuit



●Absolute maximum ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-source voltage		V_{DSS}	100	V
Gate-source voltage		V_{GSS}	±20	V
Drain current	Continuous	I_D	5	A
	Pulsed	I_{DP}*	20	A
Reverse drain current	Continuous	I_{DR}	5	A
	Pulsed	I_{DRP}*	20	A
Total power dissipation(Tc=25°C)		P_D	20	W
Channel temperature		Tch	150	°C
Storage temperature		Tstg	−55 to +150	°C

* Pw ≤ 10μs, Duty cycle ≤ 1%

●**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	$V_{(BR)DSS}$	100	–	–	V	I_D=1mA, V_{GS}=0V
Zero gate voltage drain current	I_{DSS}	–	–	10	μA	V_{DS}=100V, 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	$R_{DS(on)}$	–	0.18	0.22	Ω	I_D=2.5A, V_{GS}=10V
		–	0.25	0.28		I_D=2.5A, V_{GS}=4V
Forward transfer admittance	$\lvert Y_{fs} \rvert$ *	4.0	–	–	S	I_D=2.5A, V_{DS}=10V
Input capacitance	C_{iss}	–	520	–	pF	V_{DS}=10V
Output capacitance	C_{oss}	–	175	–	pF	V_{GS}=0V
Reverse transfer capacitance	C_{rss}	–	60	–	pF	f=1MHz
Turn-on delay time	$t_{d(on)}$	–	5.0	–	ns	I_D=2.5A, V_{DD}≒50V
Rise time	t_r	–	20	–	ns	V_{GS}=10V
Turn-off delay time	$t_{d(off)}$	–	50	–	ns	R_L=20Ω
Fall time	t_f	–	20	–	ns	R_G=10Ω

* Pw ≤ 300μs, Duty cycle ≤ 1%

●Electrical characteristics curve

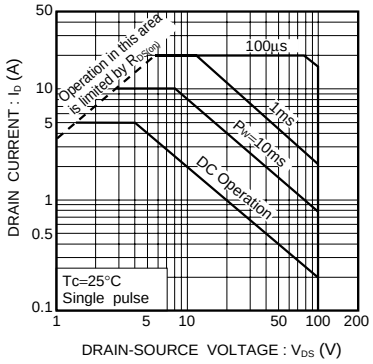


Fig.1 Maximum Safe Operating Area

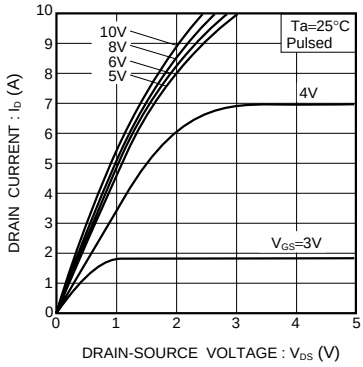


Fig.2 Typical Output Characteristics

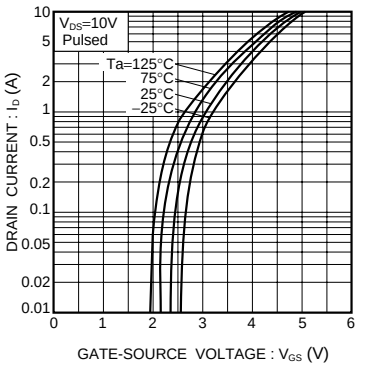


Fig.3 Typical Transfer Characteristics

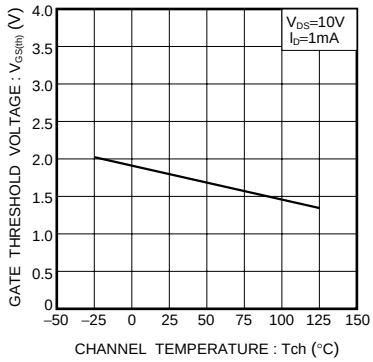


Fig.4 Gate Threshold Voltage vs. Channel Temperature

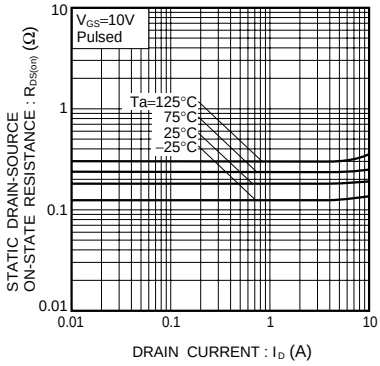


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current (I)

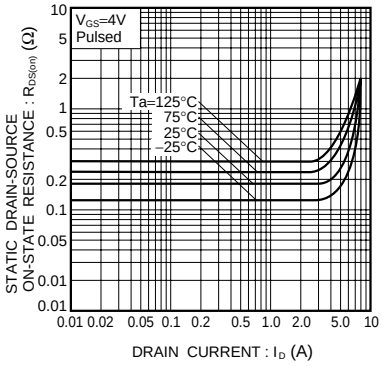


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current (II)

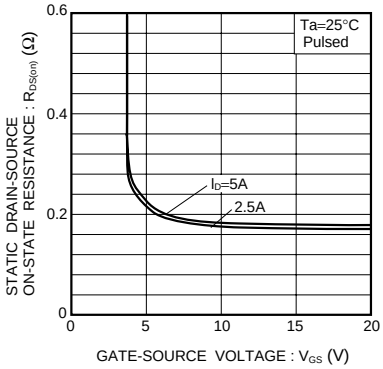


Fig.7 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

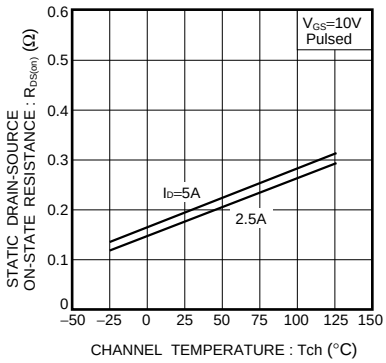


Fig.8 Static Drain-Source On-State Resistance vs. Channel Temperature

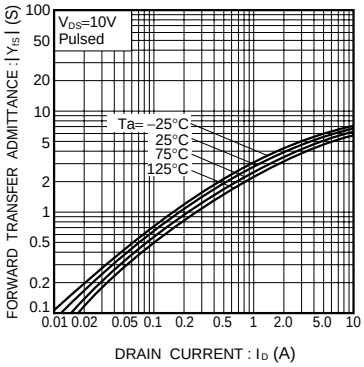


Fig.9 Forward Transfer Admittance vs. Drain Current

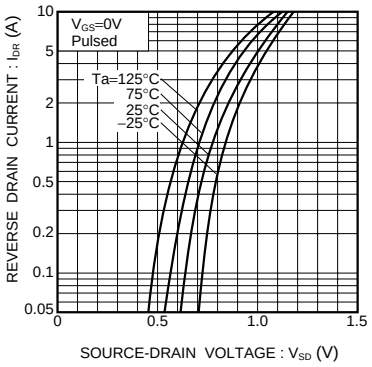


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (I)

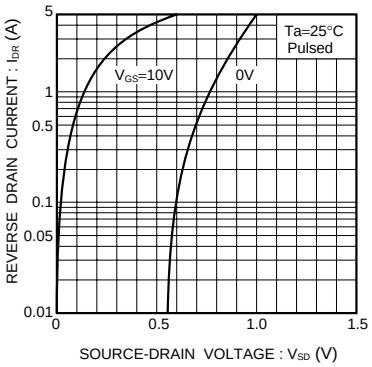


Fig.11 Reverse Drain Current vs. Source-Drain Voltage (II)

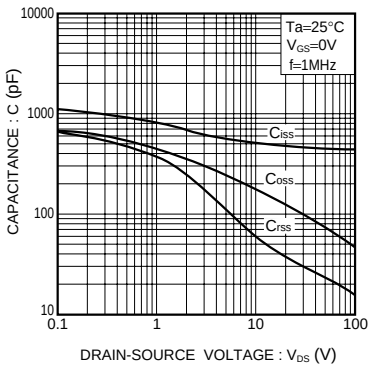


Fig.12 Typical Capacitance vs. Drain-Source Voltage

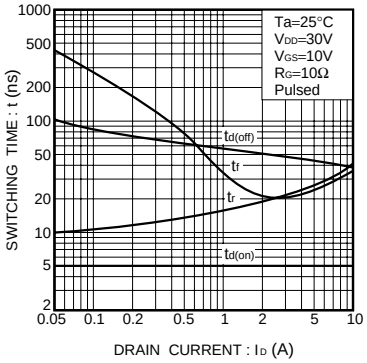


Fig.13 Switching characteristics (See Figures 16 and 17 for the measurement circuit and resultant waveforms)

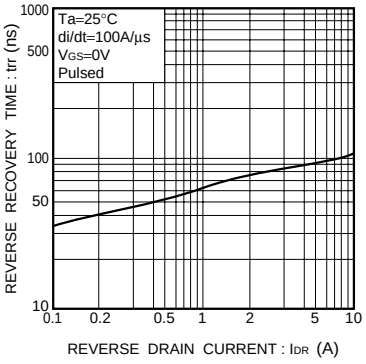


Fig.14 Reverse Recovery Time vs. Reverse Drain Current

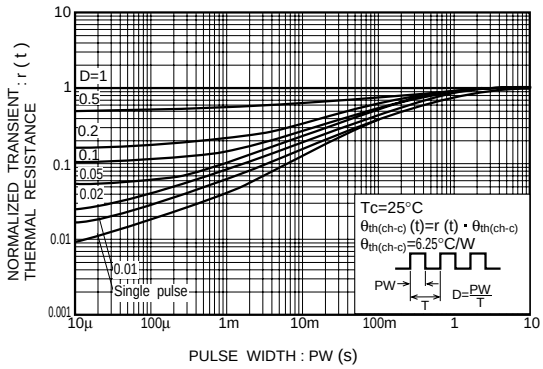


Fig.15 Normalized Transient Thermal Resistance vs. Pulse Width

●**Switching characteristics measurement circuit**

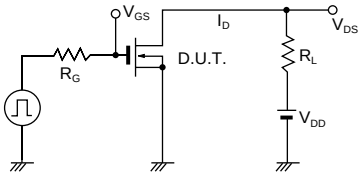


Fig.16 Switching Time Test Circuit

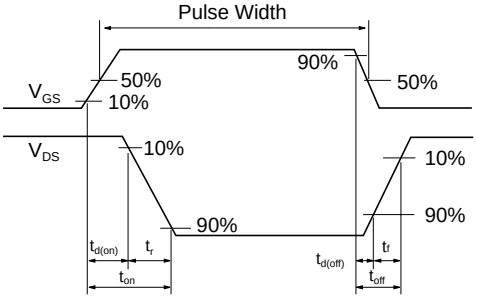


Fig.17 Switching Time Waveforms

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