

Switching (600V, 4A)

2SK2792

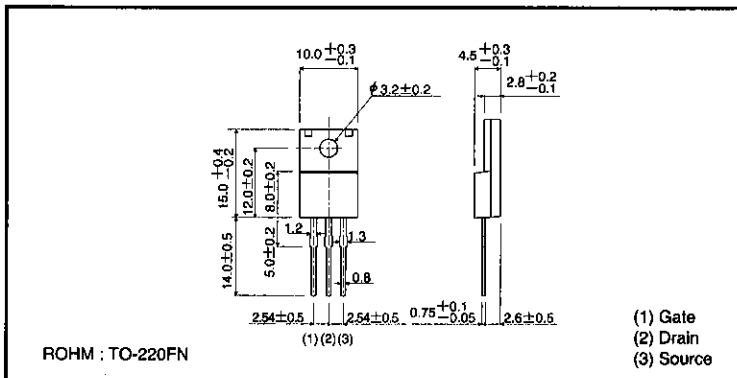
●Features

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

●Structure

Silicon N-channel
MOSFET transistor

●External dimensions (Units: mm)



MOS FET

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

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	600	V
Gate-source voltage	V_{GS}	± 30	V
Drain current	Continuous	I_D	4 A
	Pulsed	I_{DP}^*	16 A
Drain reverse current	Continuous	I_{DR}	4 A
	Pulsed	I_{DRP}^*	16 A
Total power dissipation ($T_C=25^\circ C$)	P_D	30	W
Channel temperature	T_{ch}	150	$^\circ C$
Storage temperature	T_{stg}	$-55 \sim 150$	$^\circ C$

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

●Packaging specifications

Type	Package	Bulk
	Code	—
	Basic ordering unit (pieces)	500
2SK2792		○

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate leakage current	I_{GSS}	—	—	± 100	nA	$V_{GS} = \pm 30V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	600	—	—	V	$I_D = 1mA, V_{GS} = 0V$
Drain cutoff current	I_{DSS}	—	—	100	μA	$V_{DS} = 600V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	2	—	4	V	$V_{DS} = 10V, I_D = 1mA$
Drain-source on-state resistance	$R_{DS(on)}$	—	1.8	2.4	Ω	$I_D = 2A, V_{GS} = 10V$
Forward propagation admittance	$ Y_{fs} $	1	2.7	—	S	$V_{DS} = 10V, I_D = 2A$
Input capacitance	C_{iss}	—	610	—	pF	$V_{DS} = 10V$
Output capacitance	C_{oss}	—	120	—	pF	$V_{GS} = 0V$
Reverse transfer capacitance	C_{rss}	—	53	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	14	—	ns	$I_D = 2A, V_{DD} = 150V$
Rise time	t_r	—	15	—	ns	$V_{GS} = 10V$
Turn-off delay time	$t_{d(off)}$	—	48	—	ns	$R_L = 75\Omega$
Fall time	t_f	—	34	—	ns	$R_G = 10\Omega$
Reverse recovery time	t_{rr}	—	540	—	ns	$I_{DR} = 4A, V_{GS} = 0V$
Reverse recovery load	Q_{rr}	—	3.1	—	μC	$di/dt = 100A/\mu s$

●Electrical characteristic curves

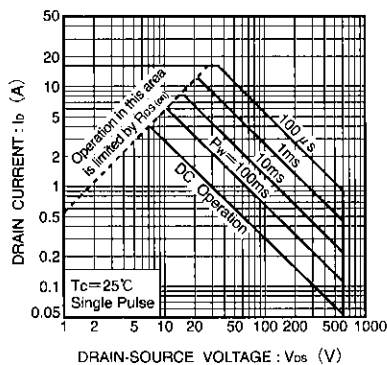


Fig.1 Maximum Safe Operating Area

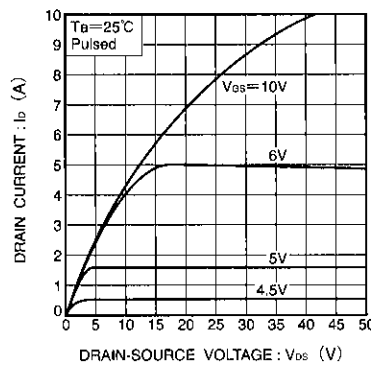


Fig.2 Typical Output Characteristics

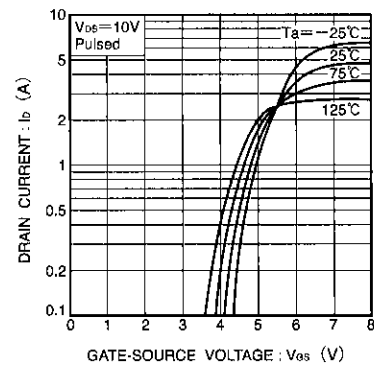


Fig.3 Typical Transfer Characteristics

●Electrical characteristic curves

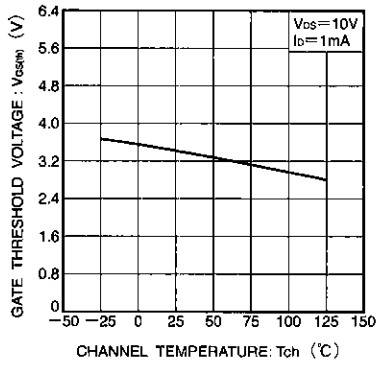


Fig.4 Gate Threshold Voltage vs. Channel Temperature

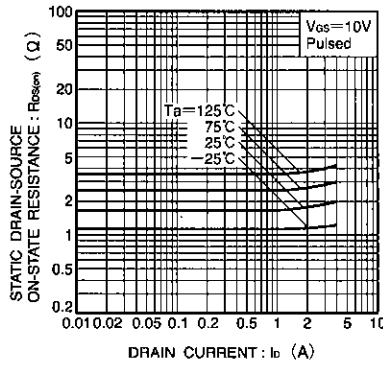


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current

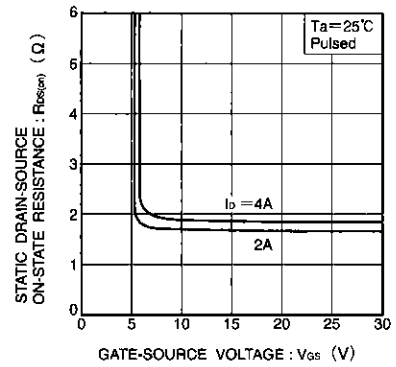


Fig.6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

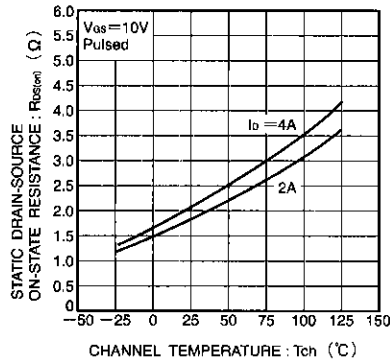


Fig.7 Static Drain-Source On-state Resistance vs. Channel Temperature

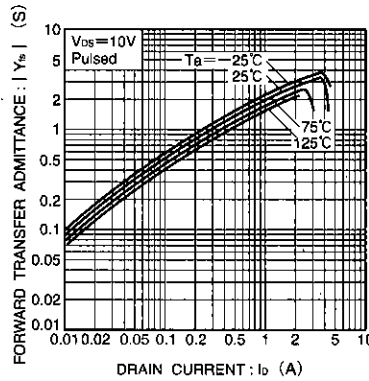


Fig.8 Forward Transfer Admittance vs. Drain Current

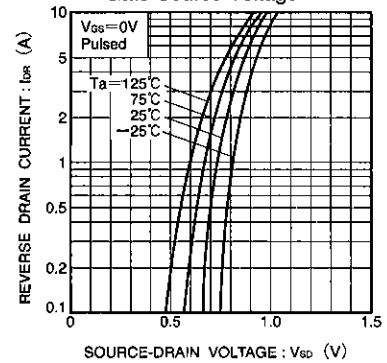


Fig.9 Reverse Drain Current vs. Source-Drain Voltage (I)

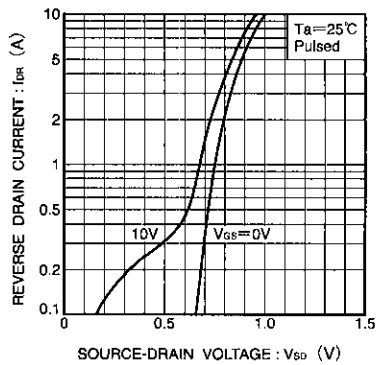


Fig.10 Reverse Drain Current vs. Source-Drain Voltage (II)

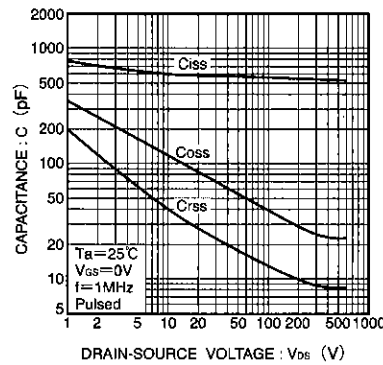


Fig.11 Typical Capacitance vs. Drain-Source Voltage

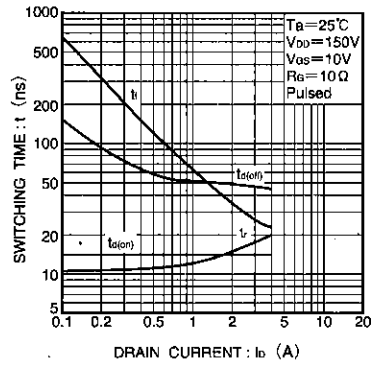


Fig.12 Switching Characteristics (See Figure. 16 and 17 for Measurement Circuits)

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● Electrical characteristic curves

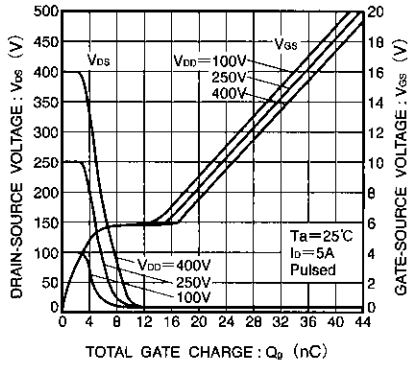


Fig. 13 Dynamic Input Characteristics
(See Figure. 18 for Measurement Circuit)

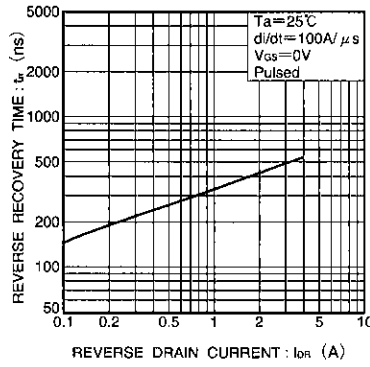


Fig. 14 Reverse Recovery Time vs. Reverse Drain Current

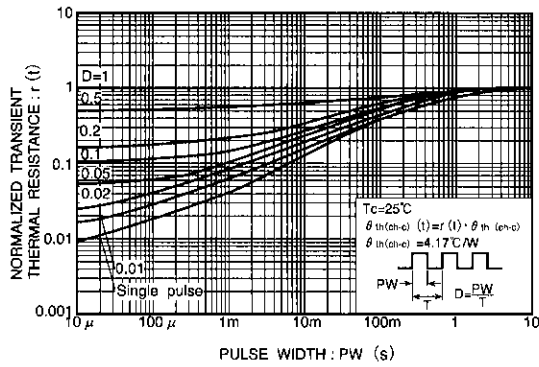


Fig. 15 Normalized Transient Thermal Resistance vs. Pulse Width

● Switching characteristics measurement circuit

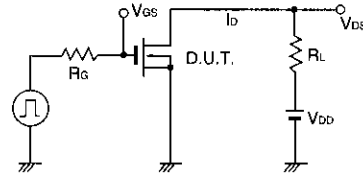


Fig. 16 Switching Time Measurement Circuit

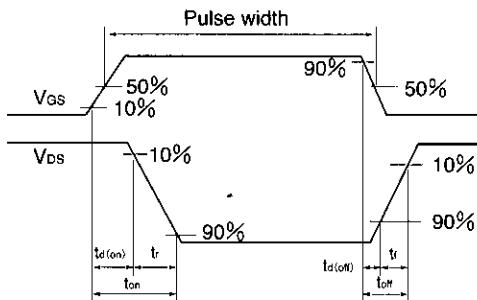


Fig. 17 Switching Time Waveforms

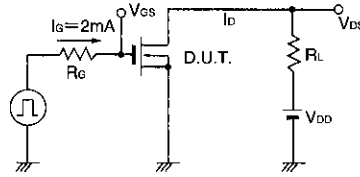


Fig. 18 Gate Charge Measurement Circuit

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