

## Switching (800V, 3A)

## 2SK2294

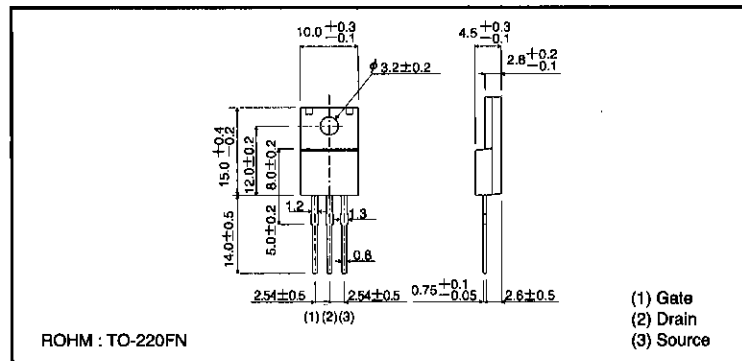
## ●Features

- 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)



MOSFET

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

Parameter	Symbol	Limits	Unit	
Drain-source voltage	$V_{DS}$	800	V	
Gate-source voltage	$V_{GS}$	$\pm 30$	V	
Drain current	Continuous	$I_D$	3	A
	Pulsed	$I_{DP}^*$	6	A
Drain reverse current	Continuous	$I_{DR}$	3	A
	Pulsed	$I_{DRP}^*$	6	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
2SK2294		○

●Electrical characteristics (Ta = 25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate leakage current	$I_{GSS}$	—	—	$\pm 100$	nA	$V_{GS} = \pm 30V, V_{DS} = 0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	800	—	—	V	$I_D = 1mA, V_{GS} = 0V$
Drain cutoff current	$I_{DSS}$	—	—	100	$\mu A$	$V_{DS} = 800V, V_{GS} = 0V$
Gate threshold voltage	$V_{GS(th)}$	2	—	4	V	$V_{DS} = 10V, I_D = 1mA$
Drain-source on-state resistance	$R_{DS(on)}$	—	3	4	$\Omega$	$I_D = 1.5A, V_{GS} = 10V$
Forward propagation admittance	$ Y_{fs} $	1	2.5	—	S	$V_{DS} = 10V, I_D = 1.5A$
Input capacitance	$C_{iss}$	—	740	—	pF	$V_{DS} = 10V$
Output capacitance	$C_{oss}$	—	120	—	pF	$V_{GS} = 0V$
Reverse transfer capacitance	$C_{rss}$	—	35	—	pF	$f = 1MHz$
Turn-on delay time	$t_{d(on)}$	—	10	—	ns	$I_D = 1.5A, V_{DD} \approx 150V$
Rise time	$t_r$	—	14	—	ns	$V_{GS} = 10V$
Turn-off delay time	$t_{d(off)}$	—	53	—	ns	$R_L = 100\Omega$
Fall time	$t_f$	—	49	—	ns	$R_G = 10\Omega$
Reverse recovery time	$t_{rr}$	—	800	—	ns	$I_{DR} = 3A, V_{GS} = 0V,$
Reverse recovery load	$Q_{rr}$	—	4.4	—	$\mu C$	$di/dt \approx 100A/\mu s$

●Electrical characteristic curves

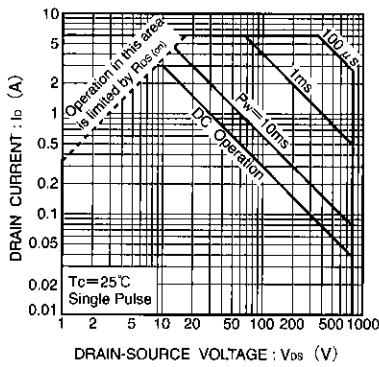


Fig.1 Maximum Safe Operating Area

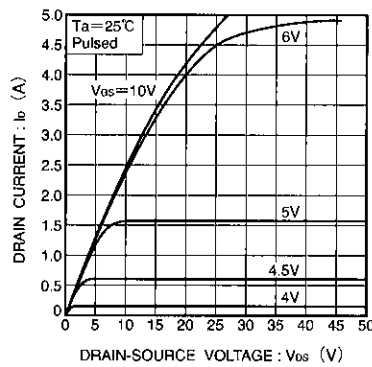


Fig.2 Typical Output Characteristics

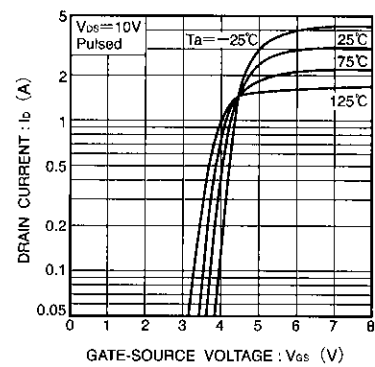


Fig.3 Typical Transfer Characteristics

● Electrical characteristic curves

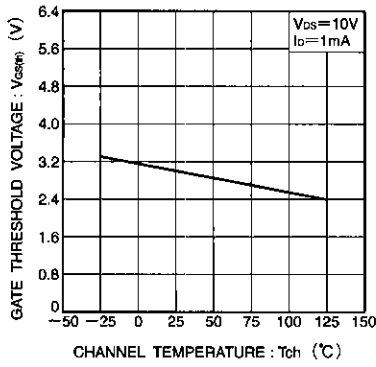


Fig. 4 Gate Threshold Voltage vs. Channel Temperature

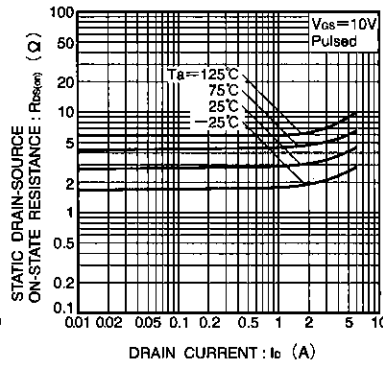


Fig. 5 Static Drain-Source On-State Resistance vs. Drain Current

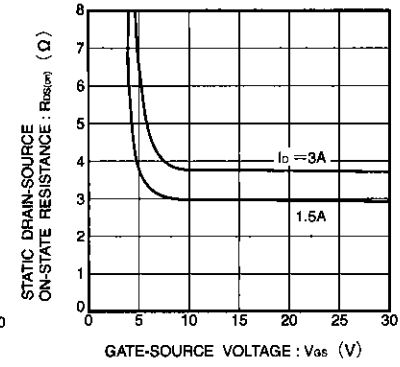


Fig. 6 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

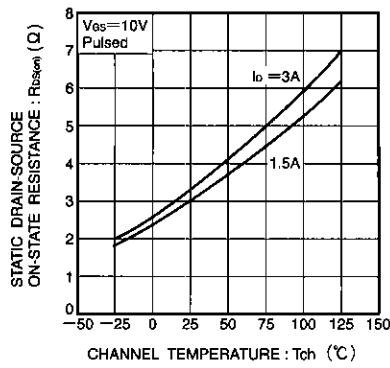


Fig. 7 Static Drain-Source On-State Resistance vs. Channel Temperature

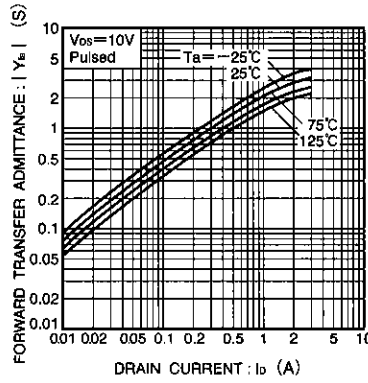


Fig. 8 Forward Transfer Admittance vs. Drain Current

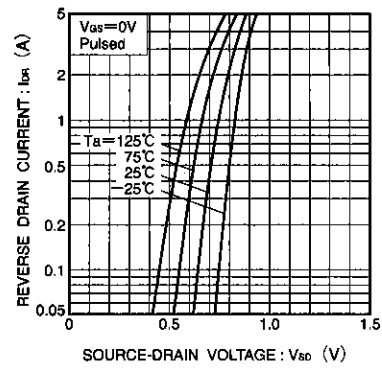


Fig. 9 Reverse Drain Current vs. Source-Drain Voltage ( I )

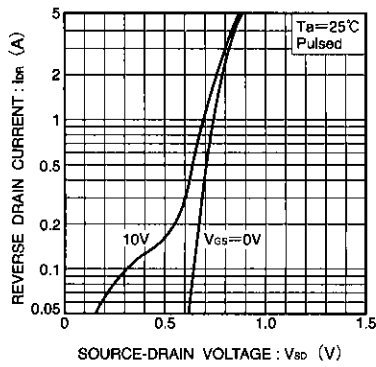


Fig. 10 Reverse Drain Current vs. Source-Drain Voltage ( II )

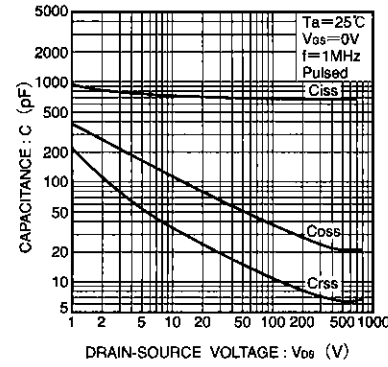


Fig. 11 Typical Capacitance vs. Drain-Source Voltage

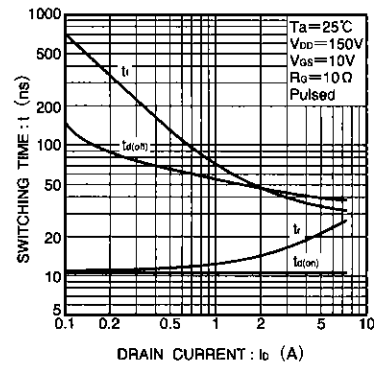
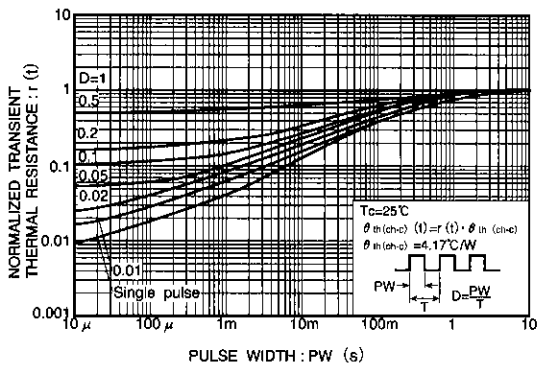
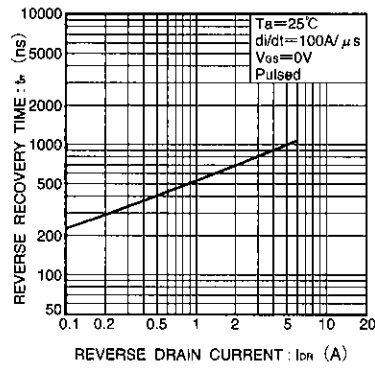
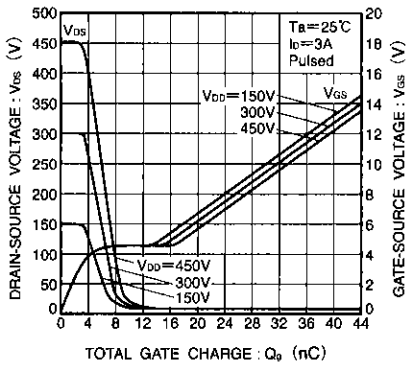


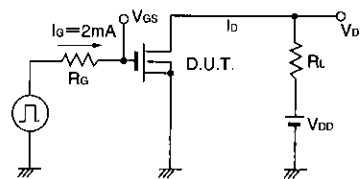
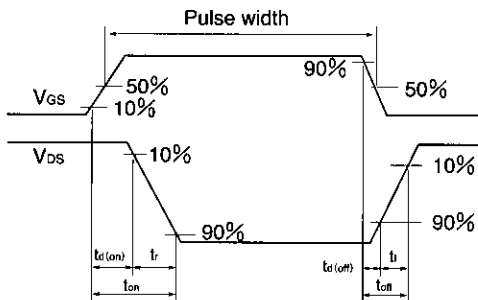
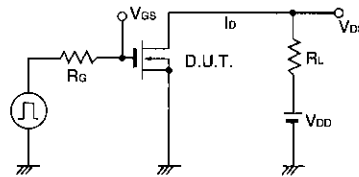
Fig. 12 Switching Characteristics (See Figure. 16 and 17 for measurement circuits)

MOS FET

● Electrical characteristic curves



● Switching characteristics measurement circuit



## Notes

- The contents described in this catalogue are correct as of March 1997.
- No unauthorized transmission or reproduction of this book, either in whole or in part, is permitted.
- The contents of this book are subject to change without notice. Always verify before use that the contents are the latest specifications. If, by any chance, a defect should arise in the equipment as a result of use without verification of the specifications, ROHM CO., LTD., can bear no responsibility whatsoever.
- Application circuit diagrams and circuit constants contained in this data book are shown as examples of standard use and operation. When designing for mass production, please pay careful attention to peripheral conditions.
- Any and all data, including, but not limited to application circuit diagrams, information, and various data, described in this catalogue are intended only as illustrations of such devices and not as the specifications for such devices. ROHM CO., LTD., disclaims any warranty that any use of such device shall be free from infringement of any third party's intellectual property rights or other proprietary rights, and further, assumes absolutely no liability in the event of any such infringement, or arising from or connected with or related to the use of such devices.
- Upon the sale of any such devices; other than for the buyer's right to use such devices itself, resell or otherwise dispose of the same; no express or implied right or license to practice or commercially exploit any intellectual property rights or other proprietary rights owned or controlled by ROHM CO., LTD., is granted to any such buyer.

The products listed in this catalogue are designed to be used with ordinary electronic equipment or devices (such as audio-visual equipment, office-automation equipment, communications devices, electrical appliances, and electronic toys). Should you intend to use these products with equipment or devices which require an extremely high level of reliability and the malfunction of which would directly endanger human life (such as medical instruments, transportation equipment, aerospace machinery, nuclear-reactor controllers, fuel controllers, or other safety devices) please be sure to consult with our sales representatives in advance.

- Notes when exporting
  - It is essential to obtain export permission when exporting any of the above products when it falls under the category of strategic material (or labor) as determined by foreign exchange or foreign trade control laws.
  - Please be sure to consult with our sales representatives to ascertain whether any product is classified as a strategic material.