

**2SK2046**

## Ultrahigh-Speed Switching Applications

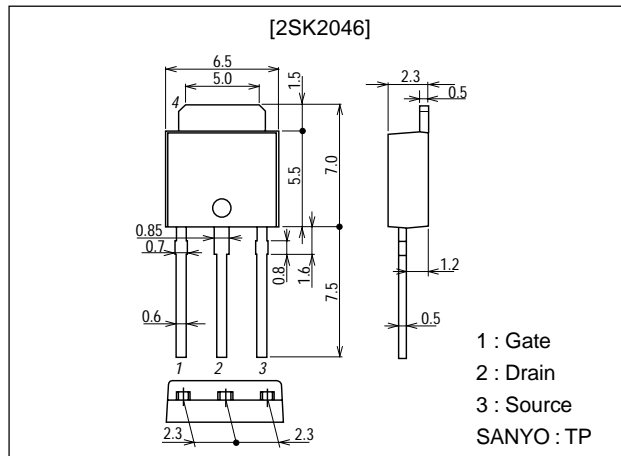
### Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.

### Package Dimensions

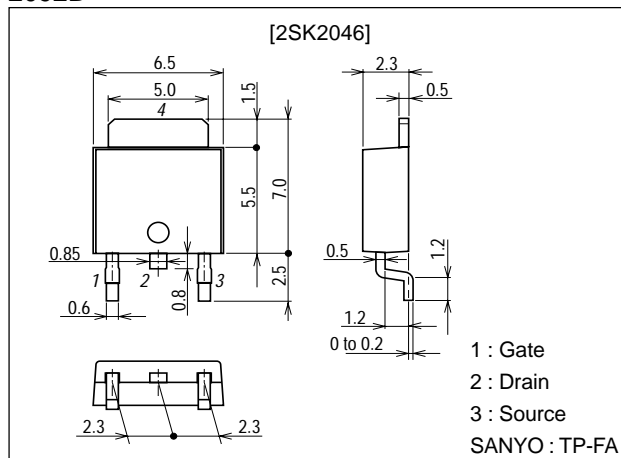
unit:mm

2083B



unit:mm

2092B



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## Specifications

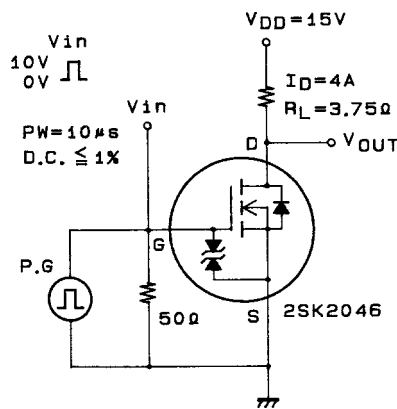
### Absolute Maximum Ratings at Ta = 25°C

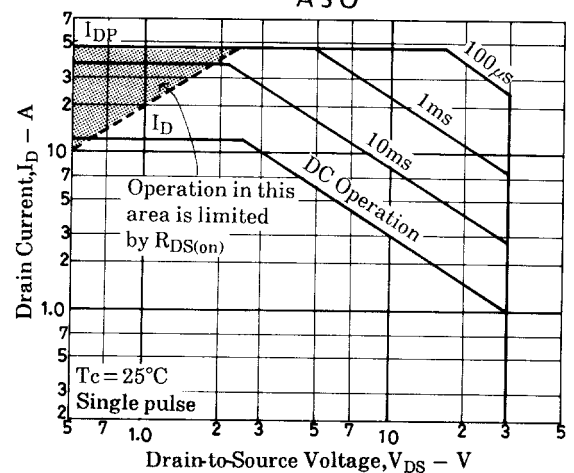
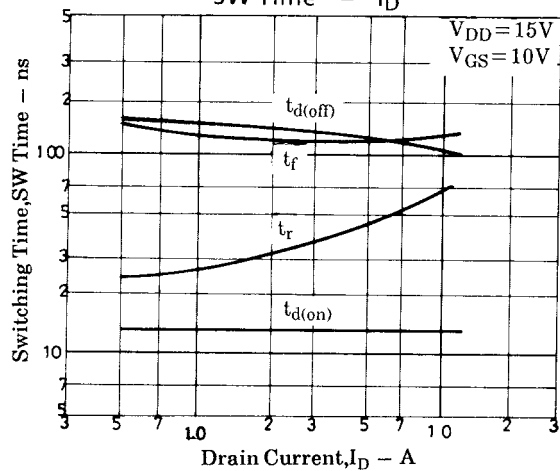
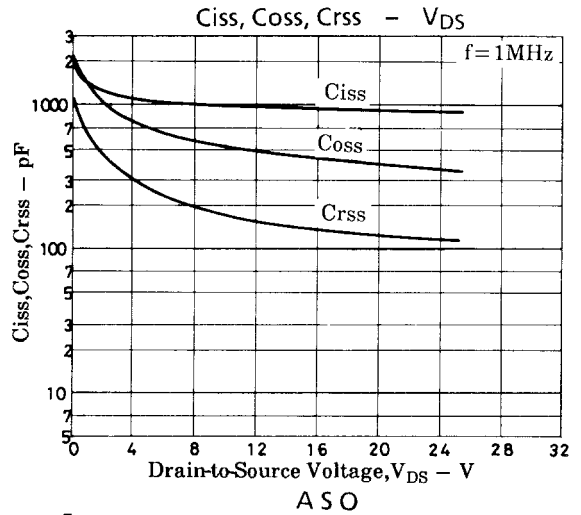
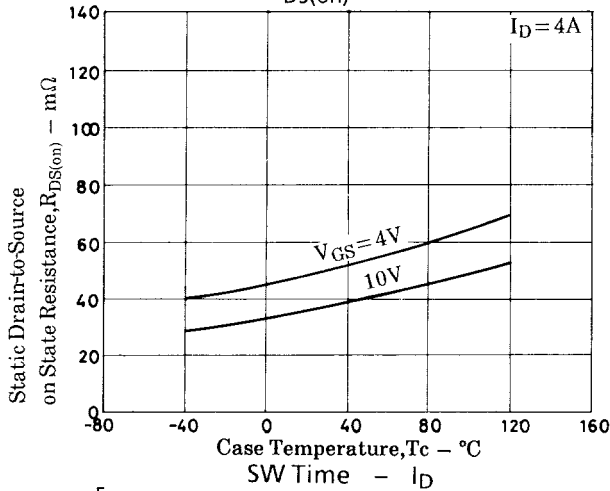
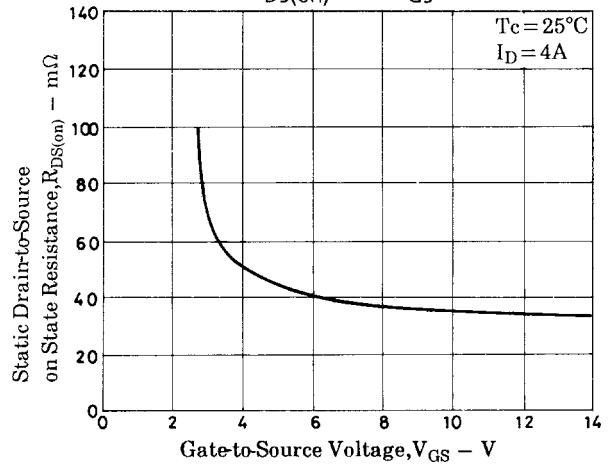
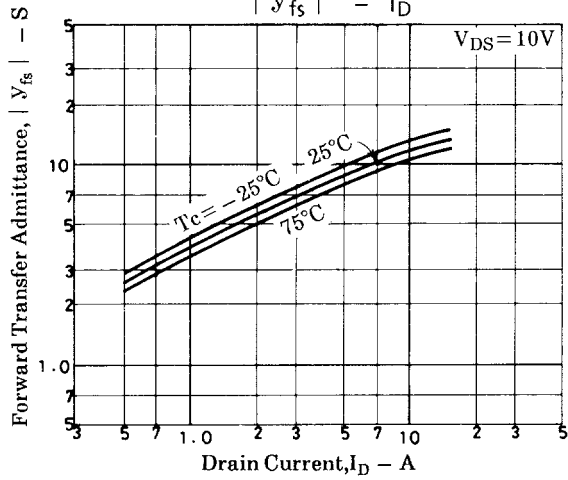
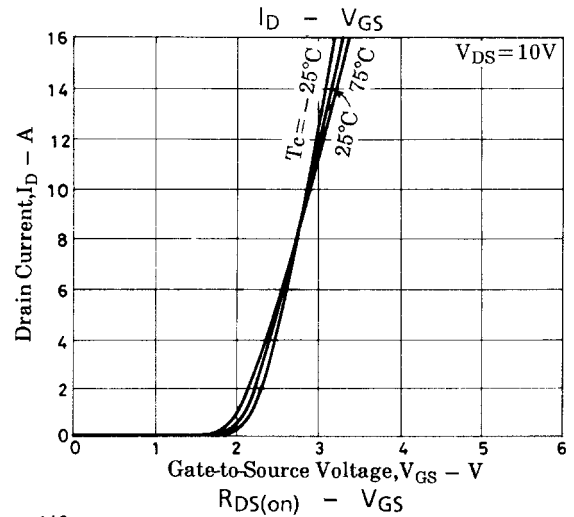
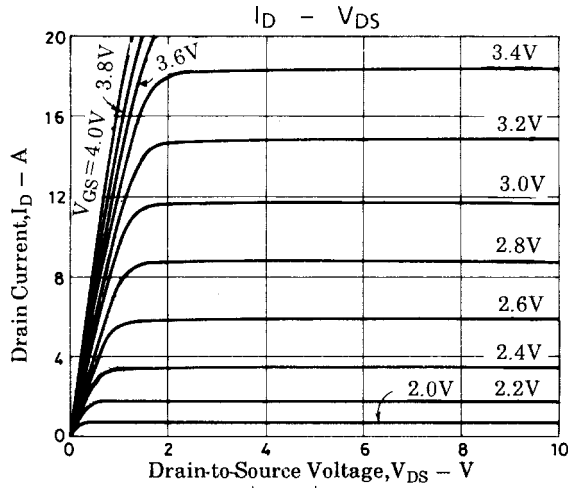
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 15$	V
Drain Current (DC)	$I_D$		12	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	48	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ C$	30	W
Channel Temperature	$T_{ch}$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

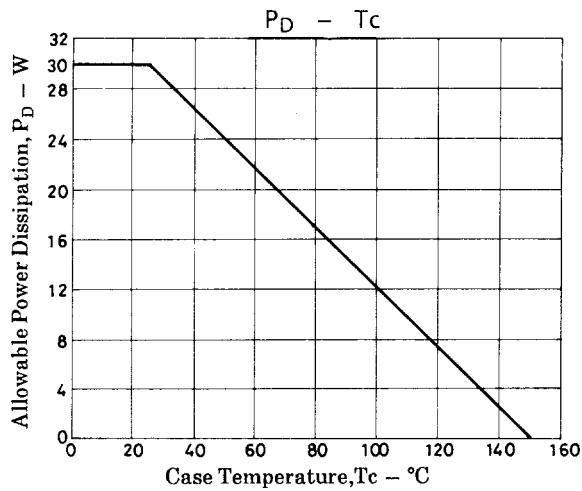
### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1mA$ , $V_{GS} = 0$	30			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	$I_G = \pm 100\mu A$ , $V_{DS} = 0$	$\pm 15$			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 30V$ , $V_{GS} = 0$			100	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 12V$ , $V_{DS} = 0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$ , $I_D = 1mA$	1.0		2.0	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10V$ , $I_D = 4A$	5	8		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = 4A$ , $V_{GS} = 10V$	24	35	50	$m\Omega$
	$R_{DS(on)2}$	$I_D = 4A$ , $V_{GS} = 4V$		50	70	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = 10V$ , $f = 1MHz$		1000		pF
Output Capacitance	$C_{oss}$	$V_{DS} = 10V$ , $f = 1MHz$		550		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = 10V$ , $f = 1MHz$		180		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		13		ns
Rise Time	$t_r$	See specified Test Circuit		40		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		130		ns
Fall Time	$t_f$	See specified Test Circuit		120		ns
Diode Forward Voltage	$V_{SD}$	$I_S = 8A$ , $V_{GS} = 0$		1.0	1.5	V
Drain Current	$I_{DSX}$	$V_{DS} = 5V$ , $V_{GS} = 0.1V$			0.5	$\mu A$

### Switching Time Test Circuit







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