

**2SK1471**

## Ultrahigh-Speed Switching Applications

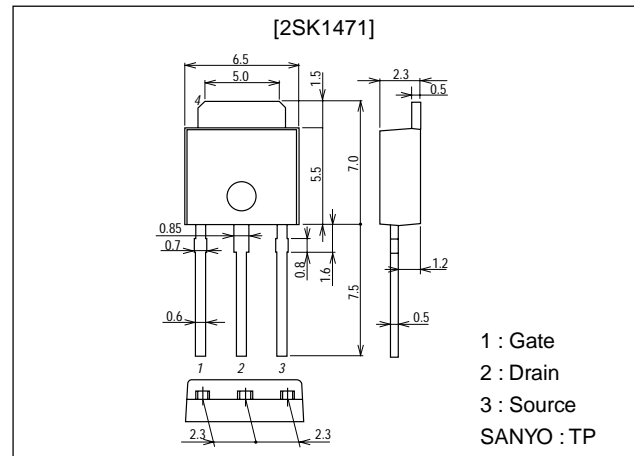
### Features

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

### Package Dimensions

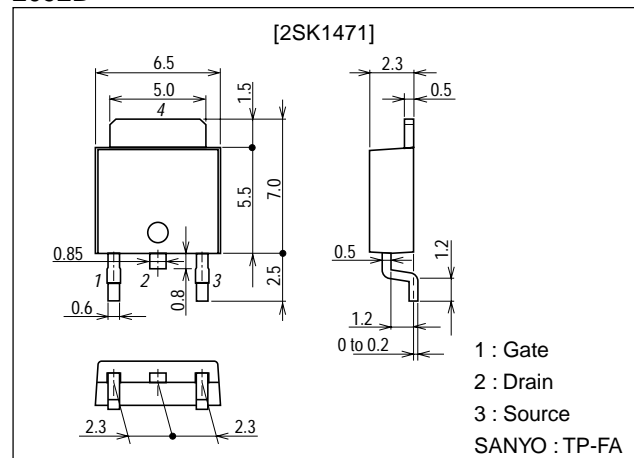
unit:mm

2083B



unit:mm

2092B



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## Specifications

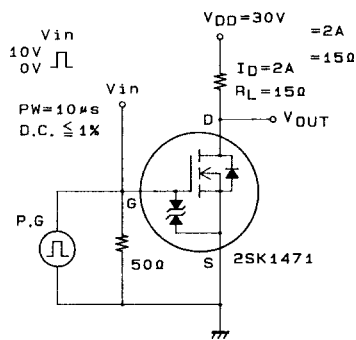
### Absolute Maximum Ratings at $T_a = 25^{\circ}\text{C}$

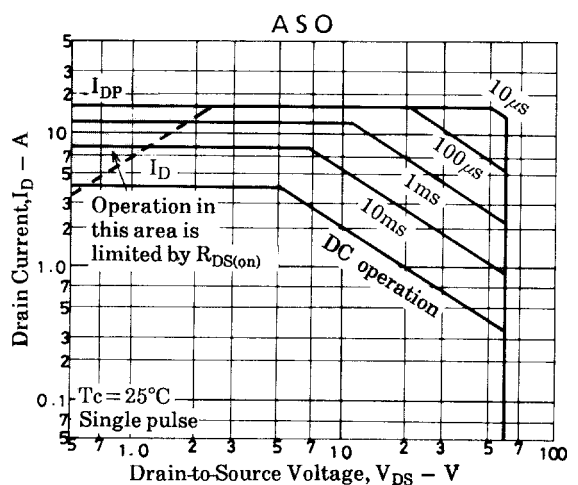
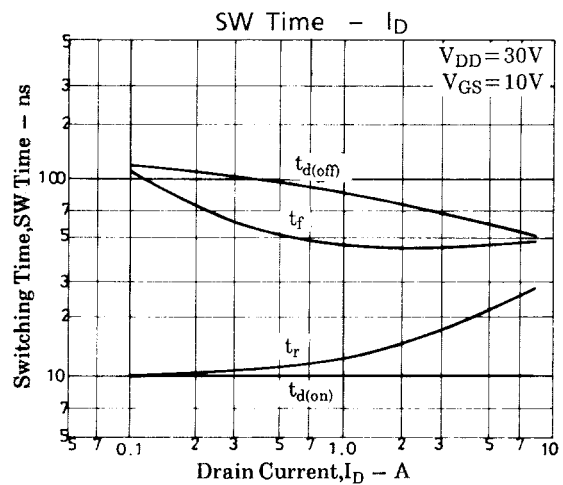
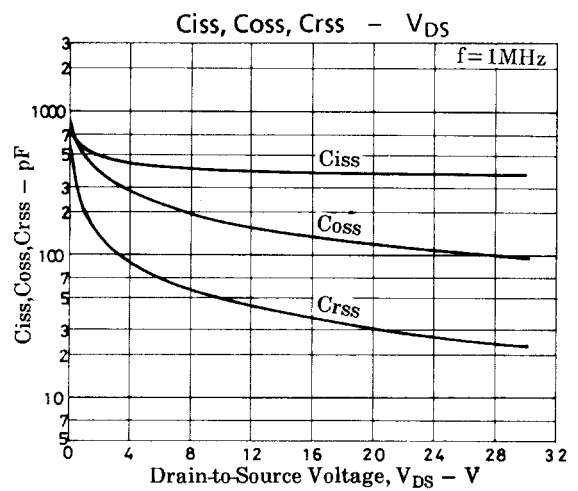
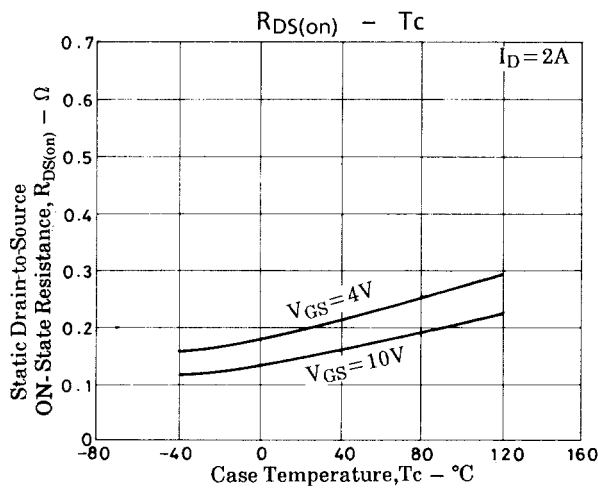
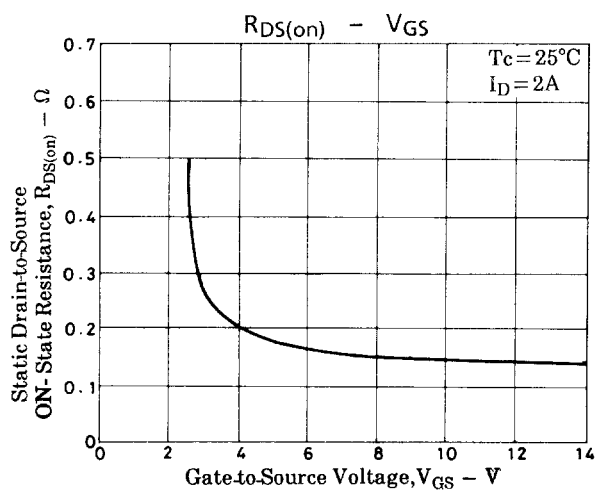
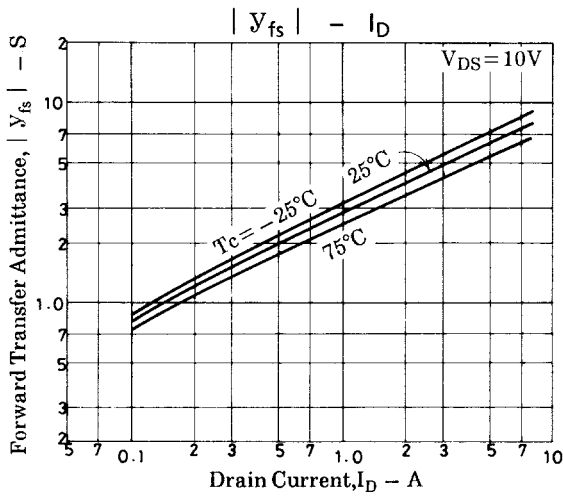
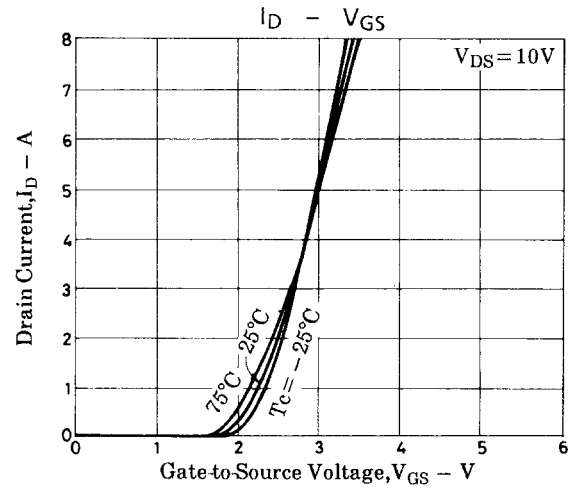
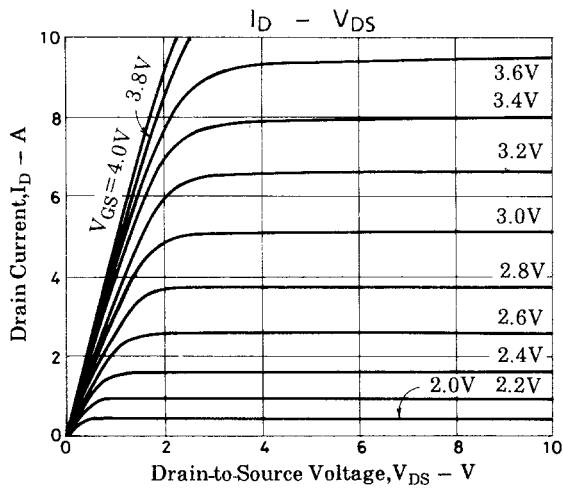
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{\text{DSS}}$		60	V
Gate-to-Source Voltage	$V_{\text{GSS}}$		$\pm 15$	V
Drain Current (DC)	$I_{\text{D}}$		4	A
Drain Current (pulse)	$I_{\text{DP}}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	16	A
Allowable Power Dissipation	$P_{\text{D}}$		1.0	W
		$T_c = 25^{\circ}\text{C}$	20	W
Channel Temperature	$T_{\text{ch}}$		150	$^{\circ}\text{C}$
Storage Temperature	$T_{\text{stg}}$		$-55$ to $+150$	$^{\circ}\text{C}$

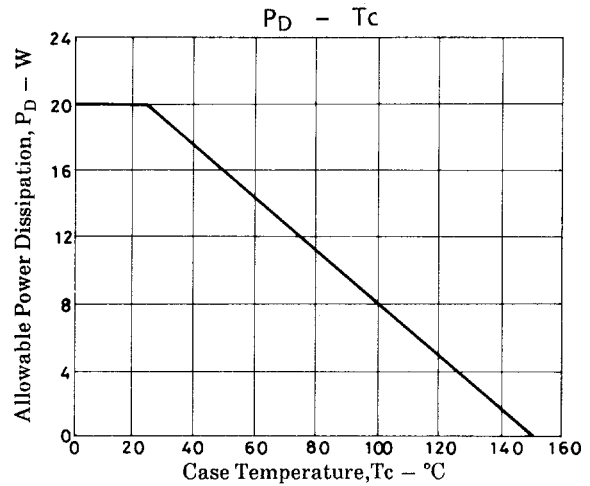
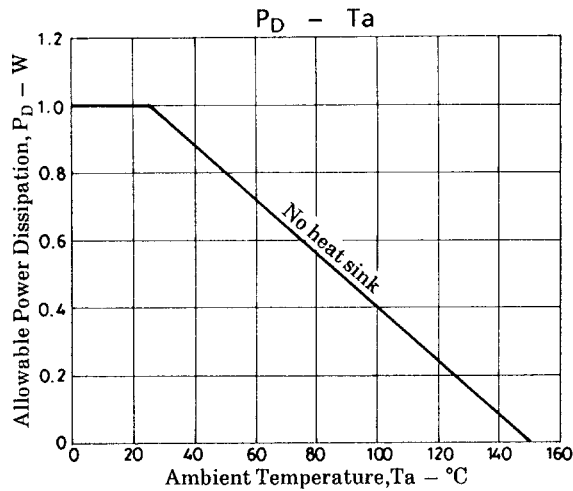
### Electrical Characteristics at $T_a = 25^{\circ}\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(\text{BR})\text{DSS}}$	$I_{\text{D}} = 1\text{mA}$ , $V_{\text{GS}} = 0$	60			V
Gate-to-Source Breakdown Voltage	$V_{(\text{BR})\text{GSS}}$	$I_{\text{G}} = \pm 100\mu\text{A}$ , $V_{\text{DS}} = 0$	$\pm 15$			V
Zero-Gate Voltage Drain Current	$I_{\text{DSS}}$	$V_{\text{DS}} = 60\text{V}$ , $V_{\text{GS}} = 0$			100	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{\text{GSS}}$	$V_{\text{GS}} = \pm 12\text{V}$ , $V_{\text{DS}} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{\text{GS(off)}}$	$V_{\text{DS}} = 10\text{V}$ , $I_{\text{D}} = 1\text{mA}$	1.0		2.0	V
Forward Transfer Admittance	$ y_{\text{fs}} $	$V_{\text{DS}} = 10\text{V}$ , $I_{\text{D}} = 2\text{A}$	2.5	4		S
Static Drain-to-Source On-State Resistance	$R_{\text{DS(on)1}}$	$I_{\text{D}} = 2\text{A}$ , $V_{\text{GS}} = 10\text{V}$		0.15	0.2	$\Omega$
	$R_{\text{DS(on)2}}$	$I_{\text{D}} = 2\text{A}$ , $V_{\text{GS}} = 4\text{V}$		0.2	0.27	$\Omega$
Input Capacitance	$C_{\text{iss}}$	$V_{\text{DS}} = 20\text{V}$ , $f = 1\text{MHz}$		380		pF
Output Capacitance	$C_{\text{oss}}$	$V_{\text{DS}} = 20\text{V}$ , $f = 1\text{MHz}$		120		pF
Reverse Transfer Capacitance	$C_{\text{rss}}$	$V_{\text{DS}} = 20\text{V}$ , $f = 1\text{MHz}$		30		pF
Turn-ON Delay Time	$t_{\text{d(on)}}$	See specified Test Circuit		10		ns
Rise Time	$t_{\text{r}}$	See specified Test Circuit		15		ns
Turn-OFF Delay Time	$t_{\text{d(off)}}$	See specified Test Circuit		75		ns
Fall Time	$t_{\text{f}}$	See specified Test Circuit		45		ns
Diode Forward Voltage	$V_{\text{SD}}$	$I_{\text{S}} = 4\text{A}$ , $V_{\text{GS}} = 0$		1.0	1.5	V

### Switching Time Test Circuit







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