

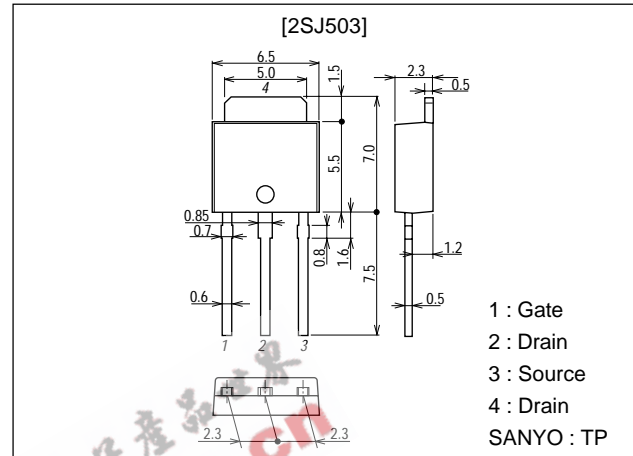
**2SJ503****DC/DC Converter Applications****Features**

- Low ON resistance.
- Ultrahigh-speed switching.
- 4V drive.

**Package Dimensions**

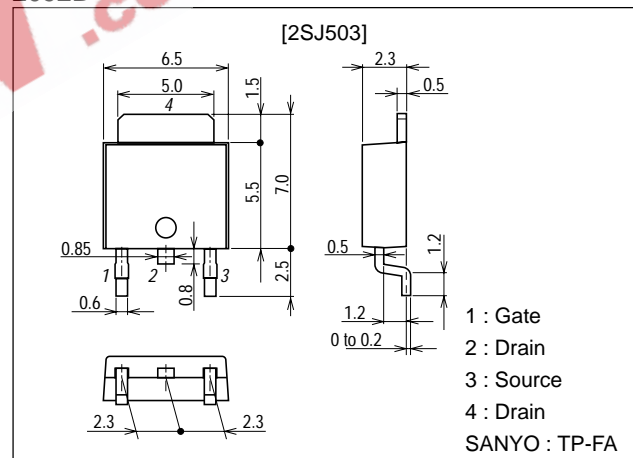
unit:mm

2083B



unit:mm

2092B



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**SANYO Electric Co.,Ltd. Semiconductor Company**

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# 2SJ503

## Specifications

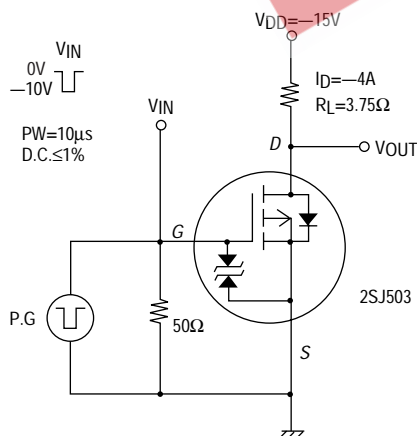
**Absolute Maximum Ratings** at  $T_a = 25^\circ\text{C}$

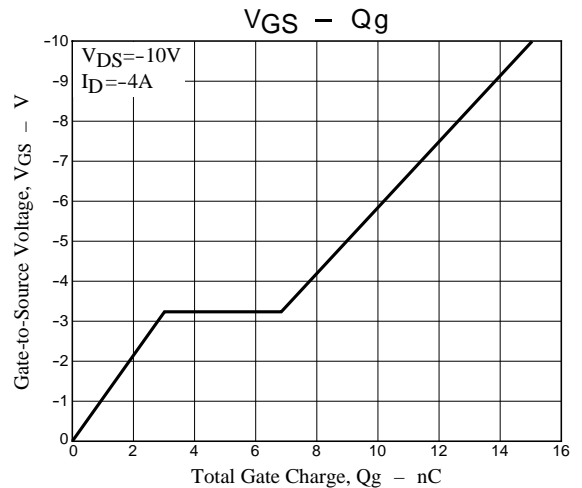
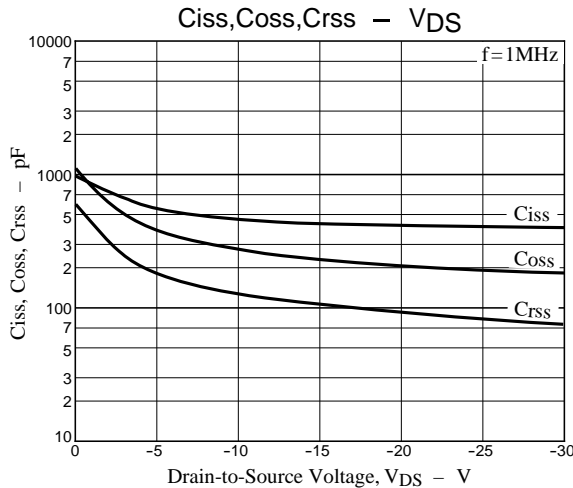
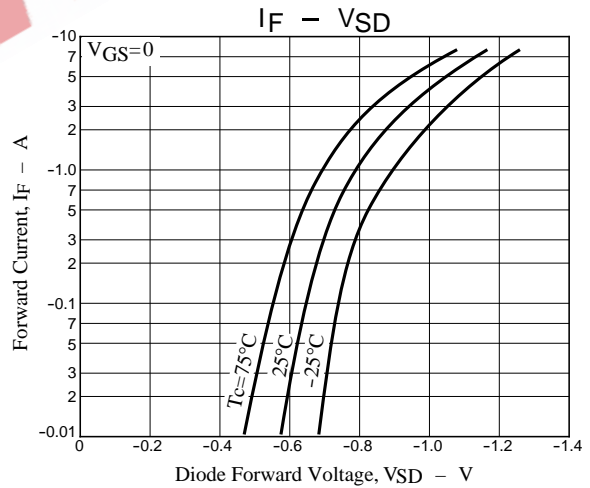
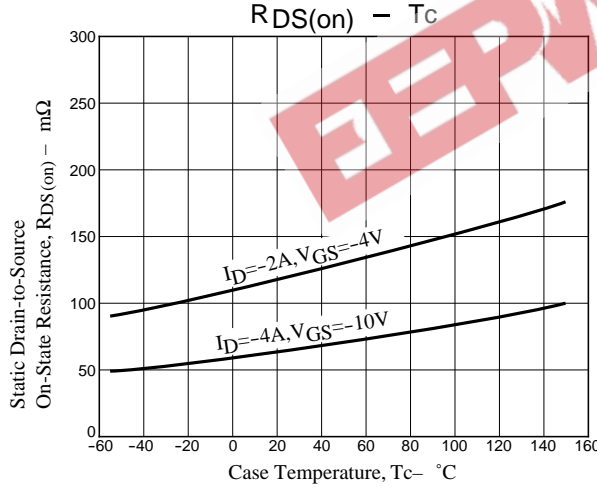
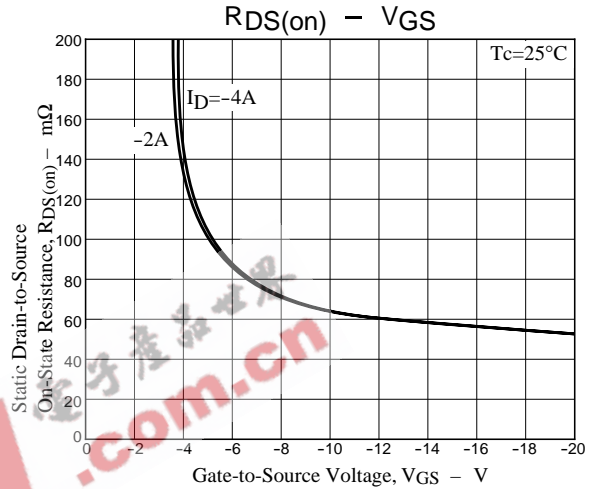
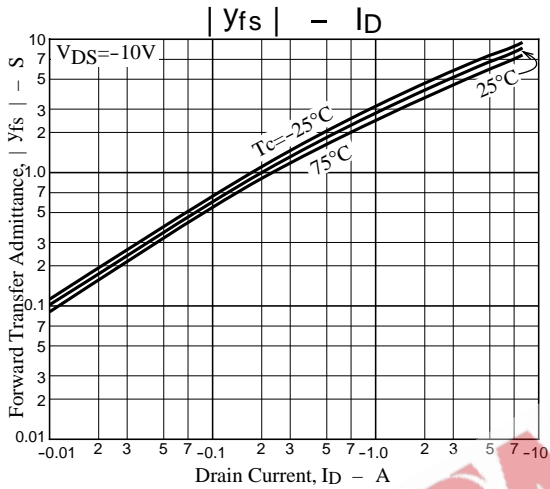
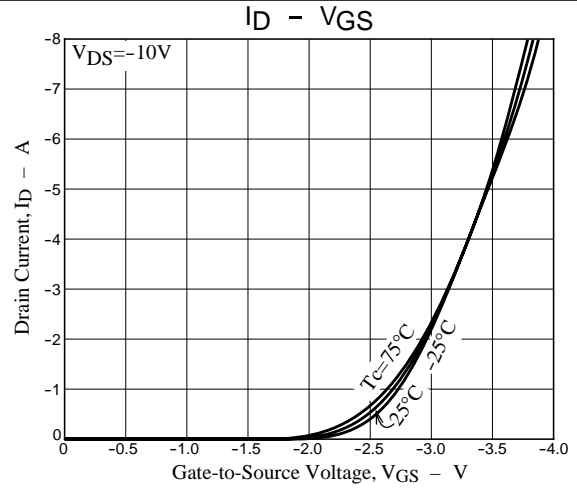
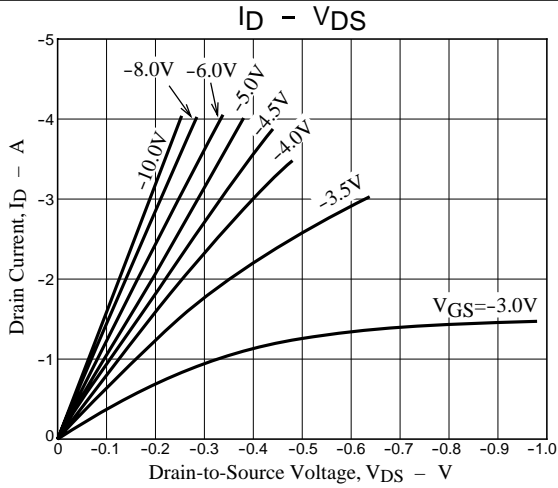
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-4	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-16	A
Allowable Power Dissipation	$P_D$		1.0	W
		$T_c = 25^\circ\text{C}$	20	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

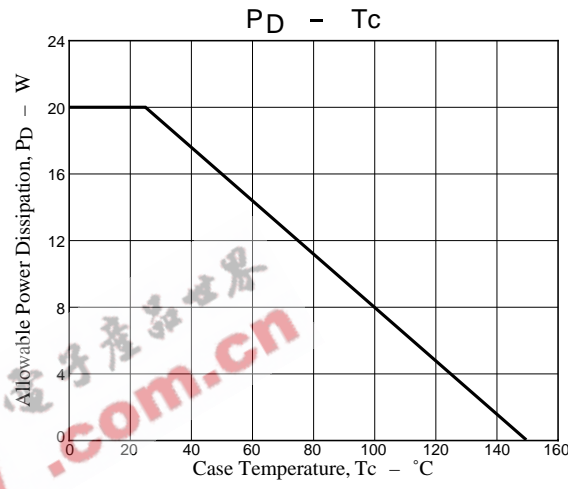
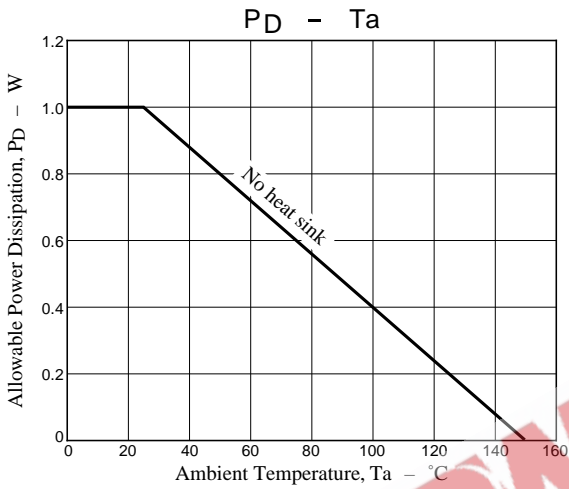
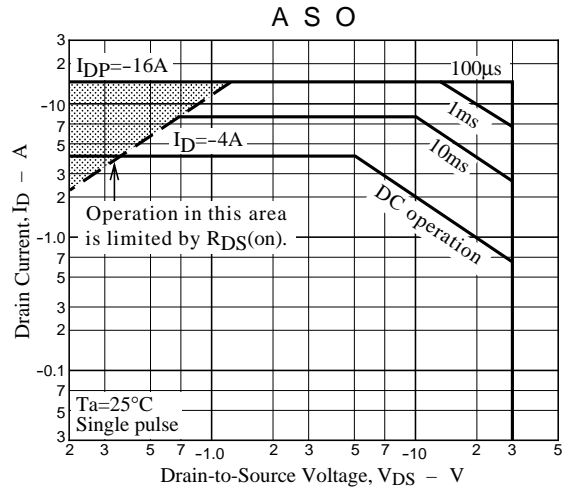
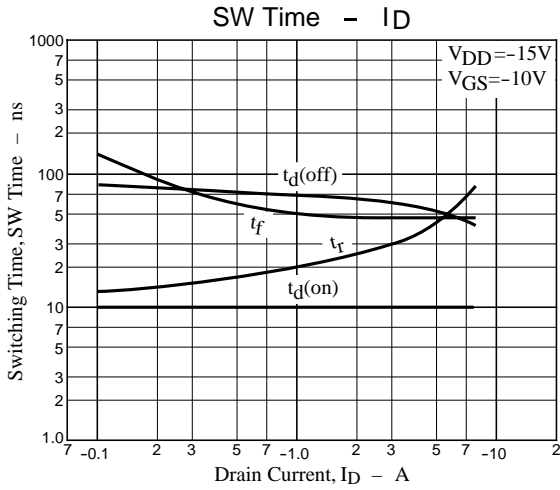
**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}$ , $V_{GS} = 0$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{V}$ , $V_{GS} = 0$			-10	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16\text{V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{V}$ , $I_D = -1\text{mA}$	-1.0		-2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{V}$ , $I_D = -4\text{A}$	4	6		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -4\text{A}$ , $V_{GS} = -10\text{V}$		65	85	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -2\text{A}$ , $V_{GS} = -4\text{V}$		130	180	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		470		pF
Output Capacitance	$C_{oss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		280		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS} = -10\text{V}$ , $f = 1\text{MHz}$		140		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		10		ns
Rise Time	$t_r$	See specified Test Circuit		35		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		60		ns
Fall Time	$t_f$	See specified Test Circuit		45		ns
Total Gate Charge	$Q_g$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -4\text{A}$		15		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -4\text{A}$		3		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS} = -10\text{V}$ , $V_{GS} = -10\text{V}$ , $I_D = -4\text{A}$		4		nC
Diode Forward Voltage	$V_{SD}$	$I_S = -4\text{A}$ , $V_{GS} = 0$		-1.0	-1.5	V

## Switching Time Test Circuit







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