



2SK3021

DC/DC Converter Applications

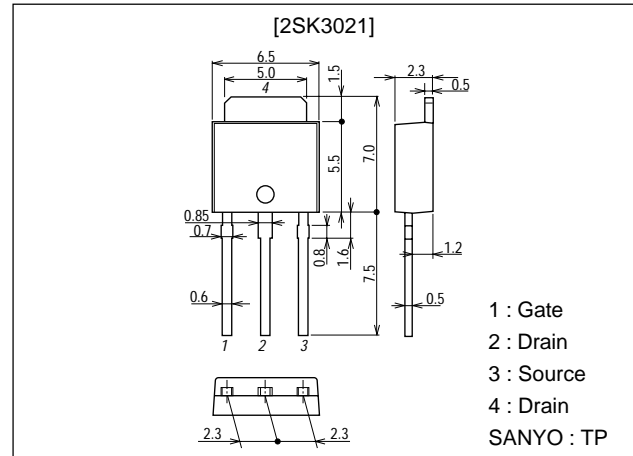
Features

- Low ON-resistance.
- 4V drive.

Package Dimensions

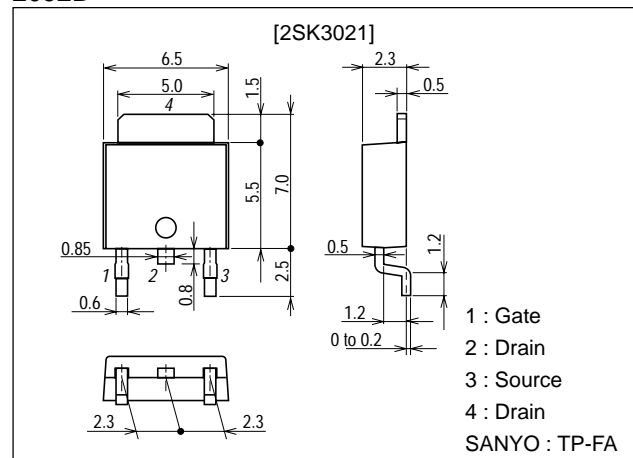
unit:mm

2083B



unit:mm

2092B



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Specifications

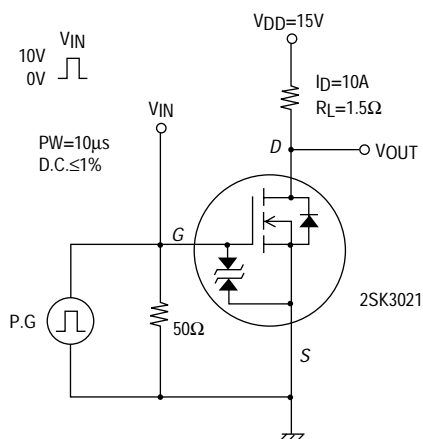
Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		± 24	V
Drain Current (DC)	I_D		20	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	45	A
Allowable Power Dissipation	P_D		1.0	W
		$T_c = 25^\circ\text{C}$	30	W
Channel Temperature	T_{ch}		150	$^\circ\text{C}$
Storage Temperature	T_{stg}		-55 to +150	$^\circ\text{C}$

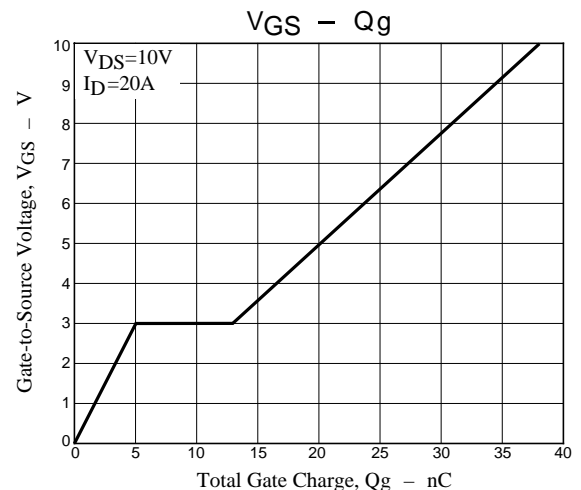
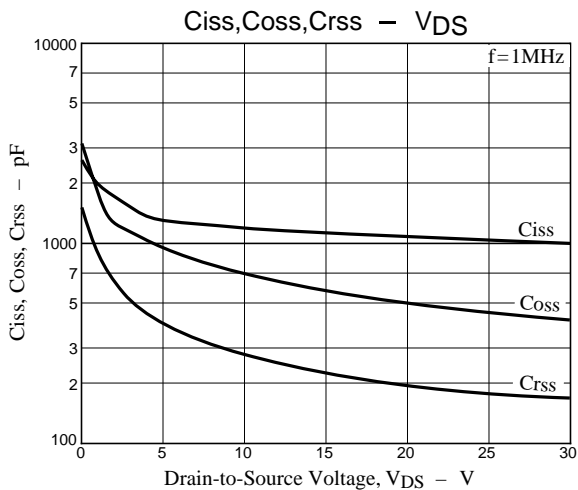
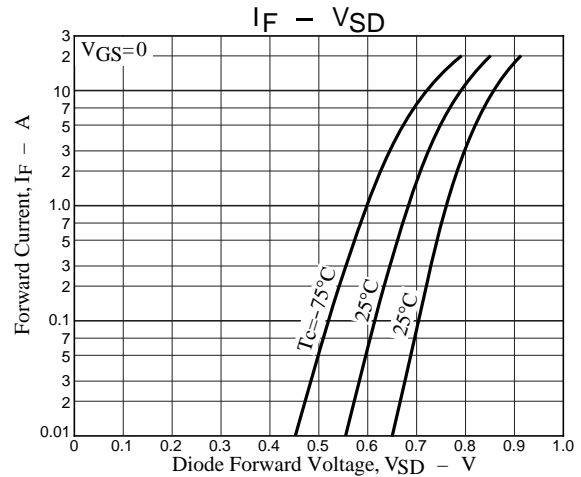
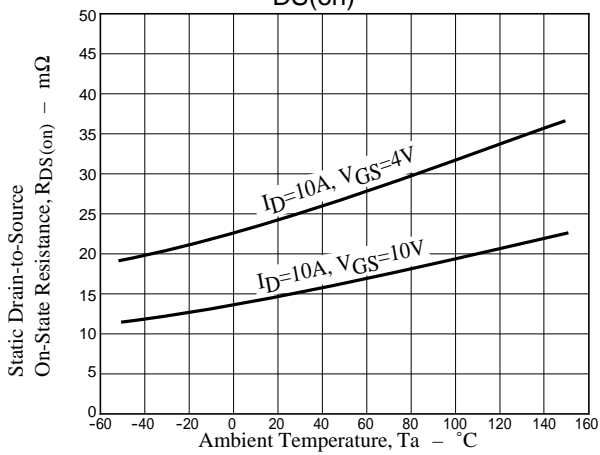
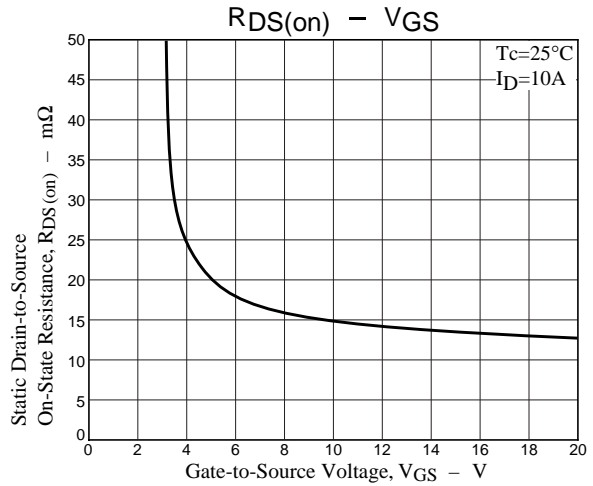
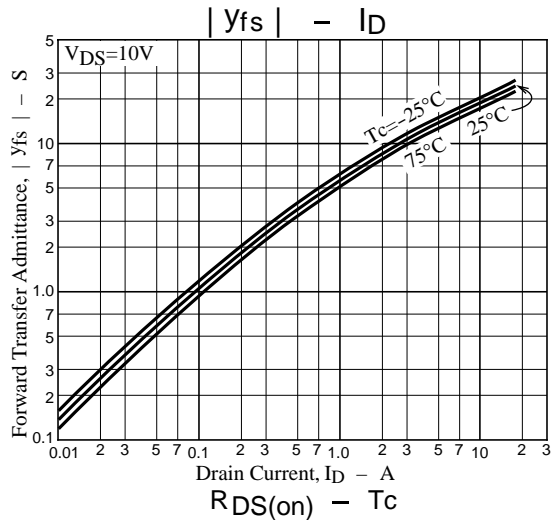
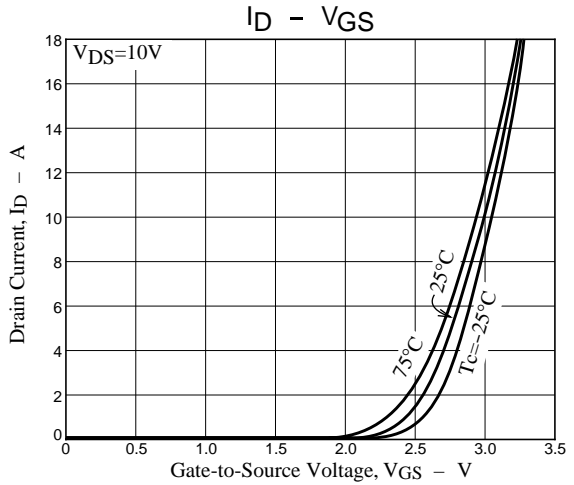
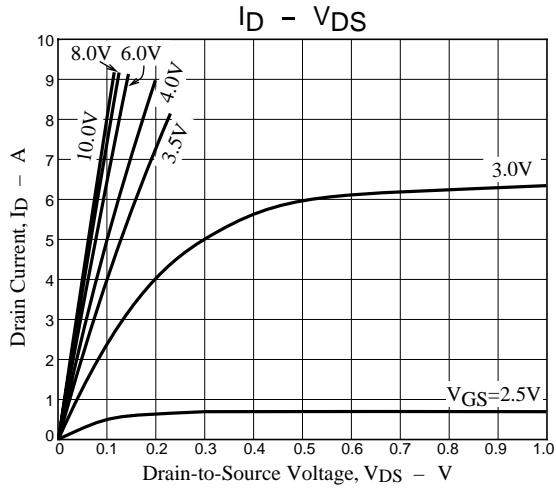
Electrical Characteristics at $T_a = 25^\circ\text{C}$

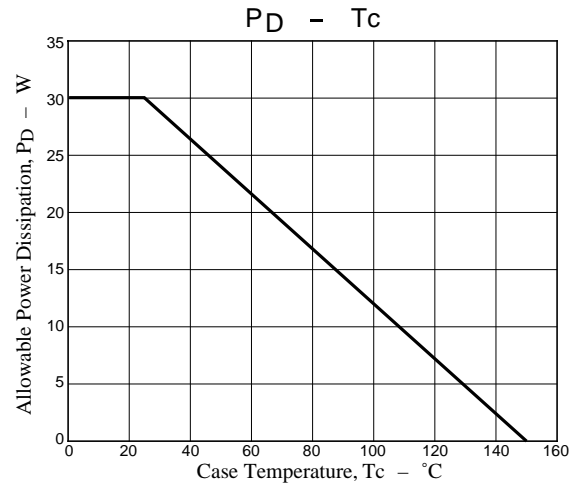
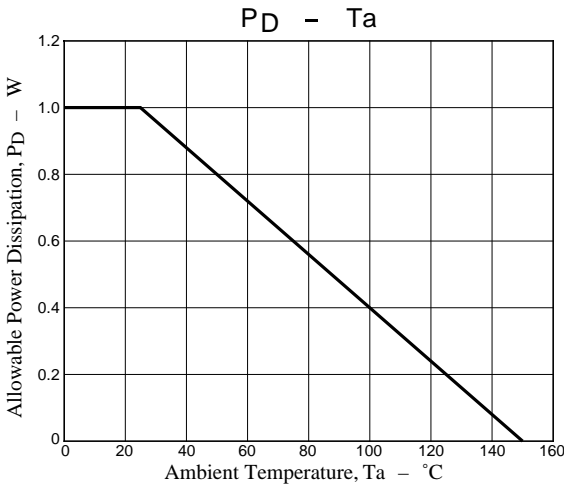
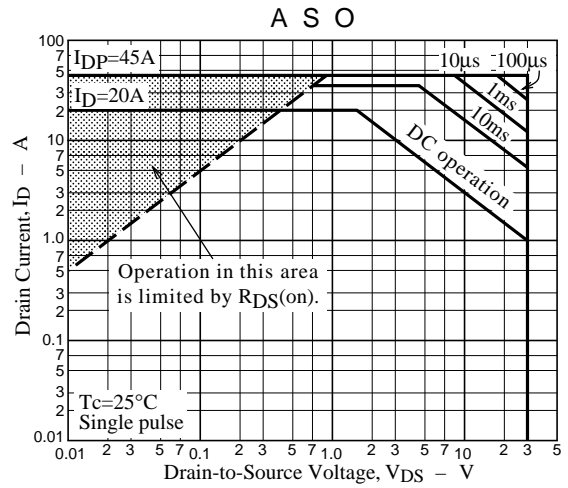
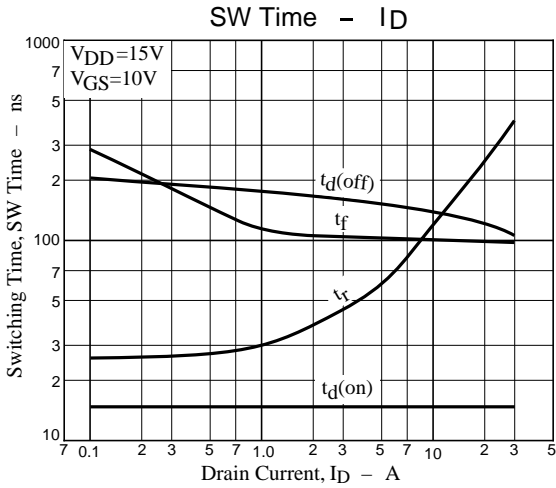
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = 1\text{mA}$, $V_{GS} = 0$	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30\text{V}$, $V_{GS} = 0$			10	μA
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS} = \pm 16\text{V}$, $V_{DS} = 0$			± 10	μA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10\text{V}$, $I_D = 1\text{mA}$	1.0		2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10\text{V}$, $I_D = 10\text{A}$	15	20		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = 10\text{A}$, $V_{GS} = 10\text{V}$		15	20	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = 10\text{A}$, $V_{GS} = 4\text{V}$		24	33	$\text{m}\Omega$
Input Capacitance	C_{iss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		1200		pF
Output Capacitance	C_{oss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		700		pF
Reverse Transfer Capacitance	C_{rss}	$V_{DS} = 10\text{V}$, $f = 1\text{MHz}$		280		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		15		ns
Rise Time	t_r	See specified Test Circuit		130		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		150		ns
Fall Time	t_f	See specified Test Circuit		100		ns
Total Gate Charge	Q_g	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 20\text{A}$		38		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 20\text{A}$		5		nC
Gate-to-Drain "Miller" Charge	Q_{gd}	$V_{DS} = 10\text{V}$, $V_{GS} = 10\text{V}$, $I_D = 20\text{A}$		8		nC
Diode Forward Voltage	V_{SD}	$I_S = 20\text{A}$, $V_{GS} = 0$		0.85	1.2	V

Switching Time Test Circuit



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