

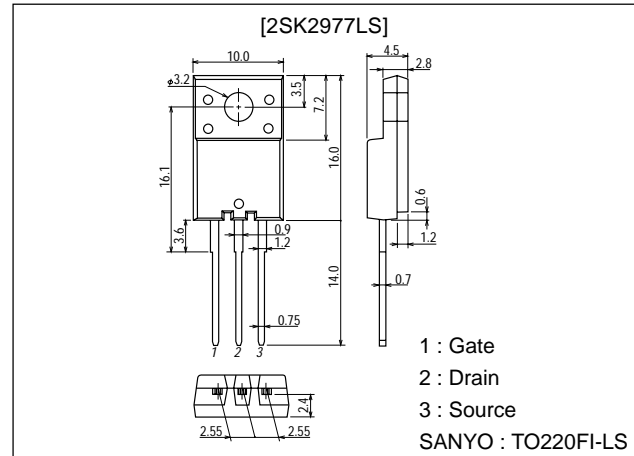
**2SK2977LS****DC/DC Converter Applications****Features**

- Low ON resistance.
- 4V drive.

**Package Dimensions**

unit:mm

2078B

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DS}$		30	V
Gate-to-Source Voltage	$V_{GS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		30	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	120	A
Allowable Power Dissipation	$P_D$		2.0	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	$\mu\text{A}$
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		2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10\text{V}$ , $I_D = 18\text{A}$	15	27		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$V_{GS} = 10\text{V}$ , $I_D = 18\text{A}$		15	22	$\text{m}\Omega$
	$R_{DS(on)2}$	$V_{GS} = 4\text{V}$ , $I_D = 18\text{A}$		25	35	$\text{m}\Omega$

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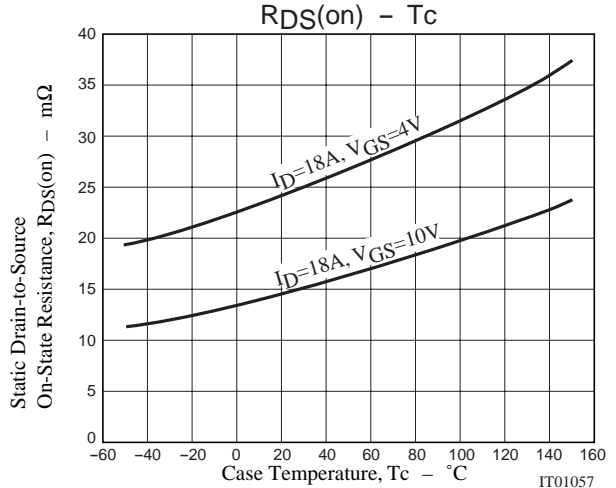
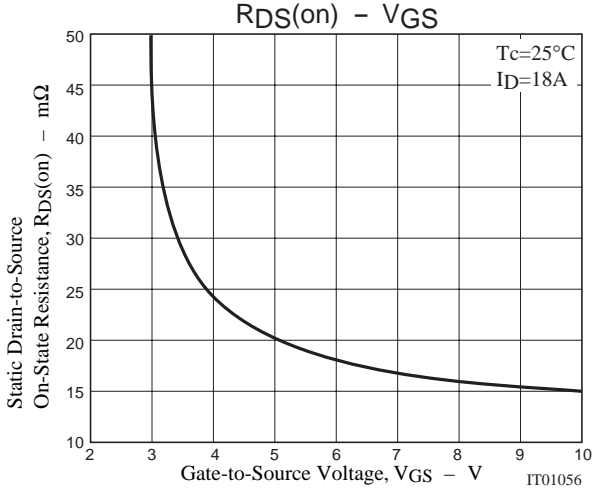
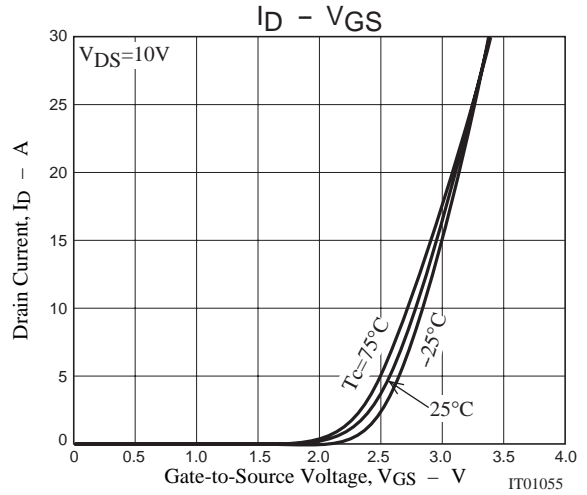
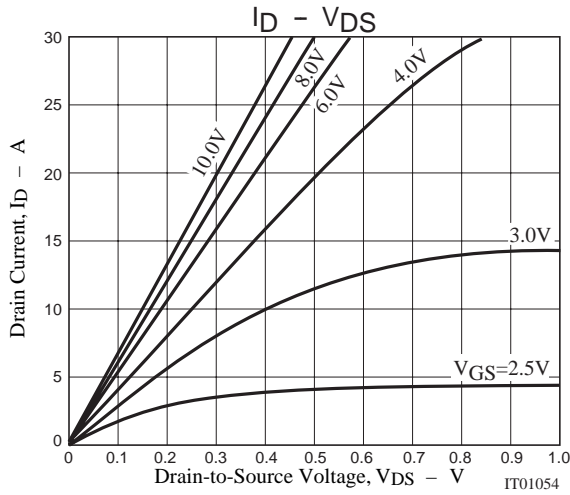
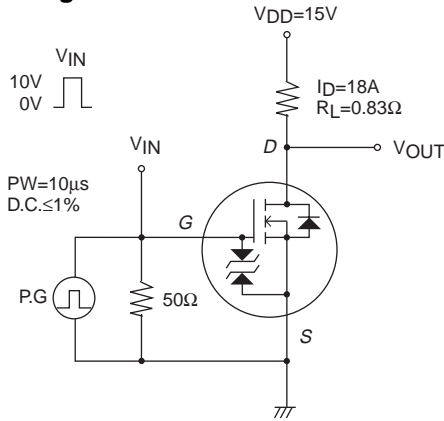
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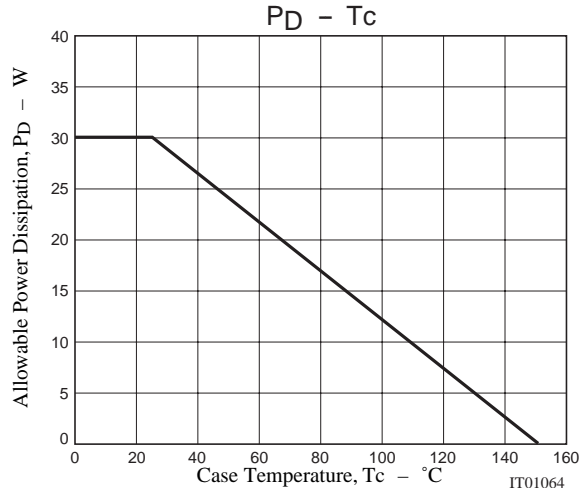
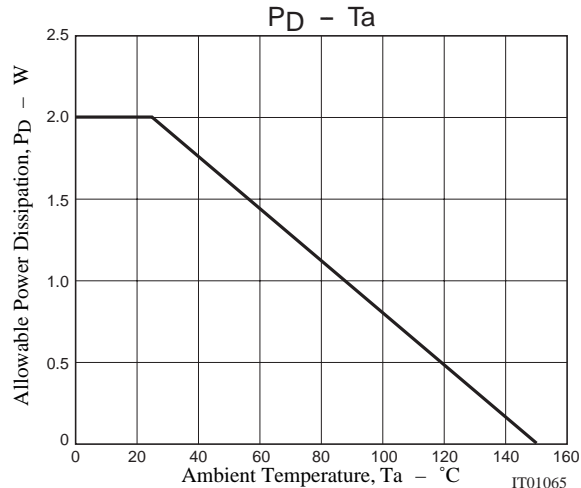
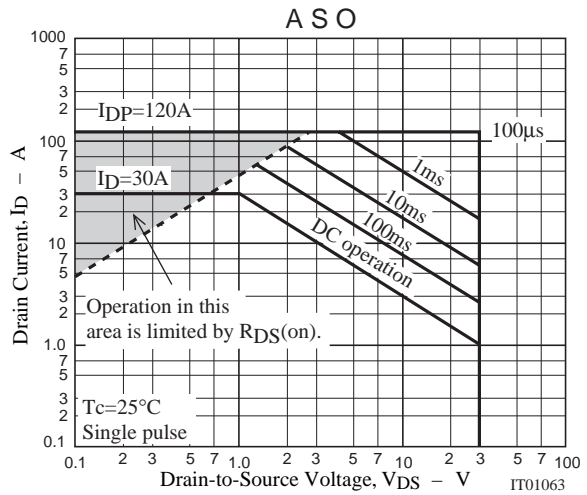
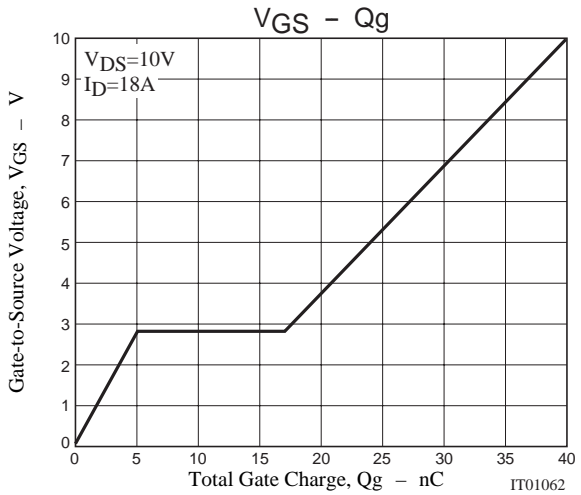
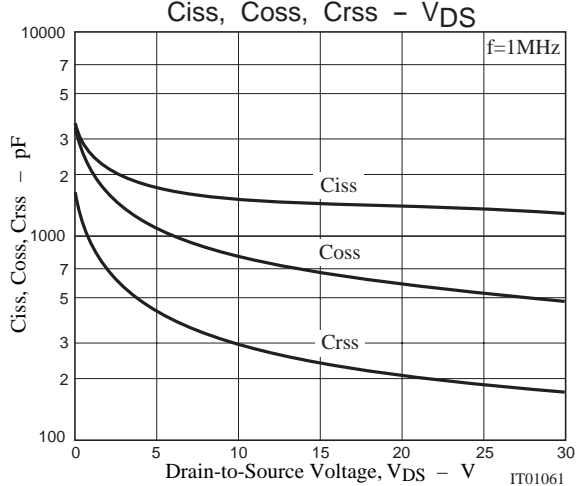
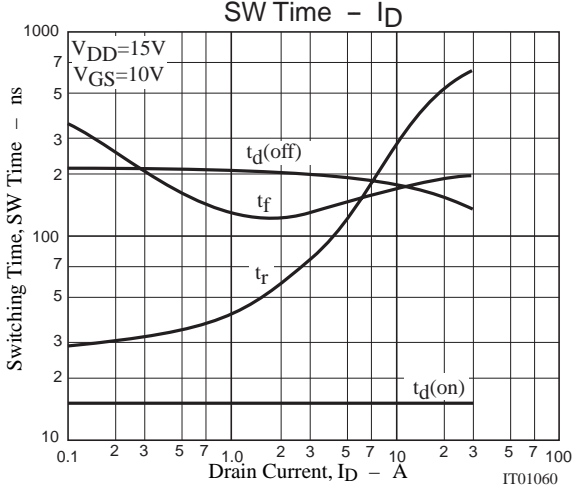
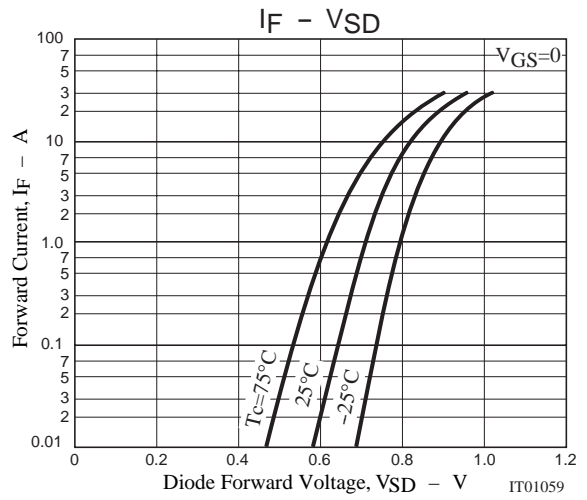
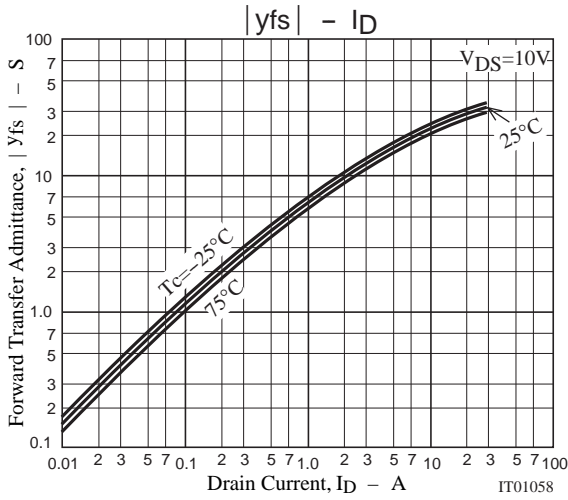
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		1600		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		800		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		300		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		15		ns
Rise Time	$t_r$	See specified Test Circuit		450		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		150		ns
Fall Time	$t_f$	See specified Test Circuit		180		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=18A$		40		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=18A$		5		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=18A$		12		nC
Diode Forward Voltage	$V_{SD}$	$I_S=30A, V_{GS}=0$		1.0	1.2	V

## Switching Time Test Circuit



# 2SK2977LS



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