

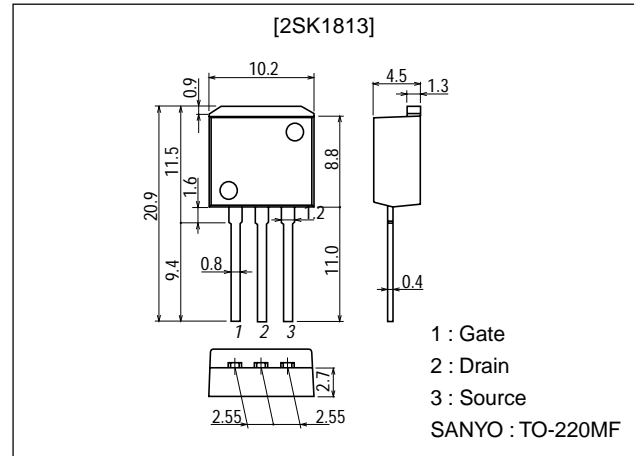
**2SK1813****High-Speed Switching Applications****Features**

- Low ON resistance.
- Ultrahigh-speed switching.
- Converters.

**Package Dimensions**

unit:mm

2089

**Specifications****Absolute Maximum Ratings at Ta = 25°C**

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		100	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		30	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10\mu s$ , duty cycle $\leq 1\%$	120	A
Allowable Power Dissipation	$P_D$		1.65	W
		$T_c = 25^\circ C$	70	W
Junction Temperature	$T_j$		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	$V_{DSS}$	$I_D = 1mA$ , $V_{GS} = 0$	100			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 100V$ , $V_{GS} = 0$			100	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 20V$ , $V_{DS} = 0$			$\pm 100$	nA
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = 10V$ , $I_D = 1mA$	1.5		2.5	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = 10V$ , $I_D = 20A$	13	22		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D = 20A$ , $V_{GS} = 10V$		0.040	0.055	$\Omega$

(Note) Be careful in handling the 2SK1813 because it has no protection diode between gate and source.

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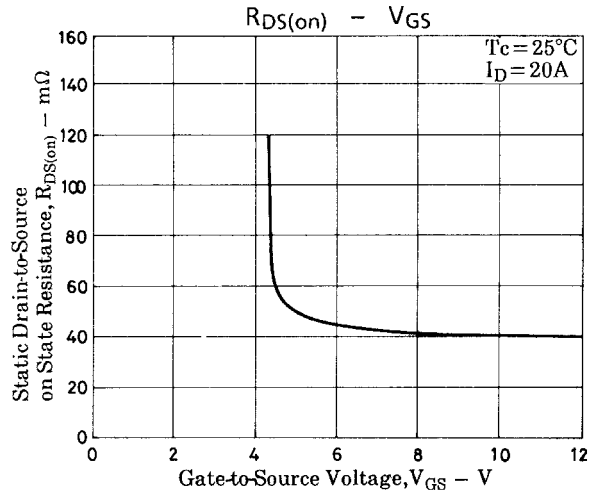
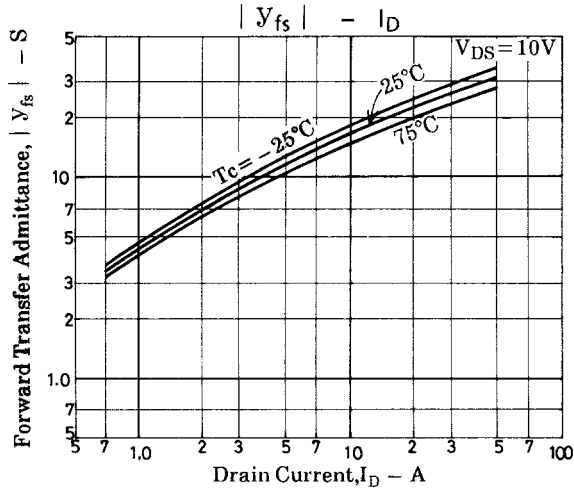
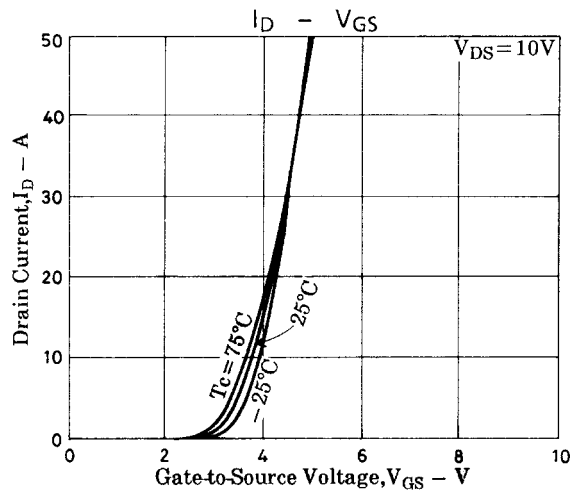
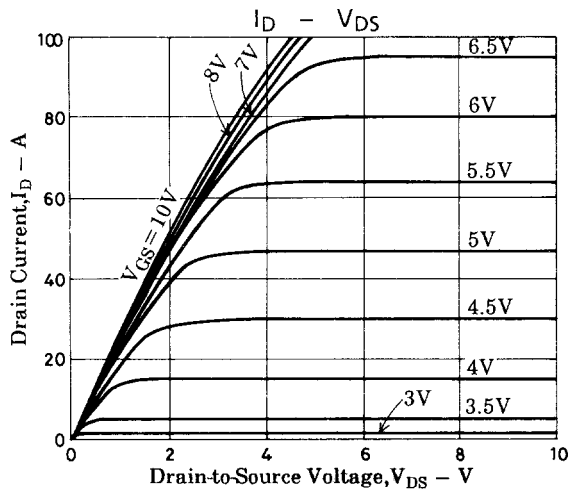
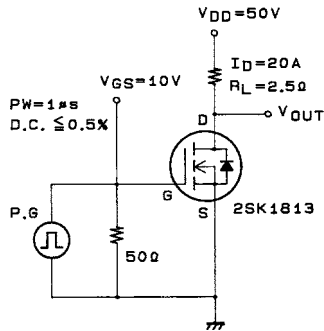
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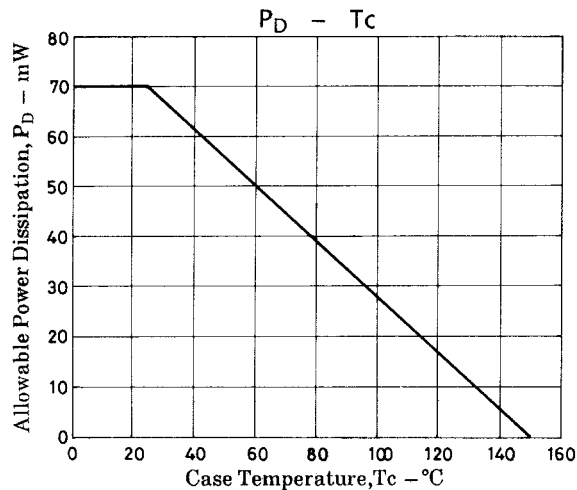
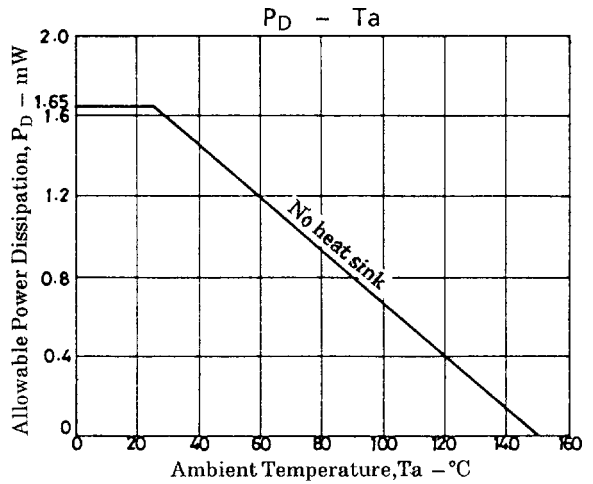
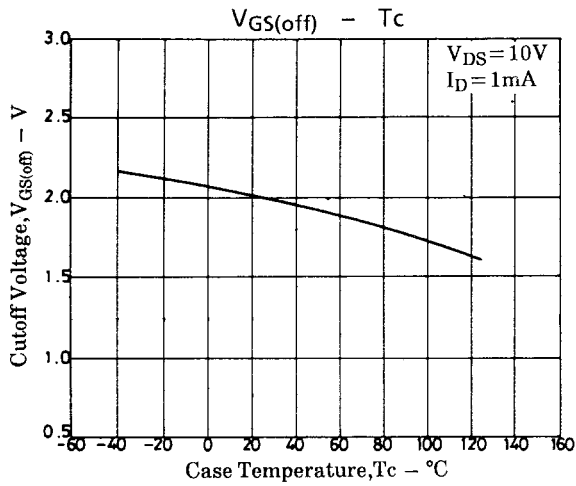
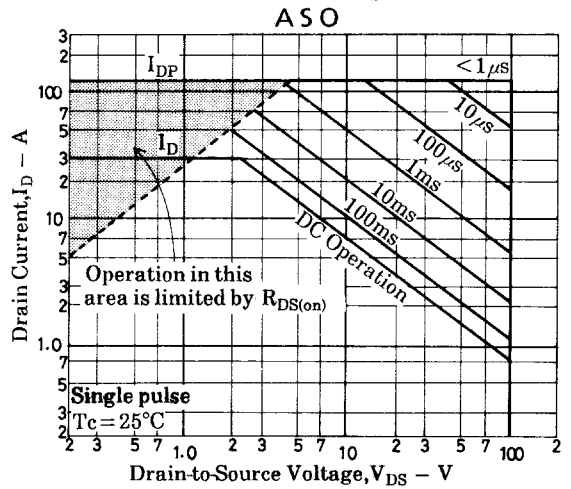
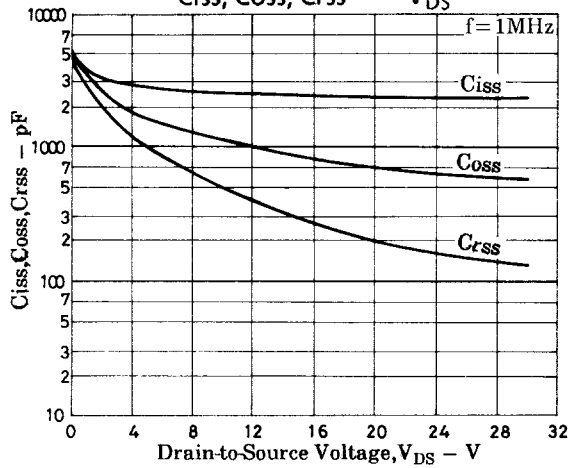
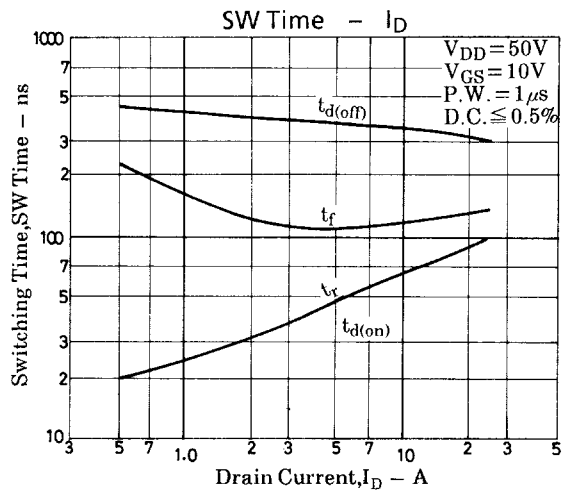
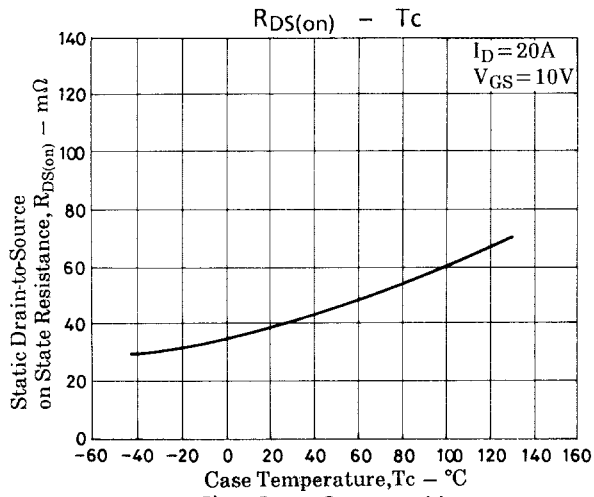
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Parameter	Symbol	Conditions	Ratings	Unit
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$	2400	pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$	700	pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$	200	pF
Turn-ON Delay Time	$t_{d(on)}$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$	30	ns
Rise Time	$t_r$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$	90	ns
Turn-OFF Delay Time	$t_{d(off)}$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$	320	ns
Fall Time	$t_f$	$I_D=20A, V_{GS}=10V, V_{DD}=50V, R_{GS}=50\Omega$	130	ns
Diode Forward Voltage	$V_{SD}$	$I_F=30A, V_{GS}=0$	1.8	V

## Switching Time Test Circuit



# 2SK1813



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