Ordering number: EN4177

SANYO No.4177

2SK1813

N-Channel MOS Silicon FET

High-Speed Switching Applications

Features

- Low ON resistance.
- Very high-speed switching.
- Converters.

Absolute Maximum Ratings at Ta = 25°C

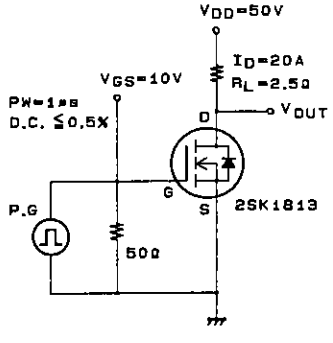
				unit
Drain to Source Voltage	V_{DSS}		100	V
Gate to Source Voltage	V_{GSS}		±20	V
Drain Current(DC)	I_D		30	A
Drain Current(Pulse)	I_{DP}	PW≦10μs, duty cycle≦1%	120	A
Allowable Power Dissipation	P_D		1.65	W
		Tc = 25°C	70	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		−55 to +150	°C

Electrical Characteristics at Ta = 25°C

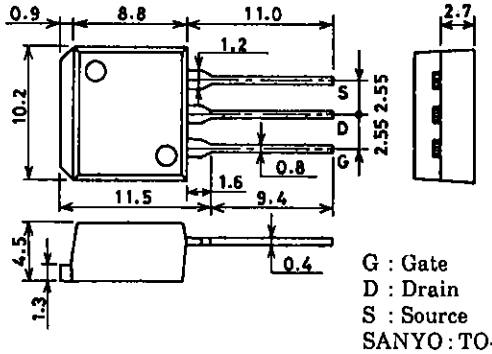
			min	typ	max	unit
D-S Breakdown Voltage	V_{DSS}	I_D = 1mA, V_{GS} = 0	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 100V, V_{GS} = 0			100	μA
Gate to Source Leakage Current	I_{GSS}	V_{GS} = ±20V, V_{DS} = 0			±100	nA
Cutoff Voltage	$V_{GS(off)}$	V_{DS} = 10V, I_D = 1mA	1.5		2.5	V
Forward Transfer 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	Ω
Input Capacitance	Ciss	V_{DS} = 20V, f = 1MHz		2400		pF
Output Capacitance	Coss	V_{DS} = 20V, f = 1MHz		700		pF
Reverse Transfer Capacitance	Crss	V_{DS} = 20V, f = 1MHz		200		pF
Turn-ON Delay Time	$t_{d(on)}$			30		ns
Rise Time	t_r	I_D = 20A, V_{GS} = 10V		90		ns
Turn-OFF Delay Time	$t_{d(off)}$	V_{DD} = 50V, R_{GS} = 50Ω		320		ns
Fall Time	t_f			130		ns
Diode Forward Voltage	V_{SD}	I_F = 30A, V_{GS} = 0			1.8	V

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

Switching Time Test Circuit



Package Dimensions 2089
(unit : mm)



G : Gate
D : Drain
S : Source
SANYO : TO-220MF

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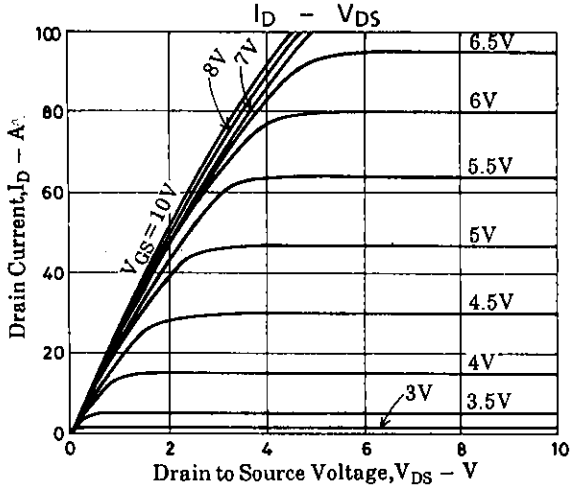
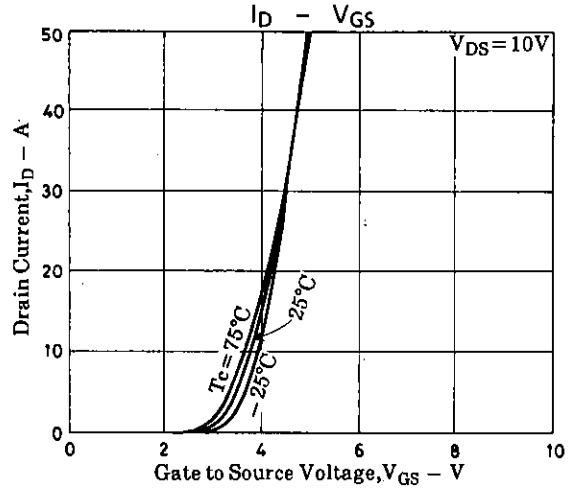
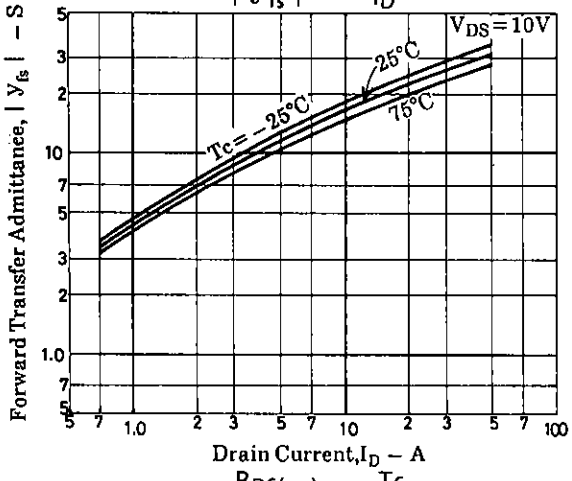
I_D – V_{DS}



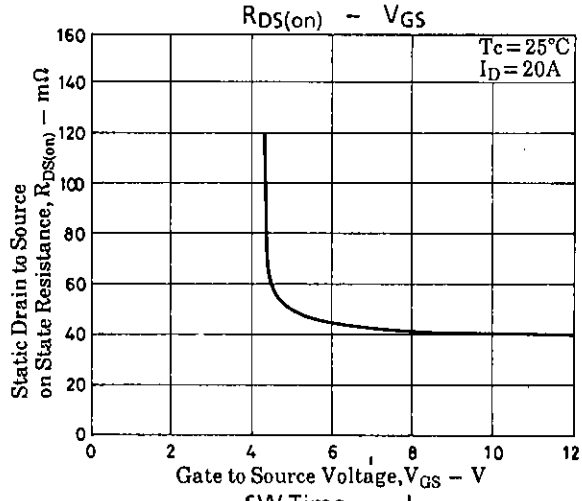
I_D – V_{GS}



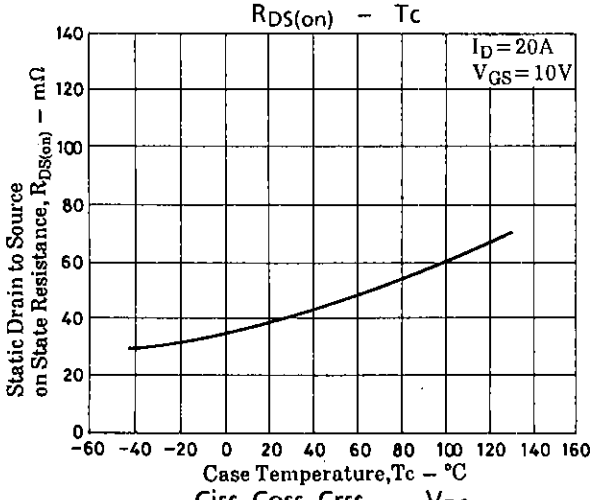
$|y_{fs}|$ – I_D



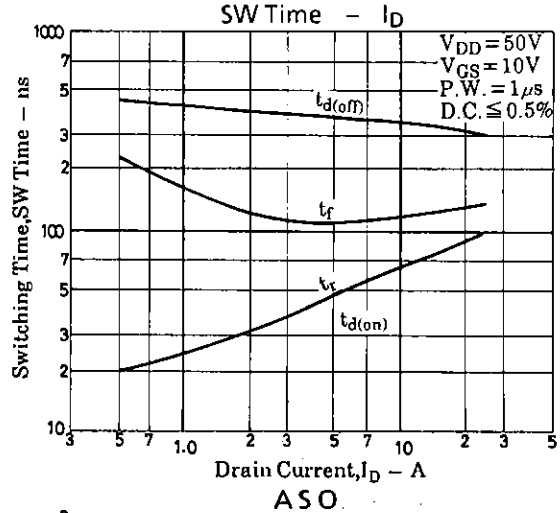
$R_{DS(on)}$ – V_{GS}



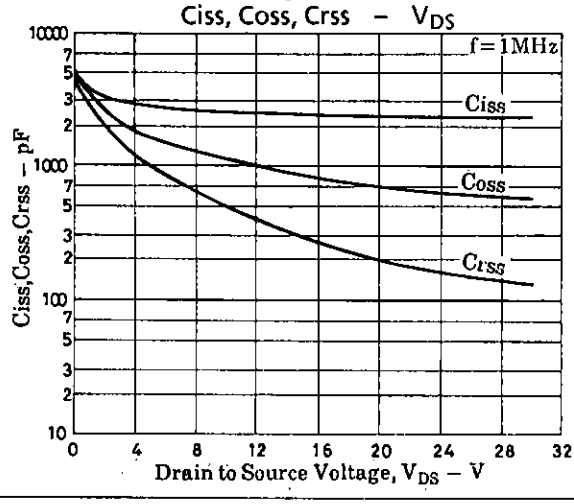
$R_{DS(on)}$ – Tc



SW Time – I_D



Ciss, Coss, Crss – V_{DS}



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