Ordering number:EN4244A

N-Channel Silicon MOSFET

2SK1920

Ultrahigh-Speed Switching Applications

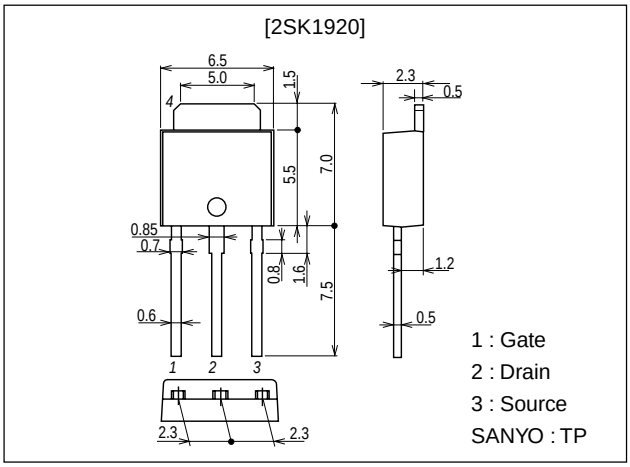
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.

Package Dimensions

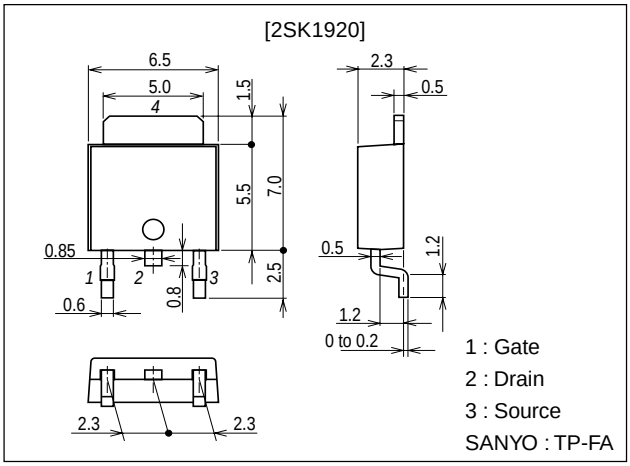
unit:mm

2083B



unit:mm

2092B



SANYO Electric Co.,Ltd. Semiconductor Company

TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

Specifications

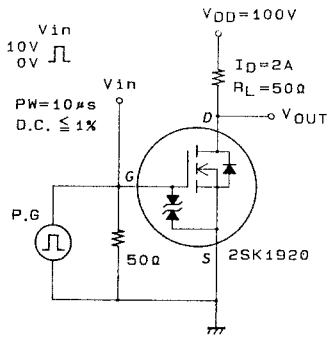
Absolute Maximum Ratings at Ta = 25˚C

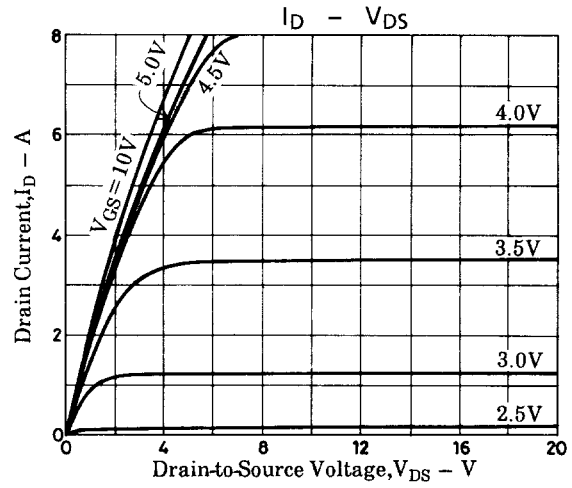
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		250	V
Gate-to-Source Voltage	V_{GSS}		±30	V
Drain Current (DC)	I_D		4	A
Drain Current (pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	16	A
Allowable Power Dissipation	P_D		1.0	W
		Tc=25°C	30	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

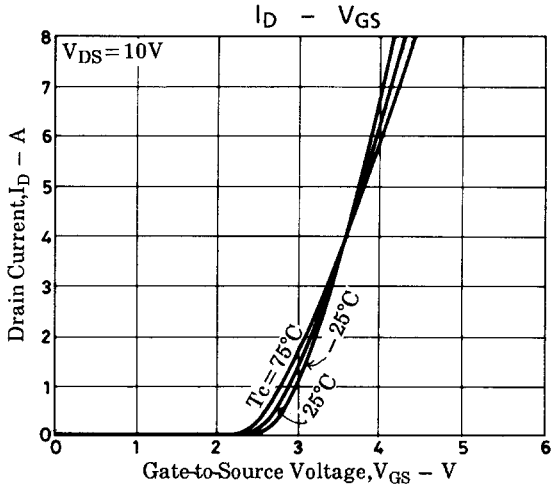
Electrical Characteristics at Ta = 25˚C

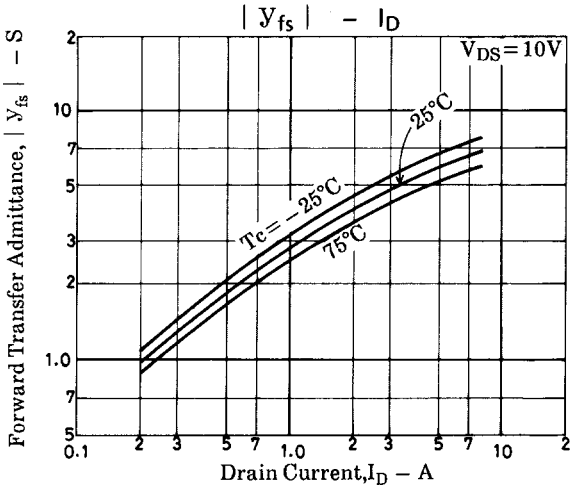
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0	250			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±30			V
Zero-Gate Votlage Drain Current	I_{DSS}	V_{DS}=250V, V_{GS}=0			100	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±25V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	1.5		2.5	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=2A	2.5	4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	I_D=2A, V_{GS}=10V		500	700	mΩ
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		420		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		95		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		30		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		12		ns
Rise Time	t_r	See specified Test Circuit		15		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		65		ns
Fall Time	t_f	See specified Test Circuit		55		ns
Diode Forward Voltage	V_{SD}	I_S=4A, V_{GS}=0		1.0	1.5	V

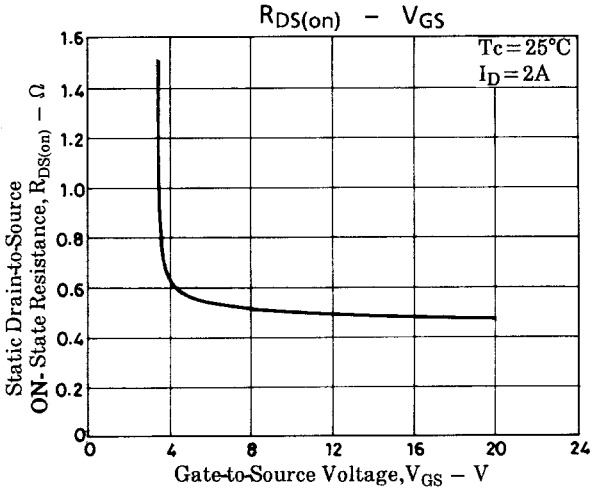
Switching Time Test Circuit

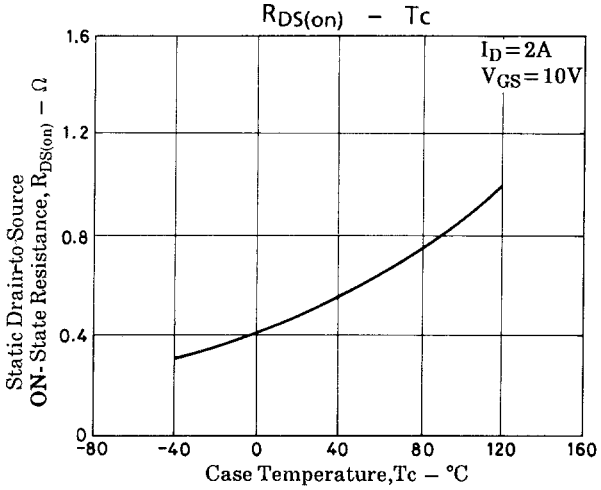


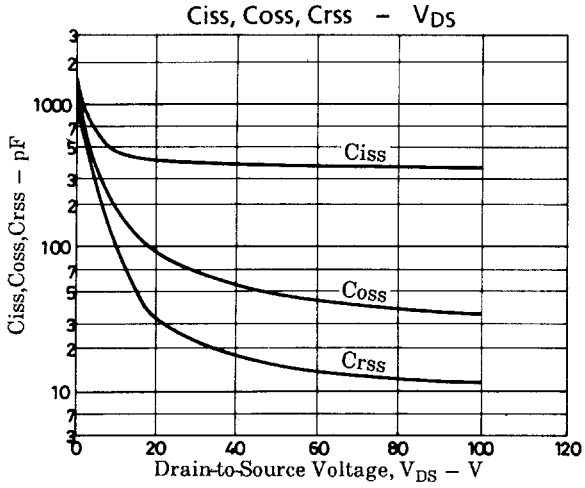

ID – VDS
Drain Current,ID – A
Drain-to-Source Voltage,VDS – V
VGS=10V
5.0V
4.5V
4.0V
3.5V
3.0V
2.5V

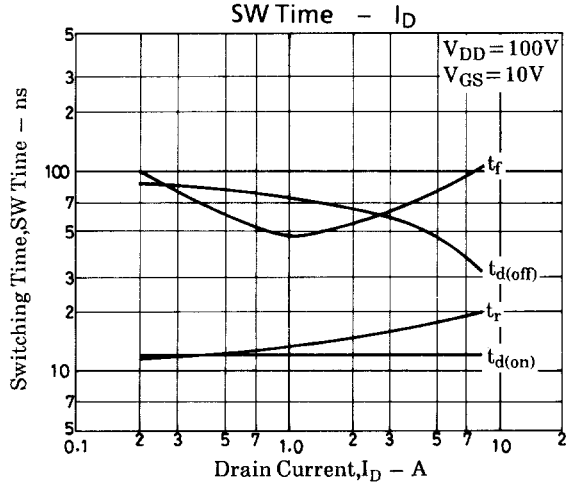

ID – VGS
VDS=10V
Drain Current,ID – A
Gate-to-Source Voltage,VGS – V
Tc=75°C
25°C
–25°C

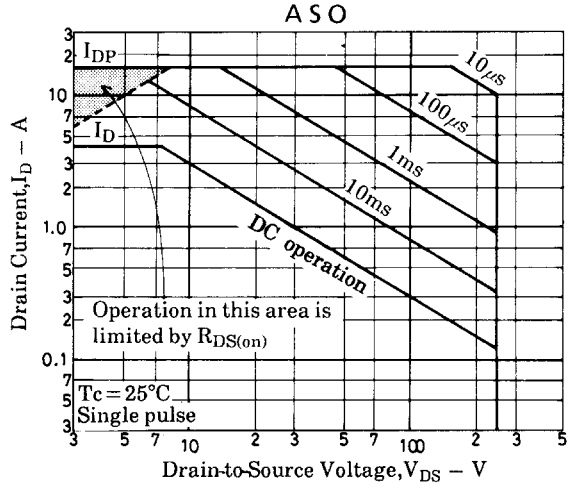

| yfs | – ID
VDS=10V
Forward Transfer Admittance, | yfs | – S
Drain Current,ID – A
Tc=–25°C
25°C
75°C


RDS(on) – VGS
Tc=25°C
ID=2A
Static Drain-to-Source
ON-State Resistance, RDS(on) – Ω
Gate-to-Source Voltage,VGS – V


RDS(on) – Tc
ID=2A
VGS=10V
Static Drain-to-Source
ON-State Resistance, RDS(on) – Ω
Case Temperature,Tc – °C


Ciss, Coss, Crss – VDS
Ciss
Coss
Crss
Ciss,Coss,Crss – pF
Drain-to-Source Voltage, VDS – V


SW Time – ID
VDD=100V
VGS=10V
tf
td(off)
tr
td(on)
Switching Time,SW Time – ns
Drain Current,ID – A


ASO
IDP
ID
10μs
100μs
1ms
10ms
DC operation
Operation in this area is
limited by RDS(on)
Tc=25°C
Single pulse
Drain Current,ID – A
Drain-to-Source Voltage,VDS – V