Ordering number:ENN6003

N-Channel Silicon MOSFET

2SK2976

DC-DC Converter Applications

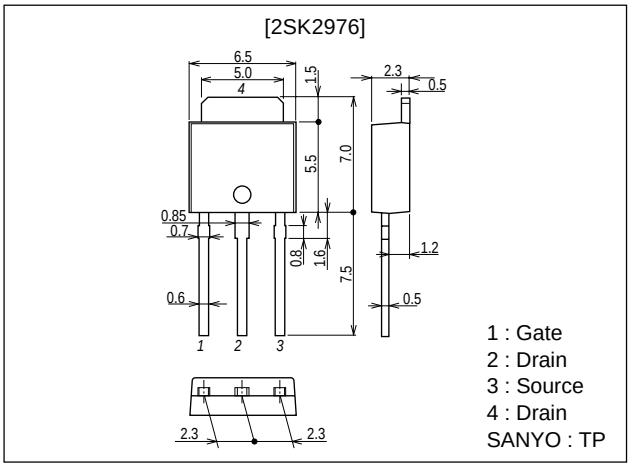
Features

· Low ON resistance.
· 4V drive.

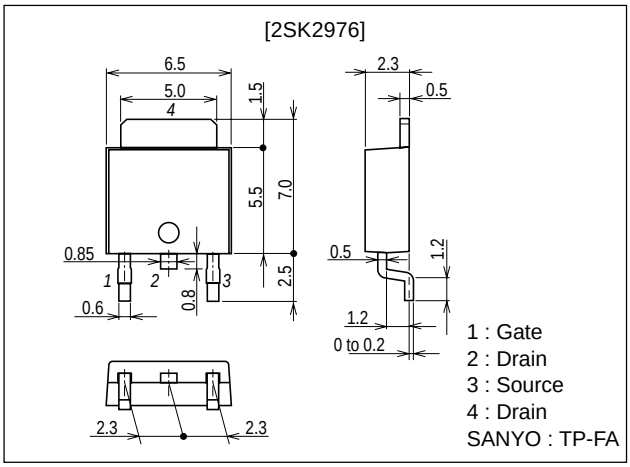
Package Dimensions

unit:mm

2083B



2092B



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

Specifications

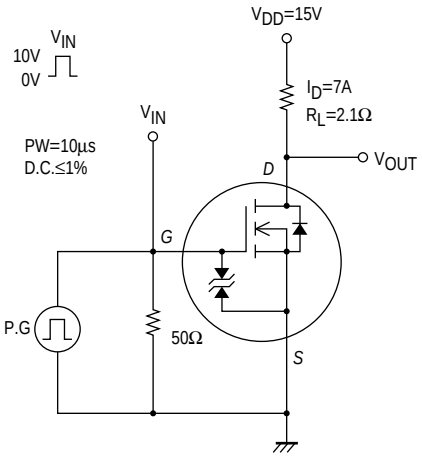
Absolute Maximum Ratings at Ta = 25˚C

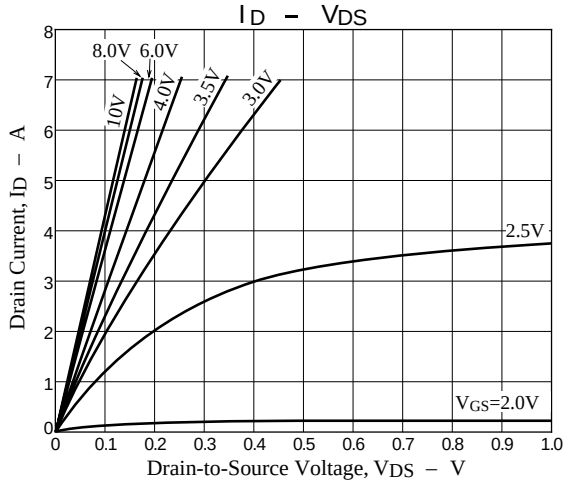
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		15	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	45	A
Allowable Power Dissipation	P_D		1	W
		Tc=25˚C	20	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

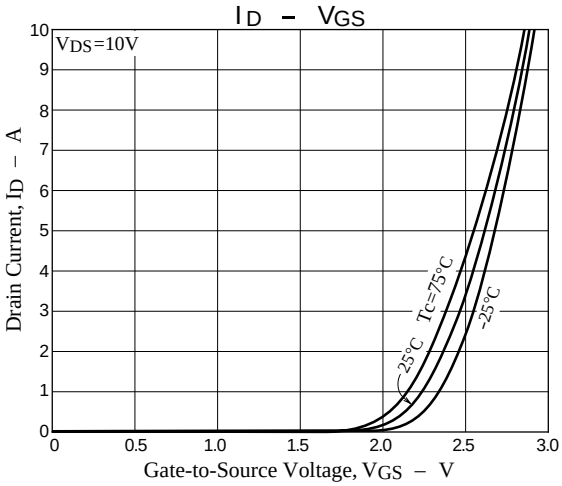
Electrical Characteristics at Ta = 25˚C

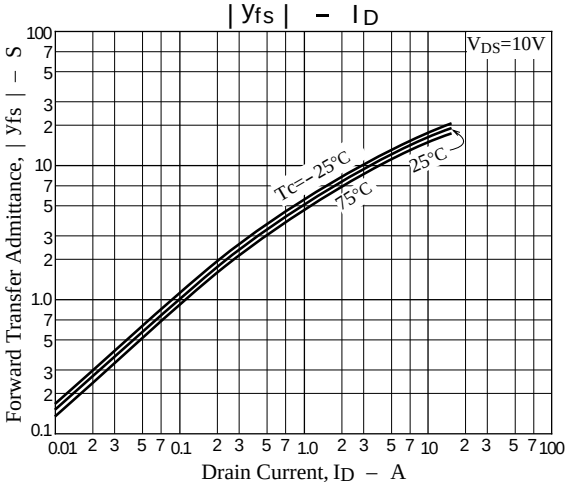
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	I_D=1mA, V_{GS}=0	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0			10	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0			±10	μA
Cutoff Voltage	$V_{GS(off)}$	V_{DS}=10V, I_D=1mA	1.0		2.4	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=7A	8	12		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}1$	I_D=7A, V_{GS}=10V		28	36	mΩ
	$R_{DS(on)}2$	I_D=4A, V_{GS}=4V		42	58	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		700		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		380		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		180		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		15		ns
Rise Time	t_r	See specified Test Circuit		280		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		80		ns
Fall Time	t_f	See specified Test Circuit		80		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=7A		22		nC
Gate-to-Source Charge	Qgs			5		nC
Gate-to-Drain "Miller" Charge	Qgd			6		nC
Diode Forward Voltage	V_{SD}	I_S=7A, V_{GS}=0		0.85	1.2	V

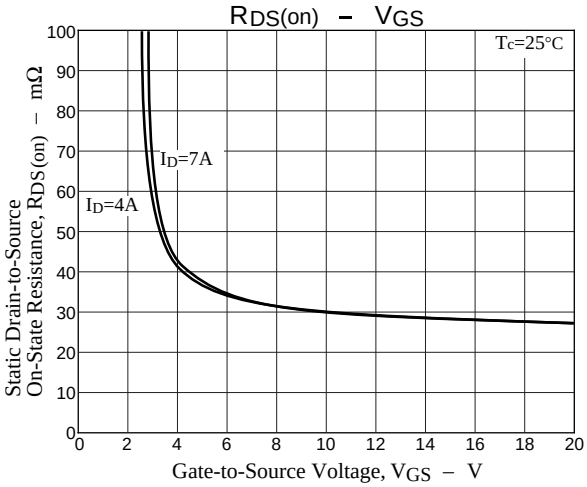
Switching Time Test Circuit

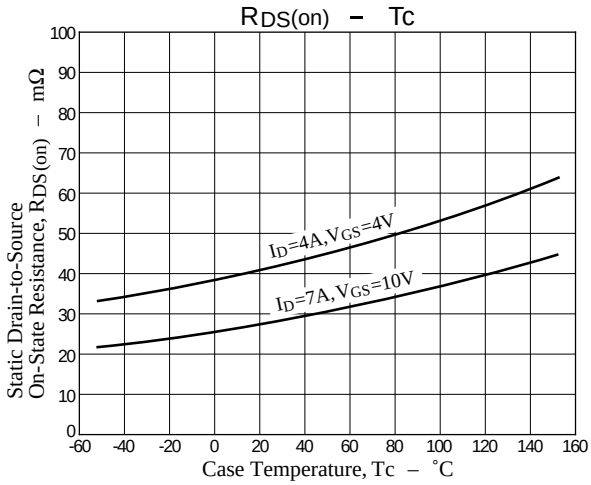


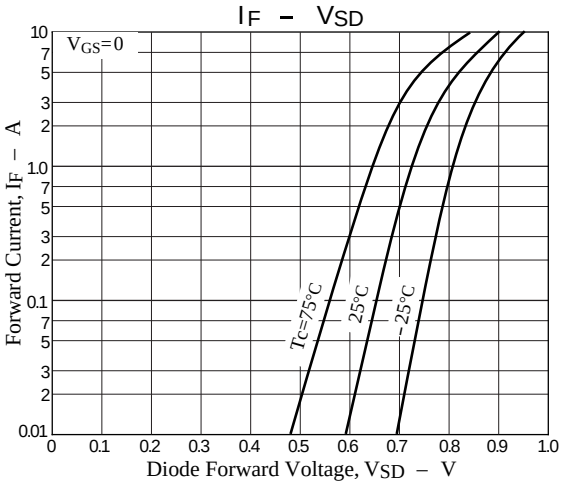

ID – VDS
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
8.0V
6.0V
10V
4.0V
3.5V
3.0V
2.5V
VGS=2.0V

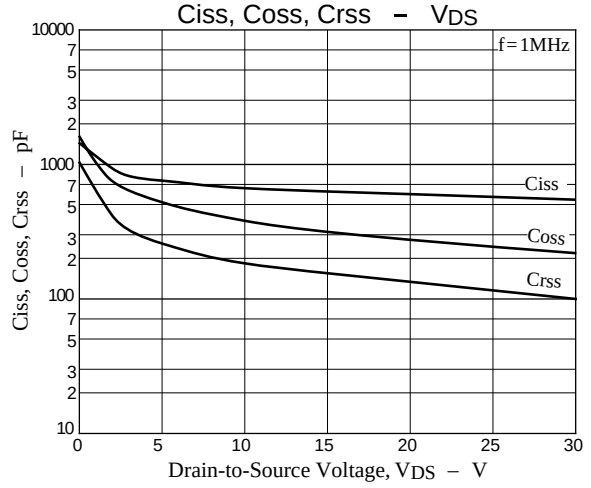

ID – VGS
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
VDS=10V
Tc=75°C
25°C
–25°C

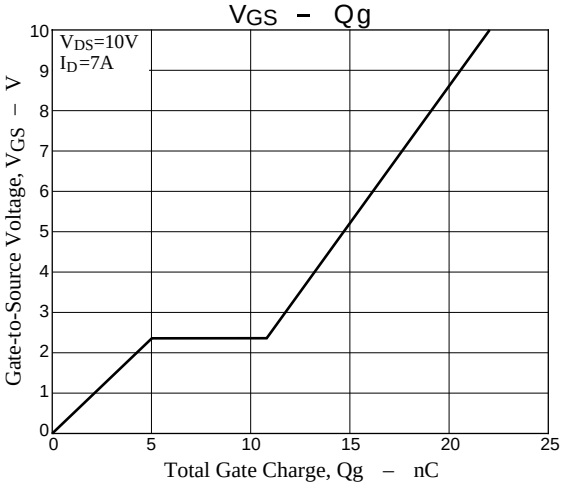

| yfs | – ID
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
VDS=10V
Tc=–25°C
25°C
75°C


RDS(on) – VGS
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
Tc=25°C
ID=7A
ID=4A


RDS(on) – Tc
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – ˚C
ID=4A,VGS=4V
ID=7A,VGS=10V


IF – VSD
Forward Current, IF – A
Diode Forward Voltage, VSD – V
VGS=0
Tc=75°C
25°C
–25°C


Ciss, Coss, Crss – VDS
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
f=1MHz
Ciss
Coss
Crss


VGS – Qg
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
VDS=10V
ID=7A