Ordering number:EN4648

N-Channel Silicon MOSFET

2SK1899

Ultrahigh-Speed Switching Applications

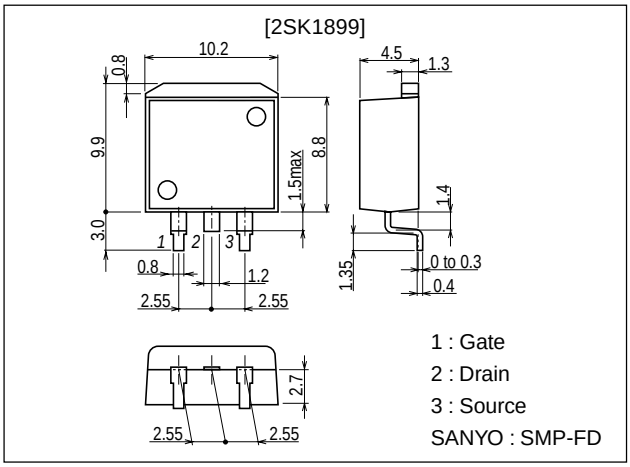
Features

- Low ON resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Surface mount type device making the following possible.
  - Reduction in the assembling time for 2SK1899-applied equipment.
  - High-density surface mount applications.
  - Small size of 2SK1899-applied equipment.

Package Dimensions

unit:mm

2090A



Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		60	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		18	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	72	A
Allowable Power Dissipation	P_D		1.65	W
		Tc=25°C	60	W
Channel Temperature	Tch		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C
Avalanche Current	I_{AV}	V_{DS}=30V, V_{GS}=10V, L=0.1mH, Tc=25°C, Single pulse	18	A

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	60			V
Gate-to-Source Breakdown Voltage	$V_{(BR)GSS}$	I_G=±100μA, V_{DS}=0	±20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=60V, V_{GS}=0			100	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		2.0	V
Forward Transfer Admittance	| yfs |	V_{DS}=10V, I_D=9A	8	13		S

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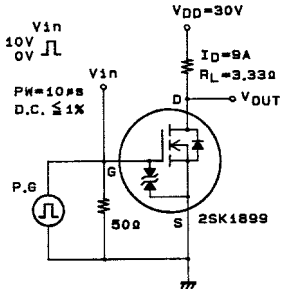
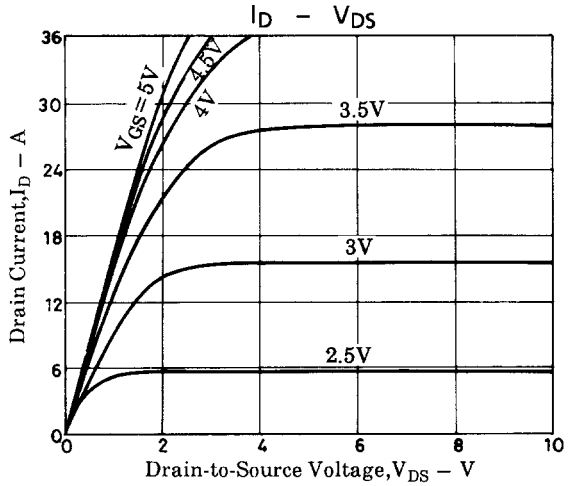
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

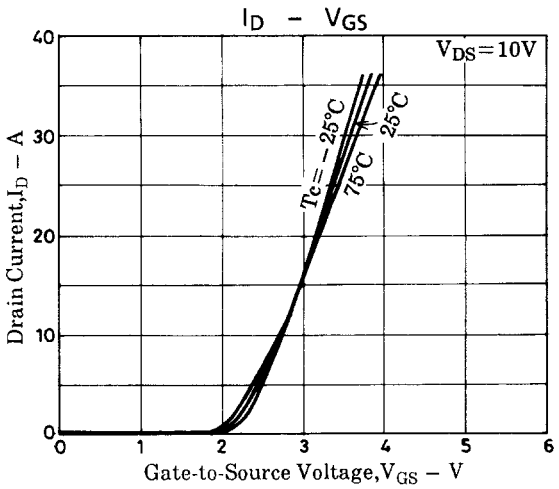
Continued from preceding page.

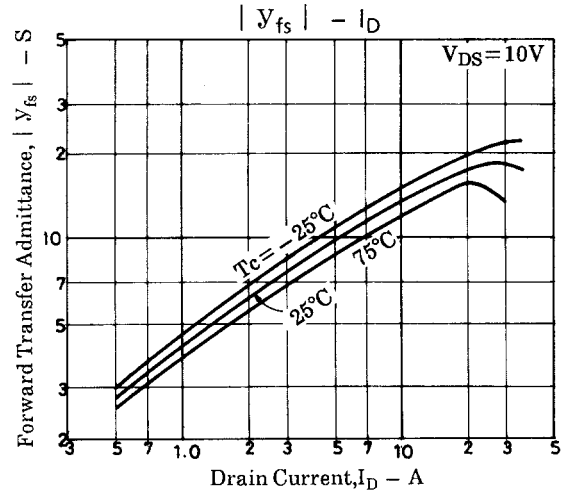
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Static Drain-to-Source ON-State Resistance	$R_{DS(on)}$	I_D=9A, V_{GS}=10V		0.05	0.07	Ω
	$R_{DS(on)}$	I_D=9A, V_{GS}=4V		0.07	0.095	Ω
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		1230		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		330		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		65		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		14		ns
Rise Time	t_r	See specified Test Circuit		35		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		250		ns
Fall Time	t_f	See specified Test Circuit		120		ns
Diode Forward Voltage	V_{SD}	I_S=18A, V_{GS}=0		1.0	1.5	V

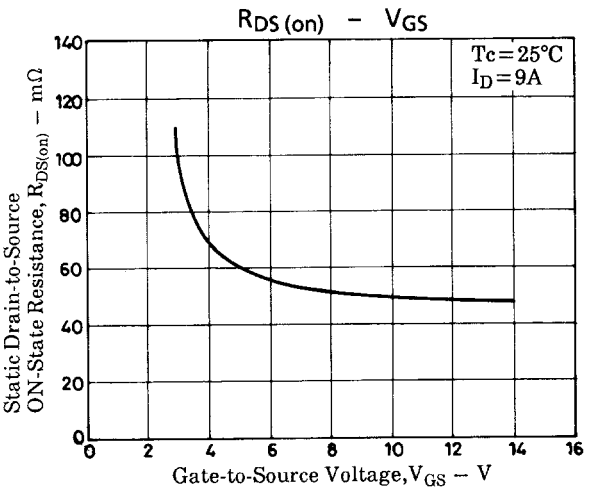
Switching Time Test Circuit

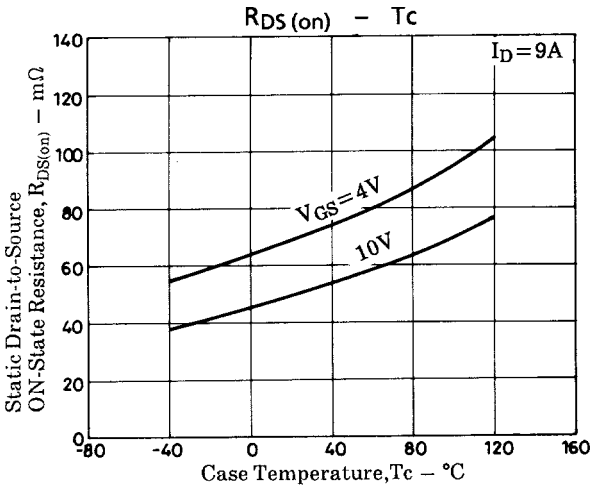


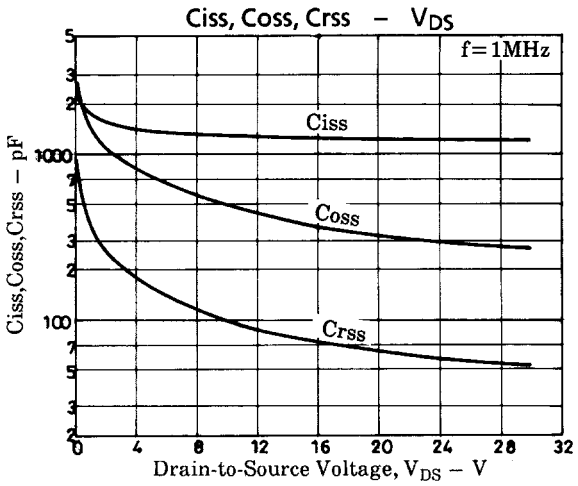


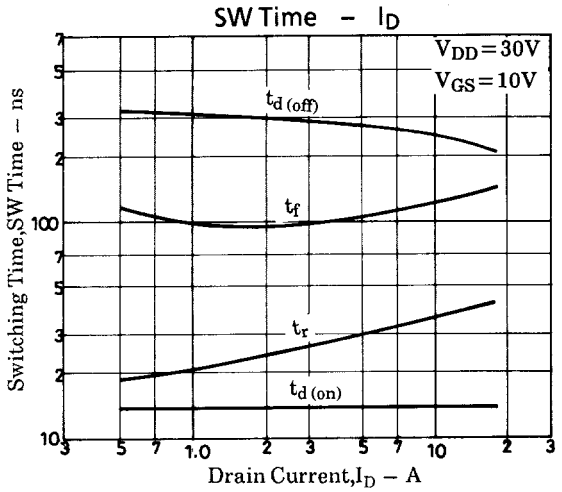


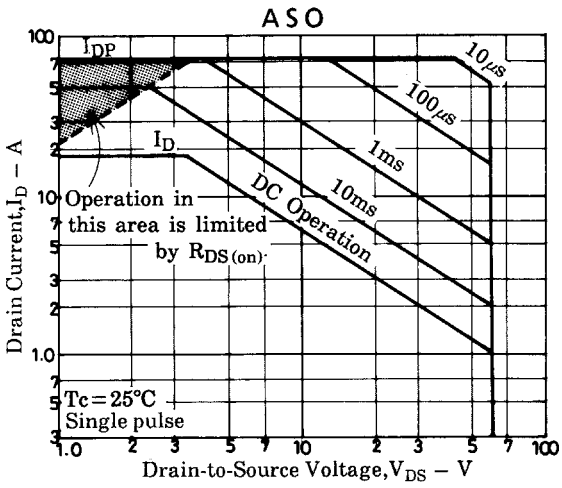


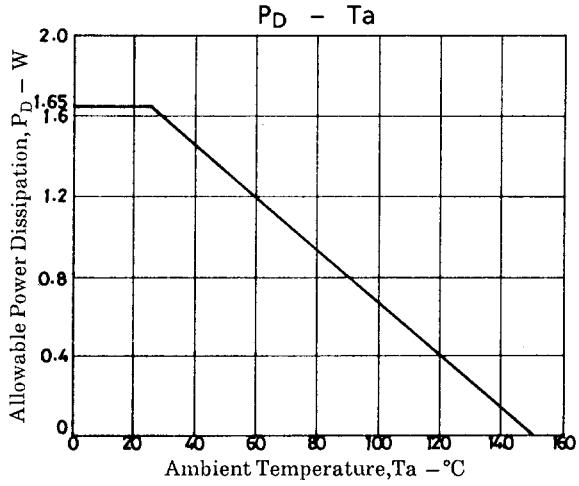


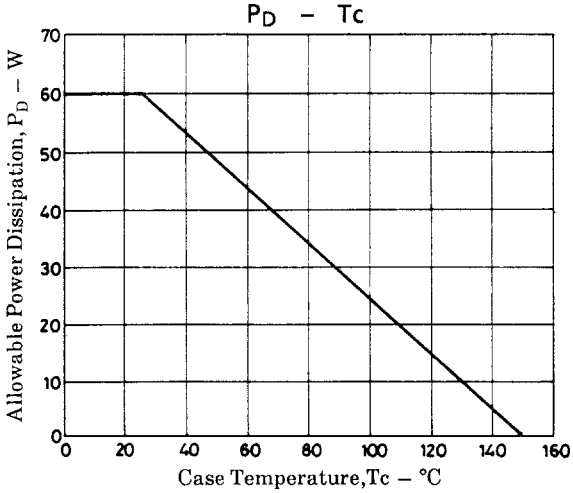

RDS (on) – Tc
ID=9A
VGS=4V
10V
Static Drain-to-Source ON-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C


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


SW Time – ID
VDD=30V
VGS=10V
td (off)
tf
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


PD – Ta
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C