Ordering number:ENN4321B

N-Channel Silicon MOSFET

2SK2012

Ultrahigh-Speed Switching Applications

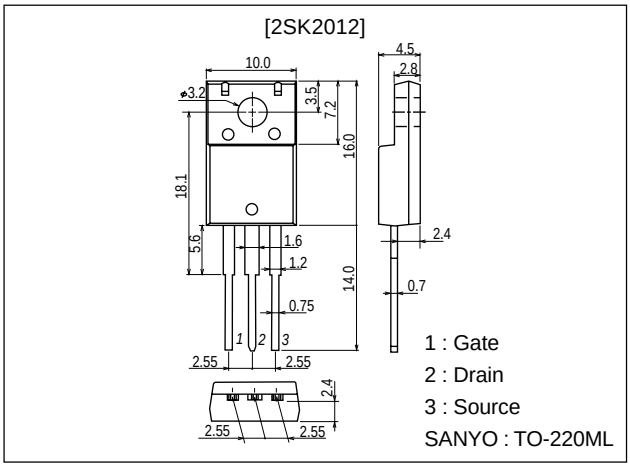
Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- Low-voltage drive.
- Micaless package facilitating mounting.

Package Dimensions

unit:mm

2063A



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		18	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	72	A
Allowable Power Dissipation	P_D		2.0	W
		Tc=25˚C	40	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 Voltage Drain Current	I_{DSS}	V_{DS}=250V, V_{GS}=0			100	μA
Gate-to-Souce 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=12A	11	18		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	I_D=12A, V_{GS}=10V		0.12	0.16	Ω

Continued on next page.

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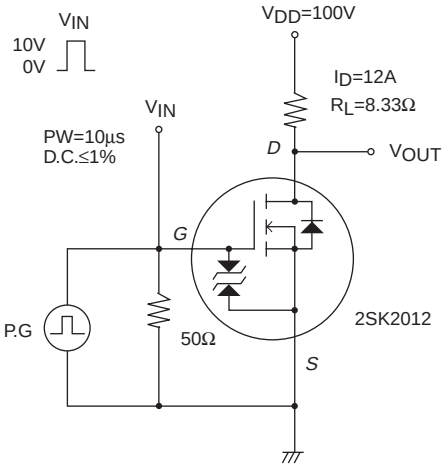
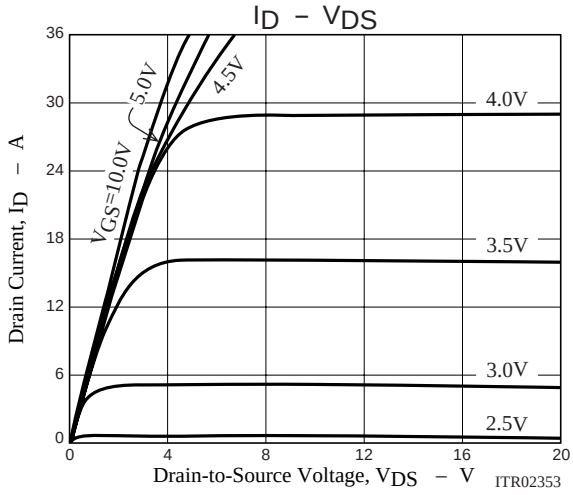
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

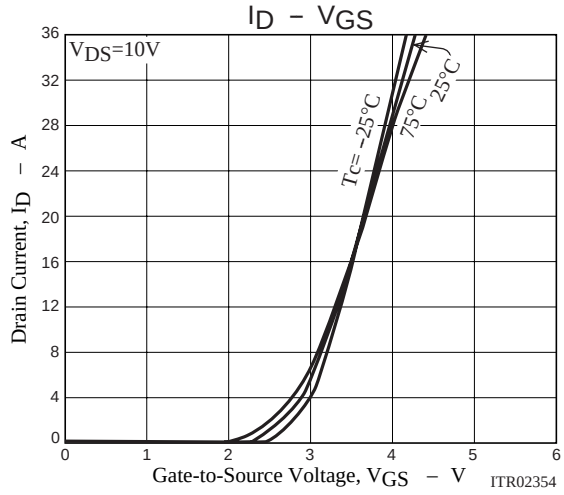
Continued from preceding page.

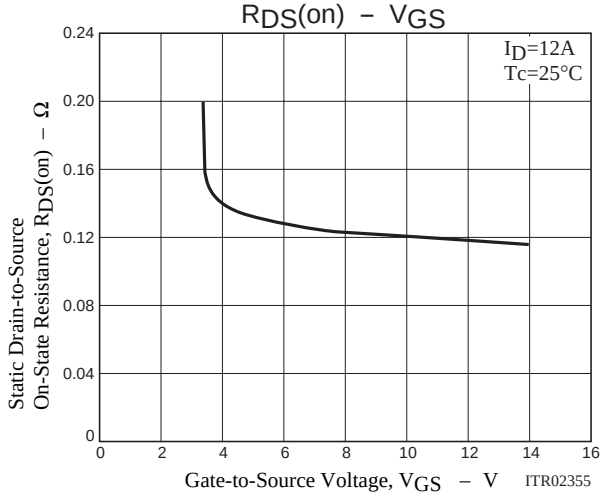
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=20V, f=1MHz		2700		pF
Output Capacitance	Coss	V_{DS}=20V, f=1MHz		450		pF
Reverse Transfer Capacitance	Crss	V_{DS}=20V, f=1MHz		180		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		35		ns
Rise Time	t_r	See specified Test Circuit		65		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		210		ns
Fall Time	t_f	See specified Test Circuit		235		ns
Diode Forward Voltage	V_{SD}	I_S=18A, V_{GS}=0		1.0	1.5	V

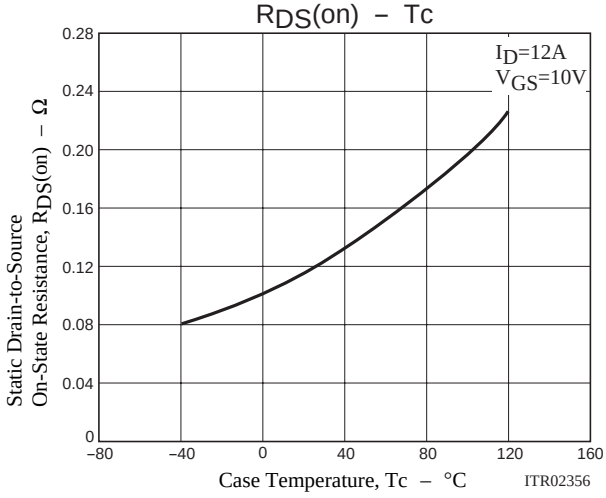
Switching Time Test Circuit

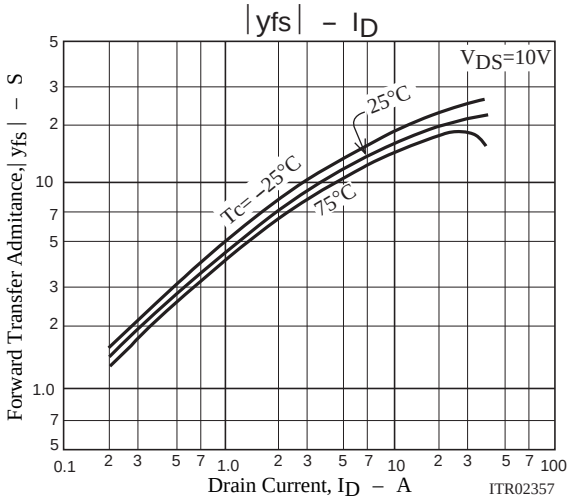


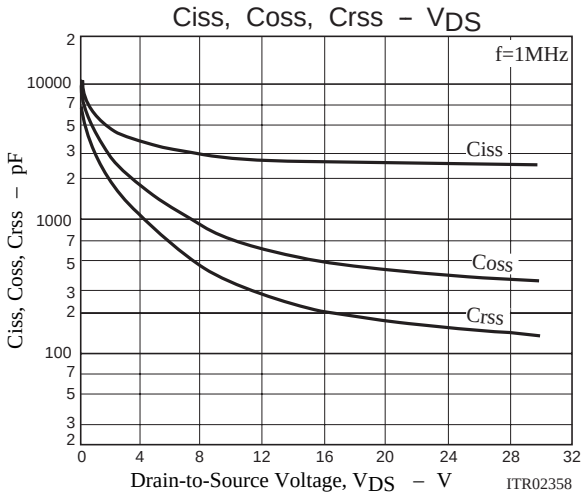


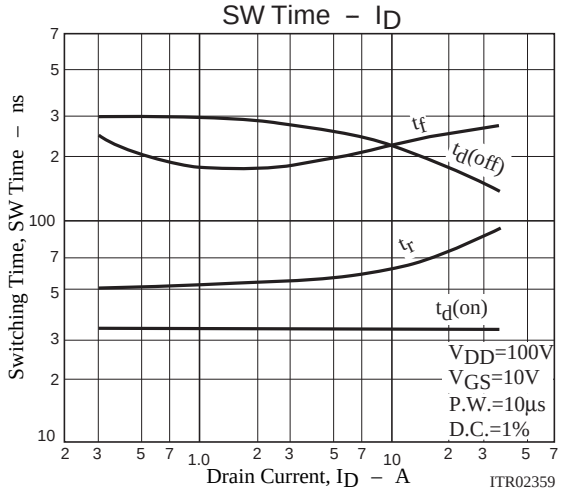


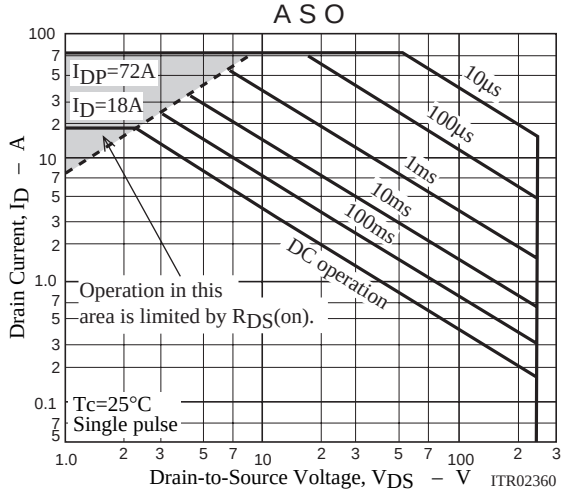


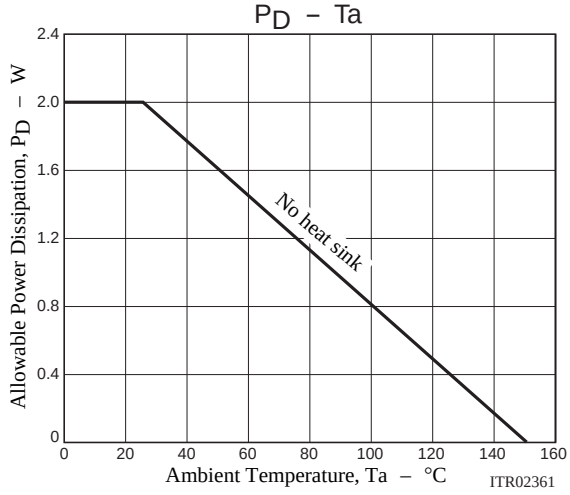


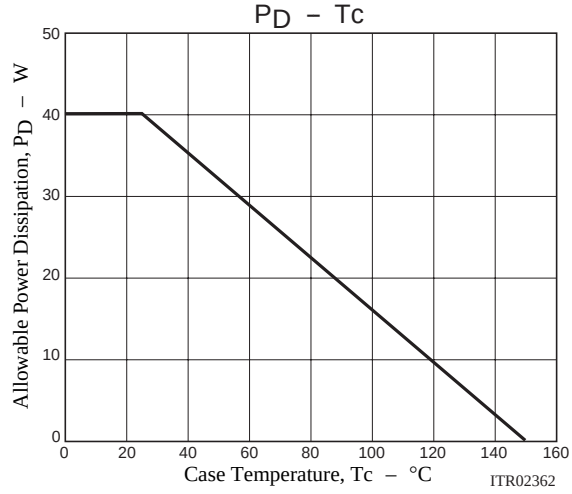

|yfs| – ID
VDS=10V
25°C
Tc= –25°C
75°C
Forward Transfer Admitance, |yfs| – S
Drain Current, ID – A
ITR02357


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
ITR02358


SW Time – ID
tf
td(off)
tr
td(on)
VDD=100V
VGS=10V
P.W.=10µs
D.C.=1%
Switching Time, SW Time – ns
Drain Current, ID – A
ITR02359


A S O
IDP=72A
ID=18A
10µs
100µs
1ms
10ms
100ms
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
ITR02360


PD – Ta
No heat sink
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
ITR02361


PD – Tc
Allowable Power Dissipation, PD – W
Case Temperature, Tc – °C
ITR02362