Ordering number : ENN7009

P-Channel Silicon MOSFET

MCH3312

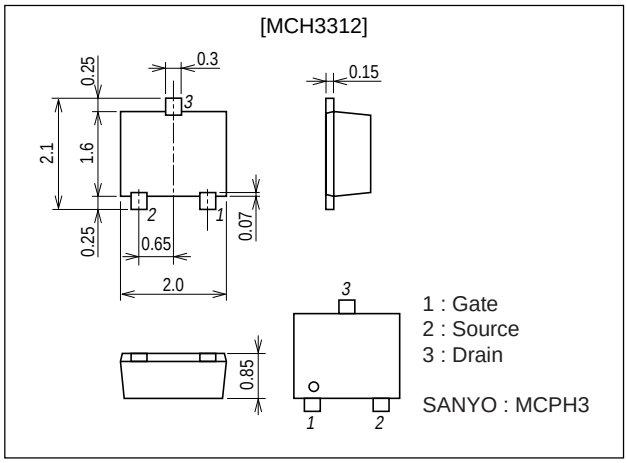
Ultrahigh-Speed Switching Applications

Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

Package Dimensions

unit : mm
2167A



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		−2	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−8	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	1	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			−1	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	−1.2		−2.6	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−1A	1.4	2.0		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−1A, V_{GS}=−10V		110	145	mΩ
	R_{DS}(on)2	I_D=−0.5A, V_{GS}=−4V		205	290	mΩ

Marking : JM

Continued on next page.

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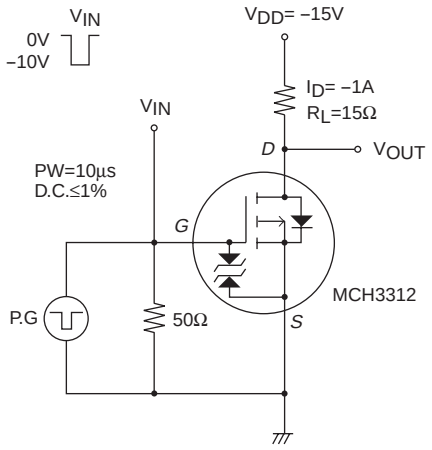
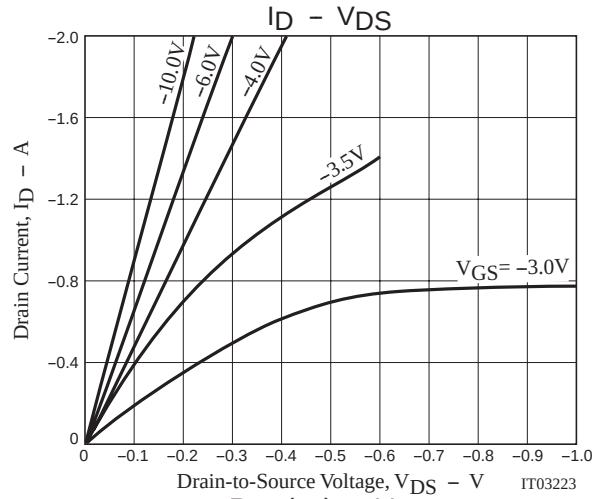
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

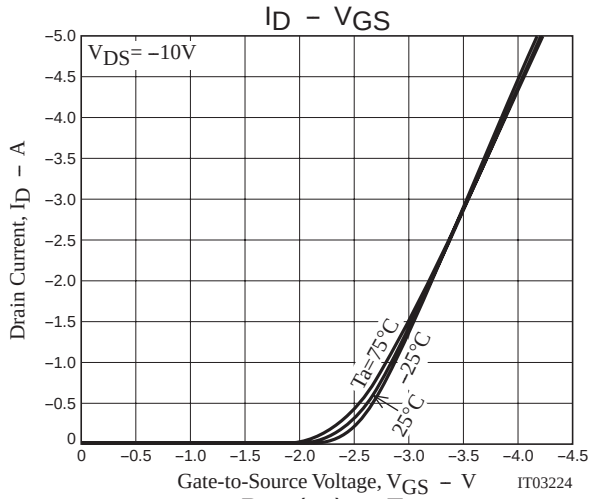
Continued from preceding page.

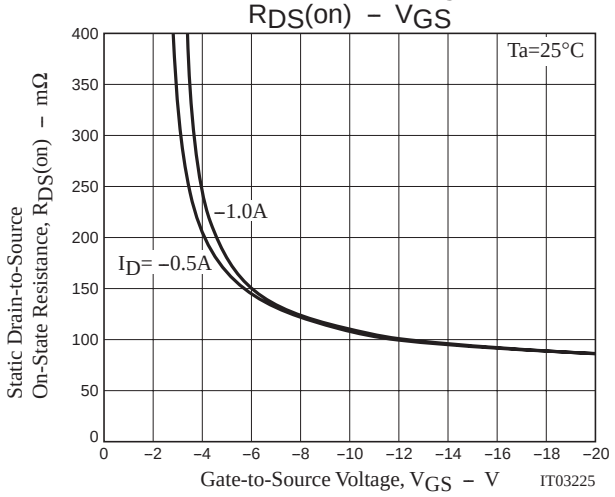
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		200		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		47		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		32		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		7.2		ns
Rise Time	t_{r}	See specified Test Circuit		2.9		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit		21		ns
Fall Time	t_{f}	See specified Test Circuit		8.7		ns
Total Gate Charge	Qg	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−2A		5.5		nC
Gate-to-Source Charge	Qgs	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−2A		0.98		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−10V, V_{GS}=−10V, I_{D}=−2A		0.82		nC
Diode Forward Voltage	V_{SD}	I_{S}=−2A, V_{GS}=0		−0.85	−1.5	V

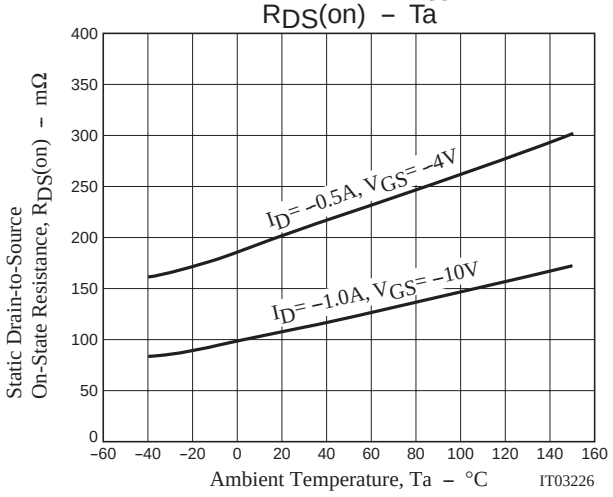
Switching Time Test Circuit

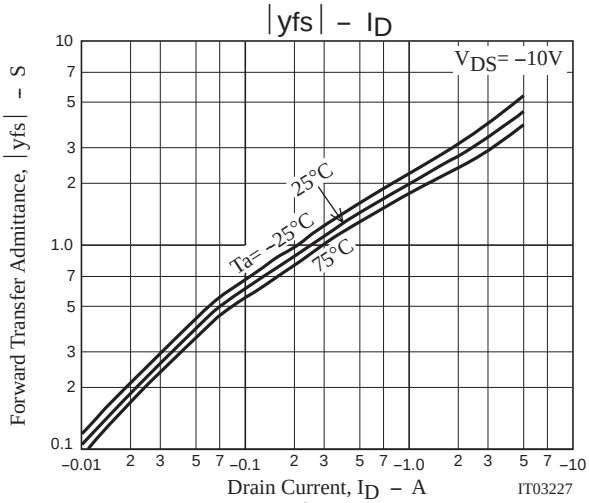


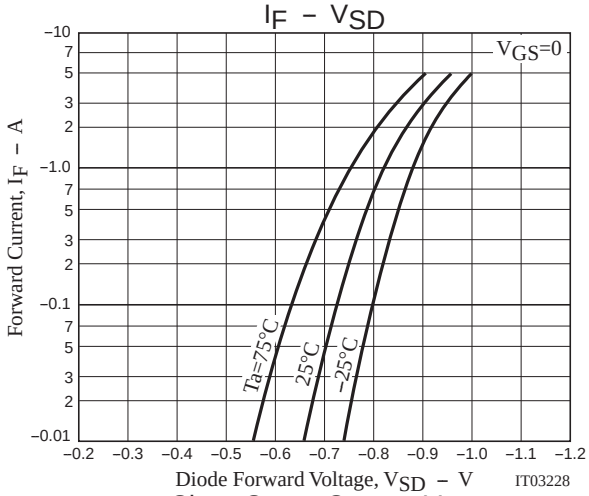


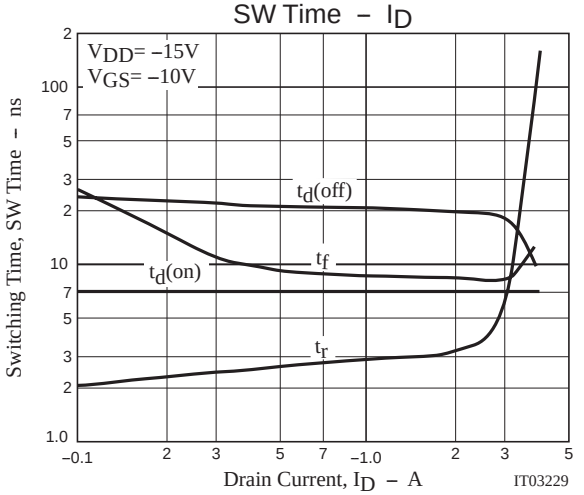


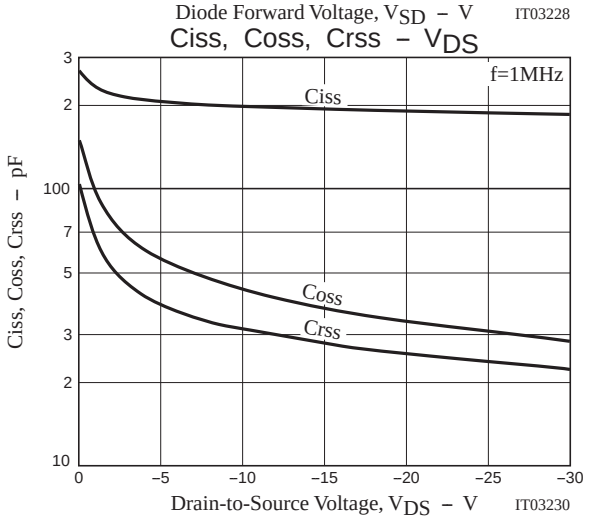


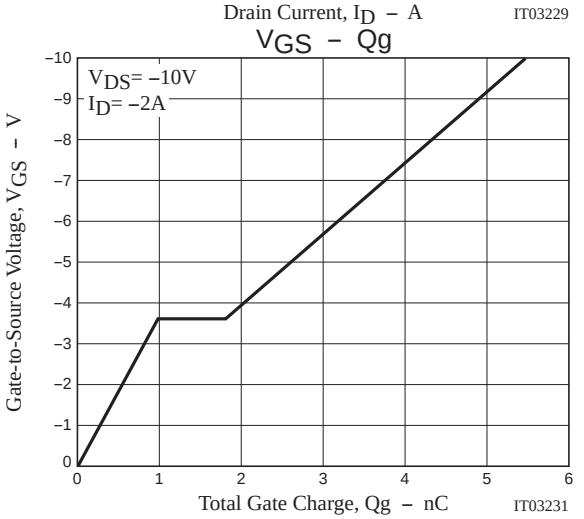


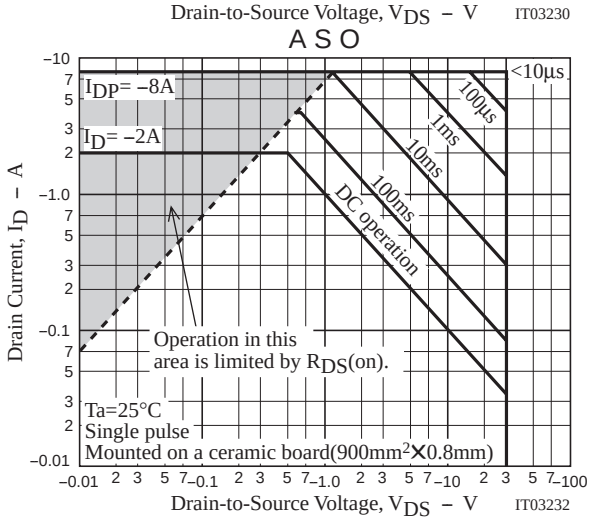

|yfs| – ID
VDS= –10V
25°C
Ta= –25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT03227

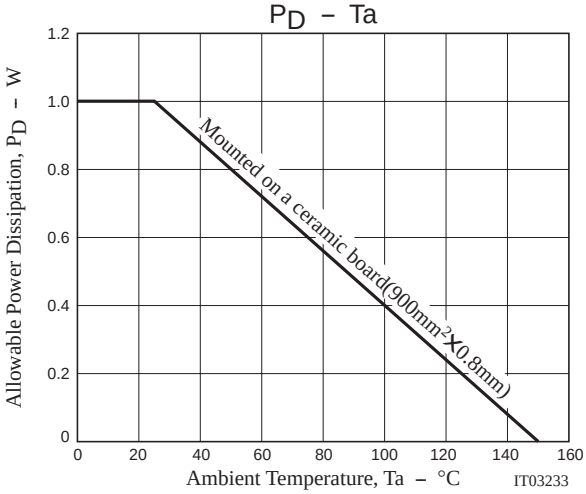

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT03228


SW Time – ID
VDD= –15V
VGS= –10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT03229


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT03230


VGS – Qg
VDS= –10V
ID= –2A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT03231


A S O
IDP= –8A
ID= –2A
<10µs
100µs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on).
Ta=25°C
Single pulse
Mounted on a ceramic board(900mm2×0.8mm)
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT03232


PD – Ta
Mounted on a ceramic board(900mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT03233