Ordering number : ENN8110

SANYO Semiconductors
DATA SHEET

N-Channel Silicon MOSFET

MCH3459 — General-Purpose Switching Device Applications

Features

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

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		1.8	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	7.2	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (900mm²×0.8mm)	0.8	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	0.78	1.3		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=1A, V_{GS}=10V		150	195	mΩ
	R_{DS}(on)2	I_D=0.5A, V_{GS}=4V		290	410	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		95		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		22		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		16		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		6.2		ns
Rise Time	t_r	See specified Test Circuit.		4.5		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		13		ns
Fall Time	t_f	See specified Test Circuit.		6.4		ns

Marking : LL

Continued on next page.

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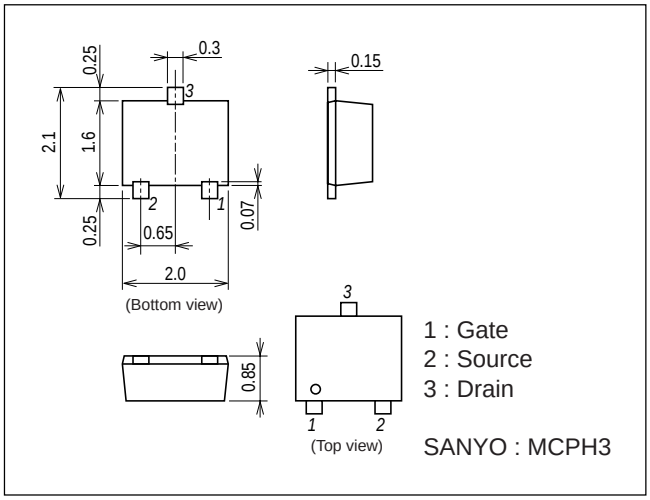
Continued from preceding page.

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		3.2		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		0.74		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		0.42		nC
Diode Forward Voltage	V_{SD}	I_S=1.8A, V_{GS}=0		0.93	1.2	V

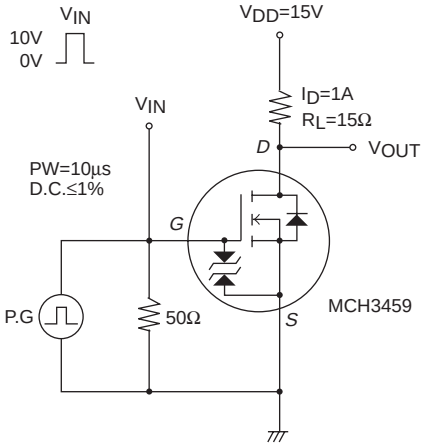
Package Dimensions

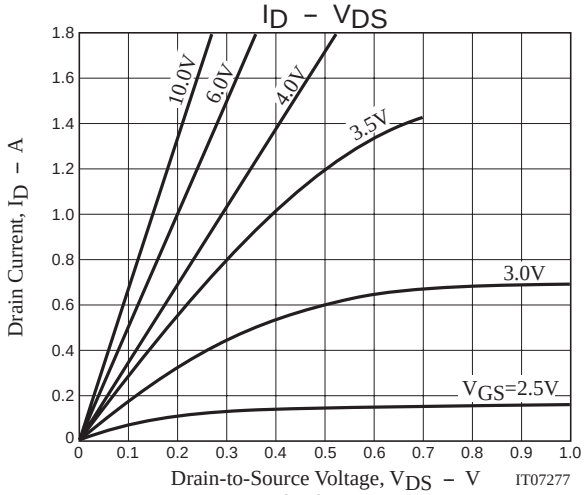
unit : mm

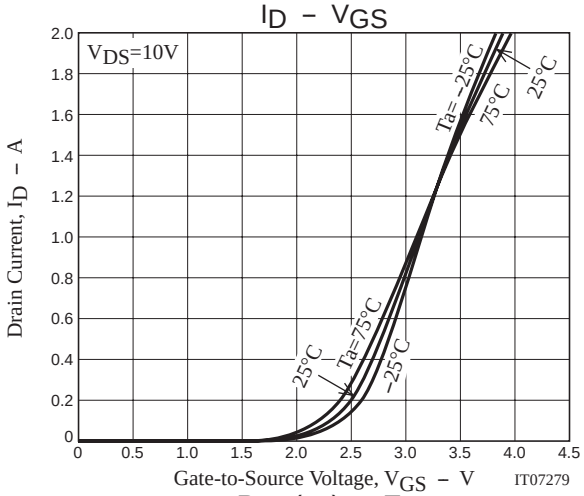
2167A

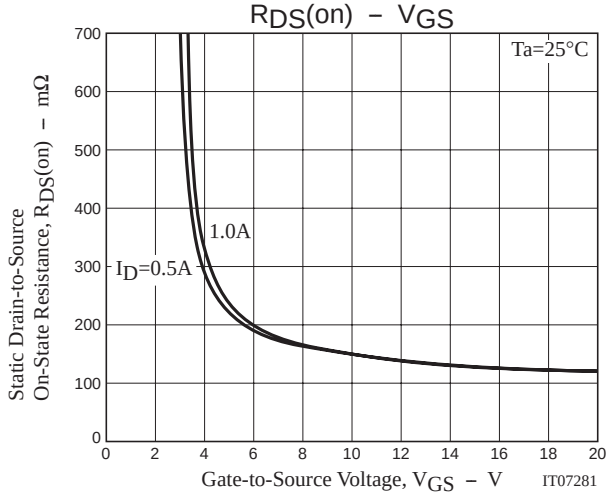


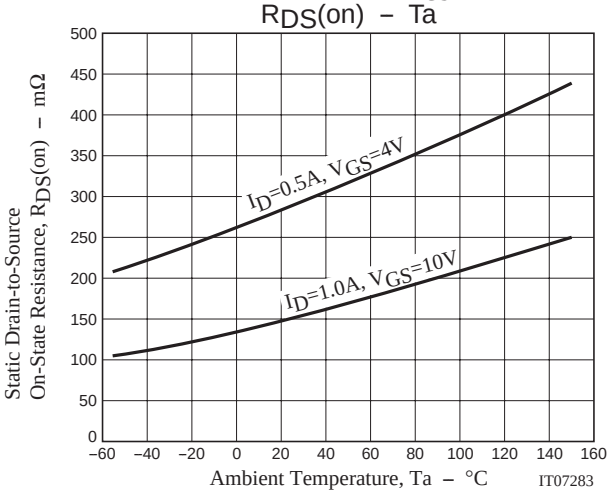
Switching Time Test Circuit

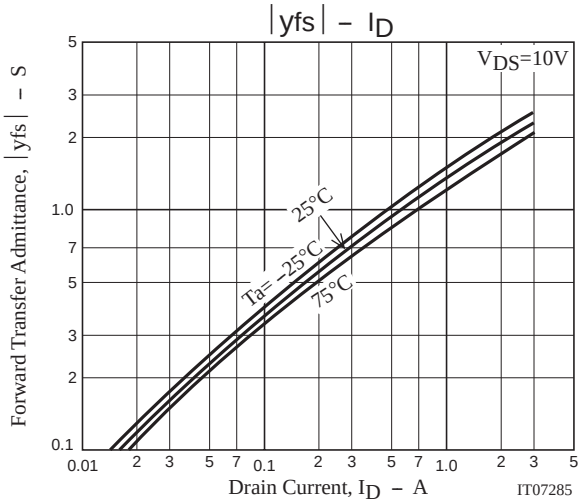


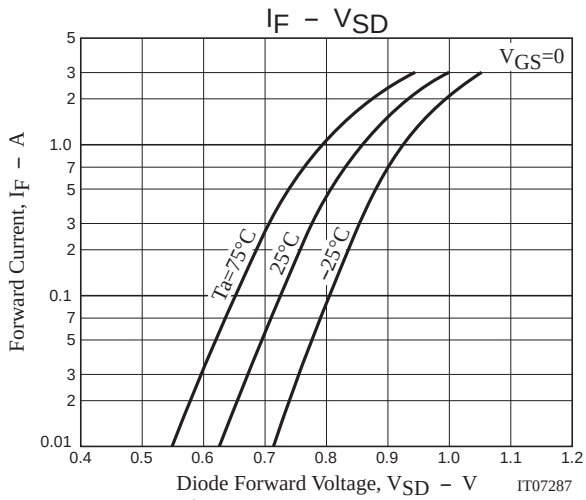


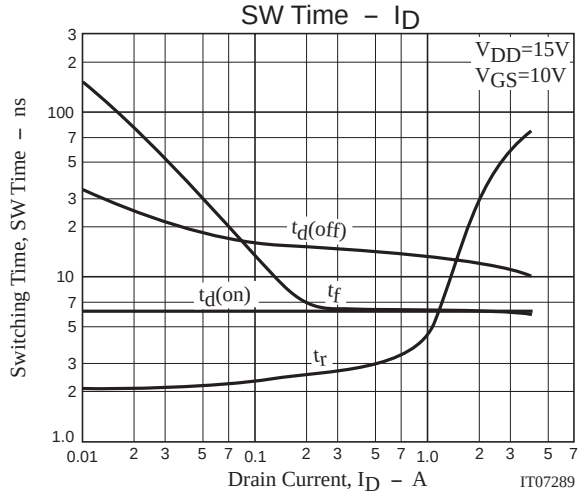


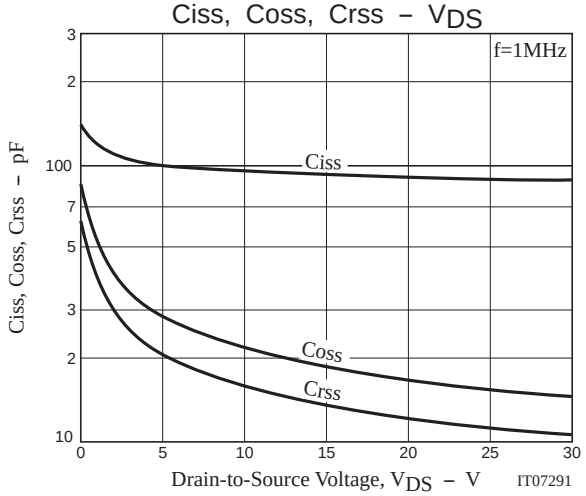


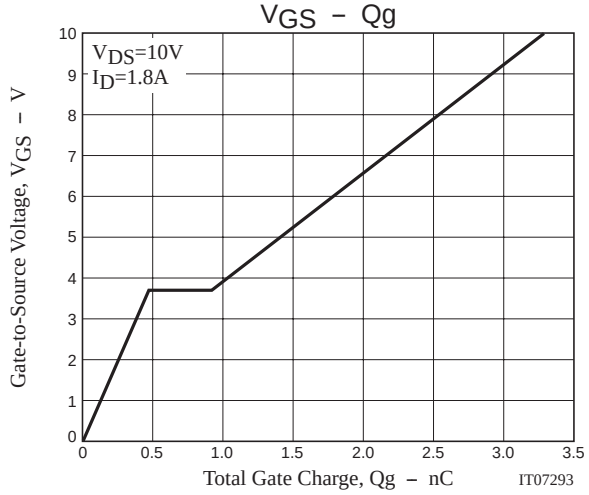


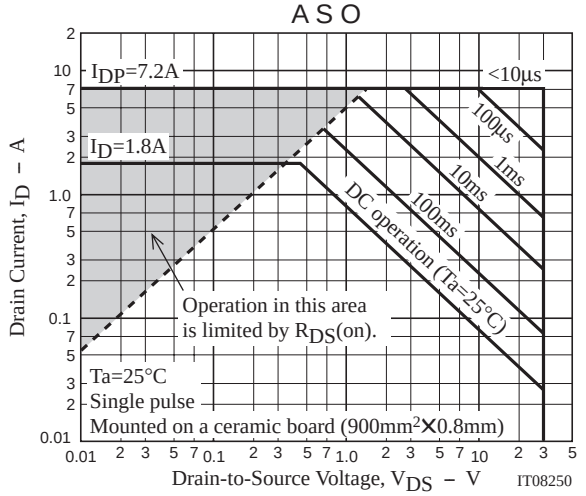

|yfs| – ID
VDS=10V
25°C
Ta=–25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT07285

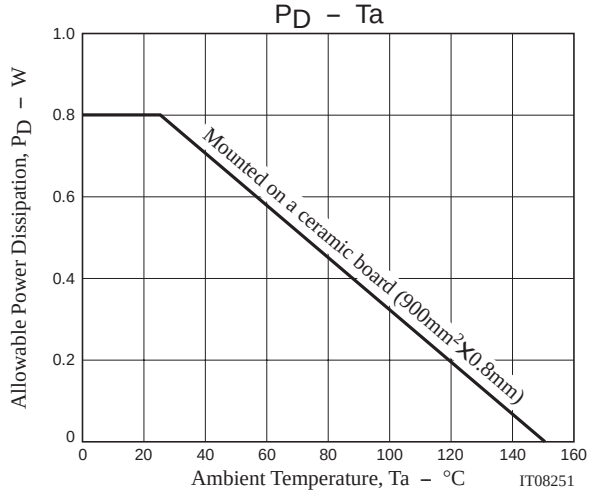

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Forward Current, IF – A
Diode Forward Voltage, VSD – V
IT07287


SW Time – ID
VDD=15V
VGS=10V
td(off)
td(on)
tf
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT07289


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT07291


VGS – Qg
VDS=10V
ID=1.8A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT07293


A S O
IDP=7.2A
ID=1.8A
<10μs
100μs
1ms
10ms
100ms
DC operation (Ta=25°C)
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
IT08250


PD – Ta
Mounted on a ceramic board (900mm²×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT08251

Note on usage : Since the MCH3459 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.