Ordering number : ENA1000

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

MCH3475 — General-Purpose Switching Device Applications

Features

- 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}=0V	30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=30V, V_{GS}=0V			1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±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=0.9A	0.66	1.1		S
Static Drain-to-Source On-State Resistance	$R_{DS}(on)1$	I_D=0.9A, V_{GS}=10V		135	180	mΩ
	$R_{DS}(on)2$	I_D=0.5A, V_{GS}=4V		230	330	mΩ
Input Capacitance	Ciss	V_{DS}=10V, f=1MHz		88		pF
Output Capacitance	Coss	V_{DS}=10V, f=1MHz		19		pF
Reverse Transfer Capacitance	Crss	V_{DS}=10V, f=1MHz		11		pF

Marking : FG

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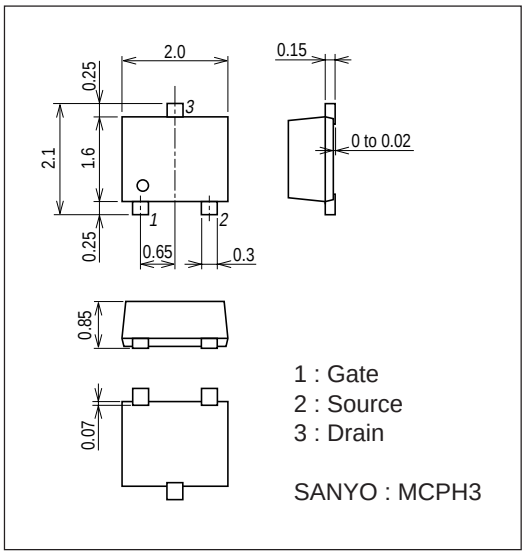
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		3.4		ns
Rise Time	t_r	See specified Test Circuit.		3.6		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		10.5		ns
Fall Time	t_f	See specified Test Circuit.		4.0		ns
Total Gate Charge	Qg	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		2.0		nC
Gate-to-Source Charge	Qgs	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		0.33		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=10V, V_{GS}=10V, I_D=1.8A		0.29		nC
Diode Forward Voltage	V_{SD}	I_S=1.8A, V_{GS}=0V		0.86	1.2	V

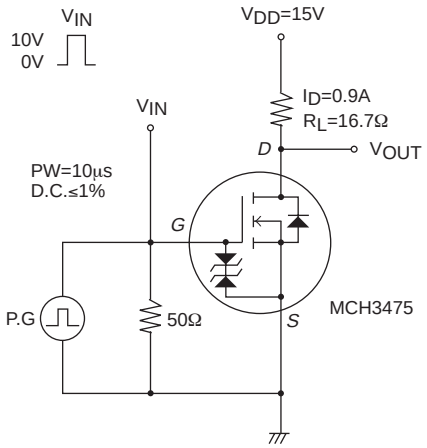
Package Dimensions

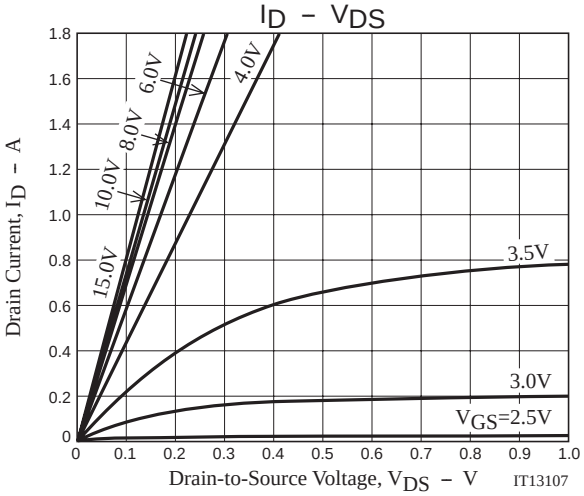
unit : mm (typ)

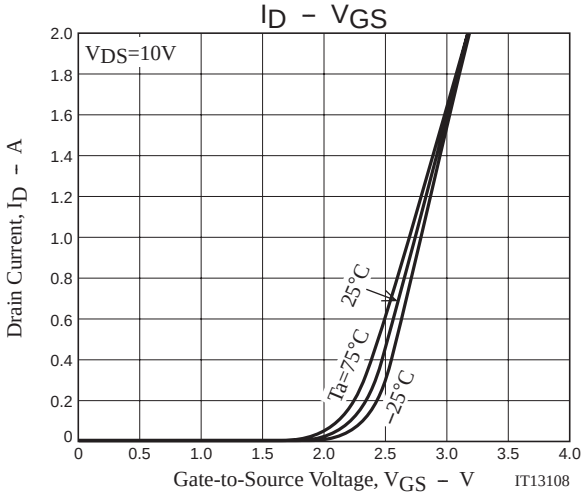
7019A-003

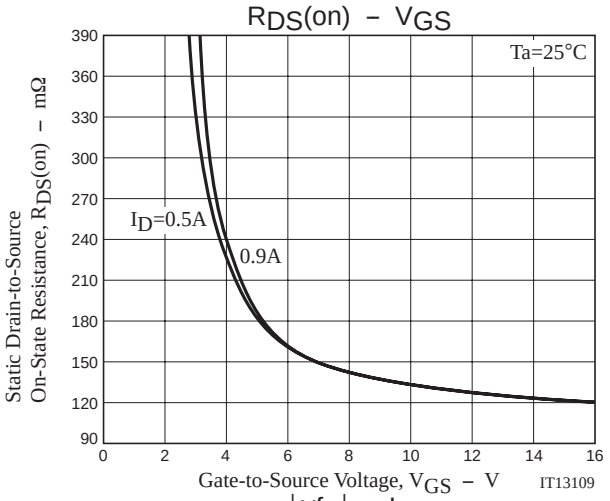


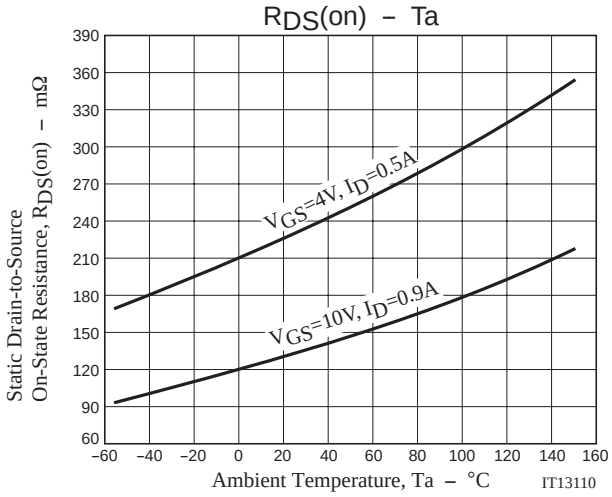
Switching Time Test Circuit

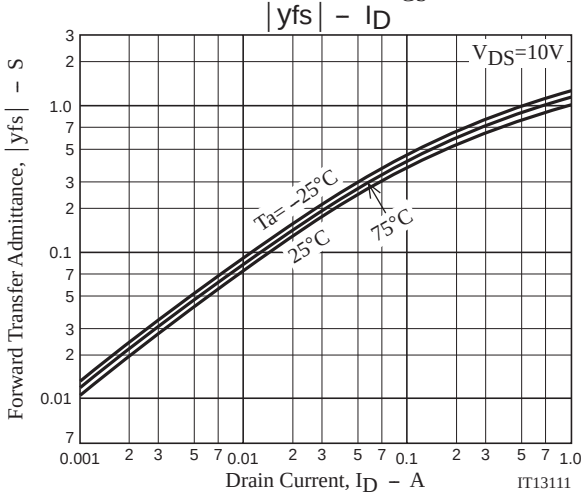


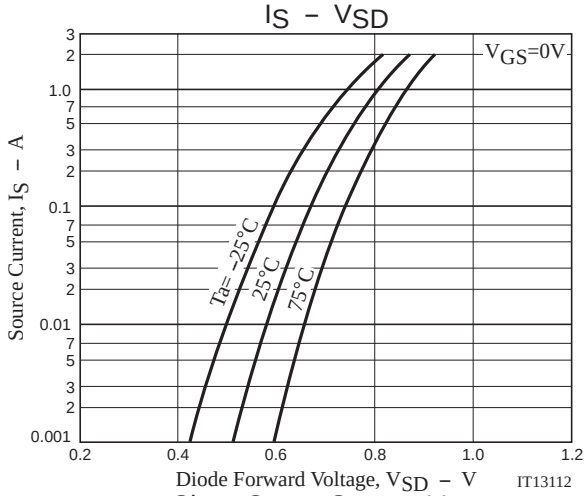


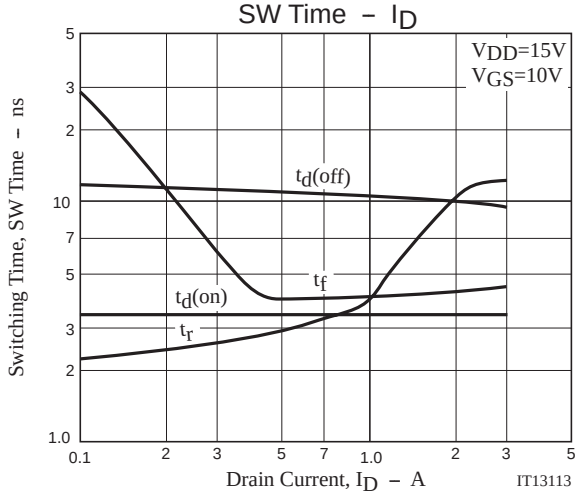


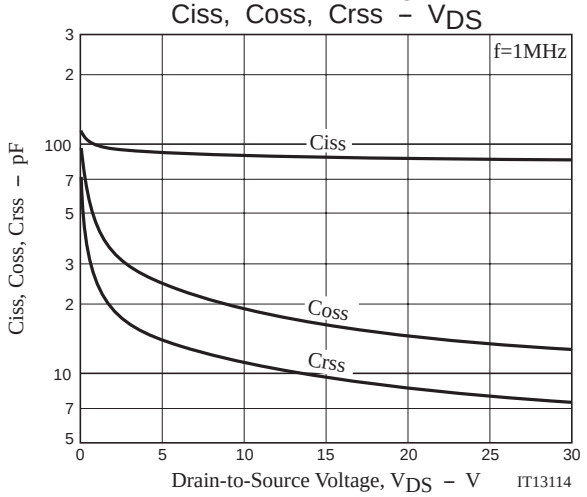

RDS(on) – VGS
Ta=25°C
ID=0.5A
0.9A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT13109

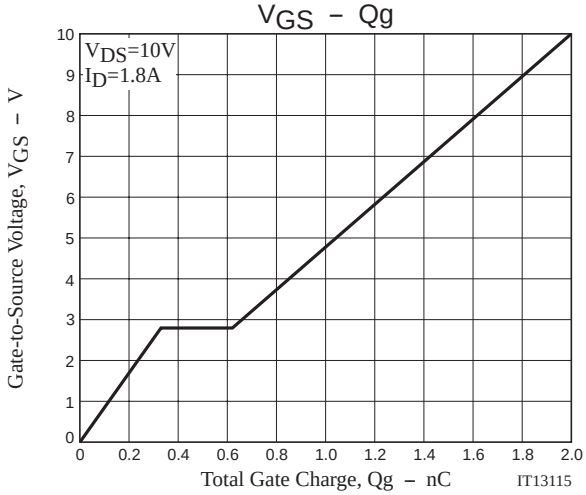

RDS(on) – Ta
VGS=4V, ID=0.5A
VGS=10V, ID=0.9A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Ambient Temperature, Ta – °C
IT13110

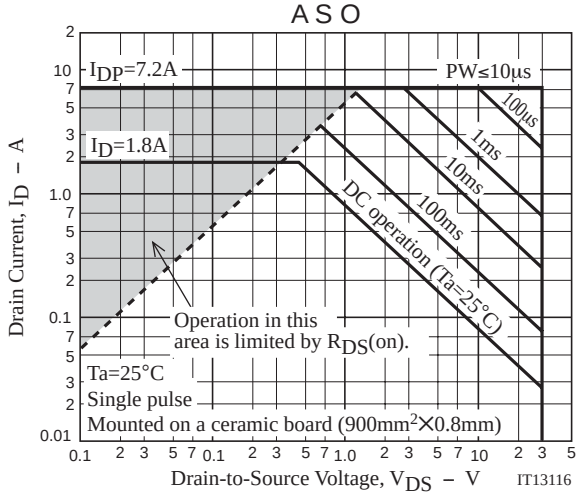

|yfs| – ID
VDS=10V
Ta= –25°C
25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT13111

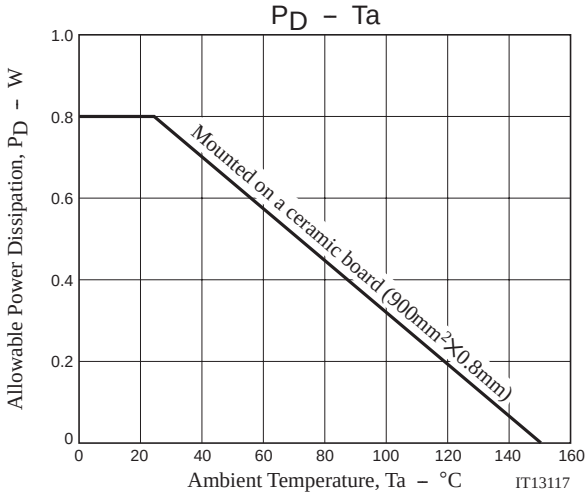

IS – VSD
VGS=0V
Ta= –25°C
25°C
75°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT13112


SW Time – ID
VDD=15V
VGS=10V
td(off)
tf
td(on)
tr
Switching Time, SW Time – ns
Drain Current, ID – A
IT13113


Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT13114


VGS – Qg
VDS=10V
ID=1.8A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT13115


A S O
IDP=7.2A
PW≤10μs
ID=1.8A
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
IT13116



Note on usage : Since the MCH3475 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

This catalog provides information as of December, 2007. Specifications and information herein are subject to change without notice.