



# SANYO Semiconductors

## DATA SHEET

# 3HN04MH — N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- 4V drive.

### Specifications

#### Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V <sub>DSS</sub>		30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		300	mA
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	1.2	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)	0.6	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =1mA, V <sub>GS</sub> =0V	30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>D</sub> =30V, V <sub>GS</sub> =0V			1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±16V, V <sub>D</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>D</sub> =10V, I <sub>D</sub> =100μA	1.2		2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>D</sub> =10V, I <sub>D</sub> =150mA	170	290		mS
Static Drain-to-Source On-State Resistance	R <sub>D(on)1</sub>	I <sub>D</sub> =150mA, V <sub>GS</sub> =10V		660	900	mΩ
	R <sub>D(on)2</sub>	I <sub>D</sub> =80mA, V <sub>GS</sub> =4V		1.5	2.2	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>D</sub> =10V, f=1MHz		22		pF
Output Capacitance	C <sub>oss</sub>	V <sub>D</sub> =10V, f=1MHz		7.5		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>D</sub> =10V, f=1MHz		3.6		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		14		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		17.5		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		65		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		41		ns

Marking : LZ

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3HN04MH

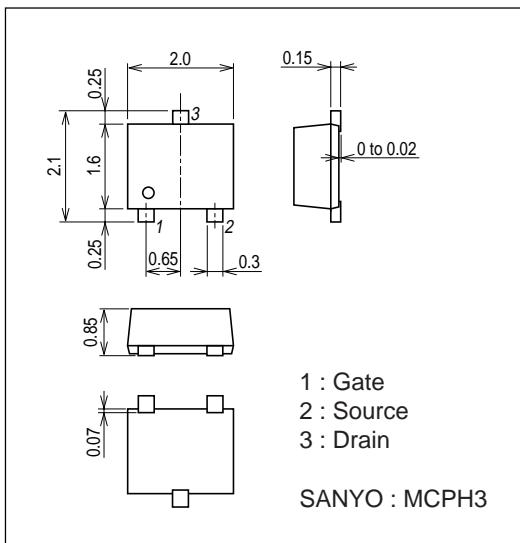
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=300mA$		1.68		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=300mA$		0.54		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=300mA$		0.12		nC
Diode Forward Voltage	$V_{SD}$	$I_S=300mA, V_{GS}=0V$		0.86	1.2	V

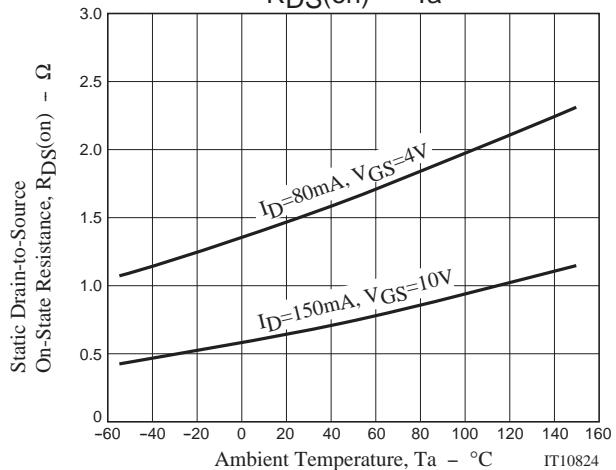
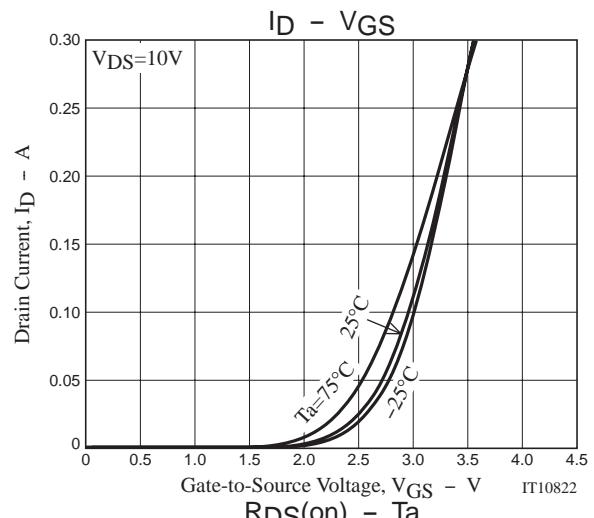
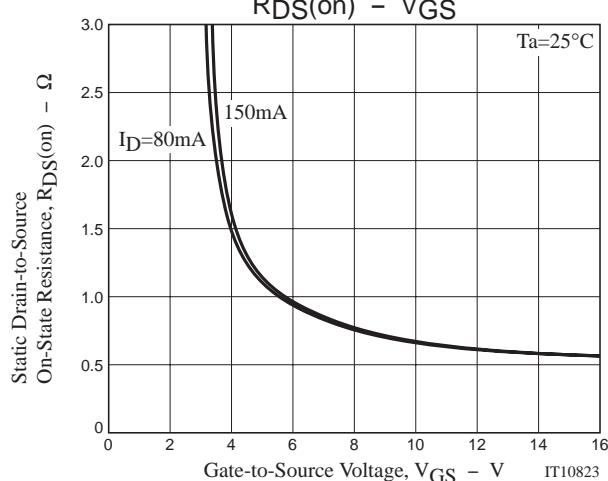
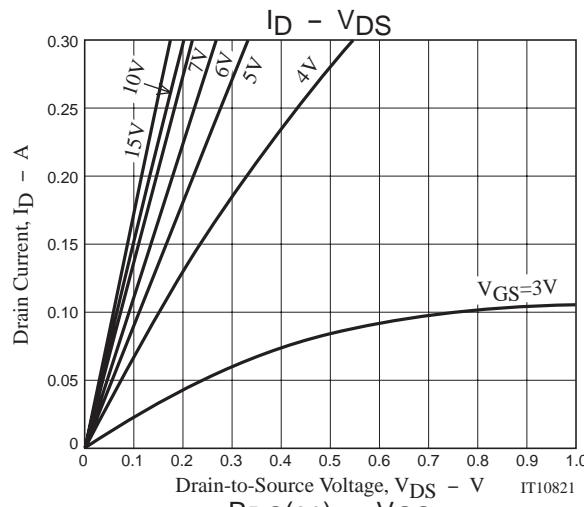
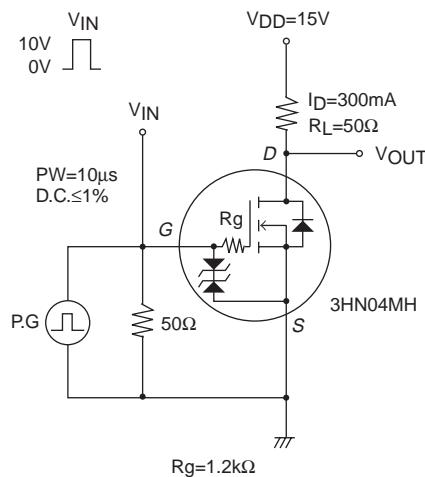
## Package Dimensions

unit : mm

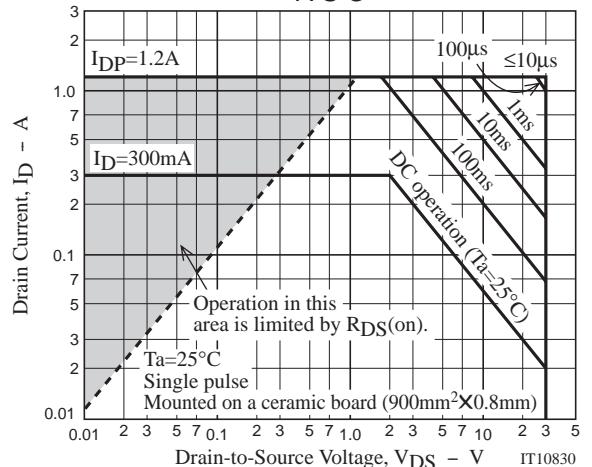
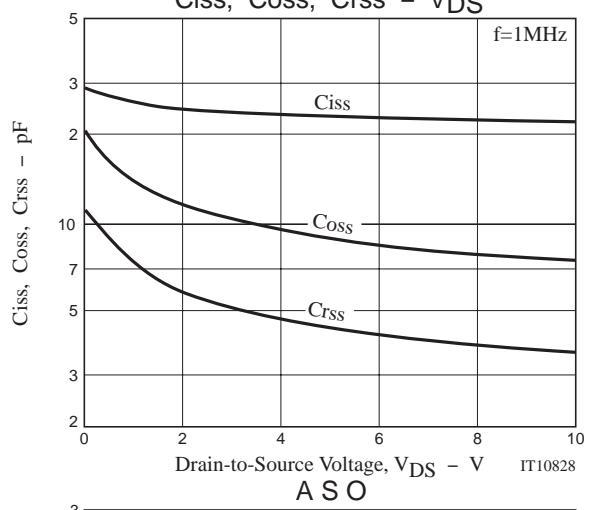
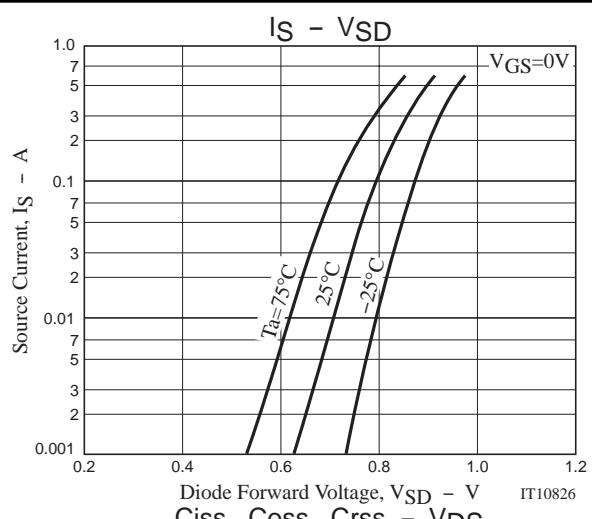
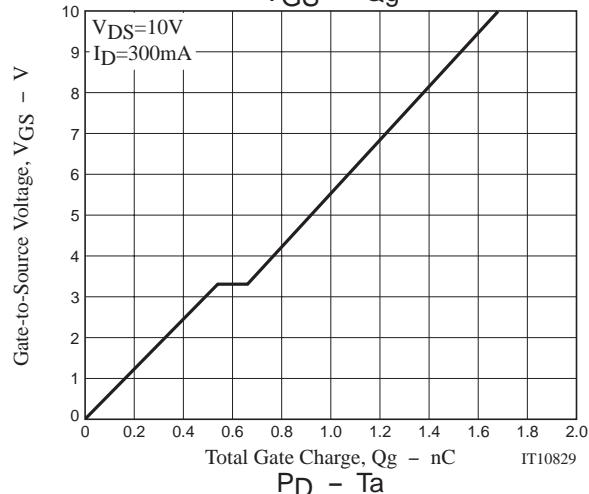
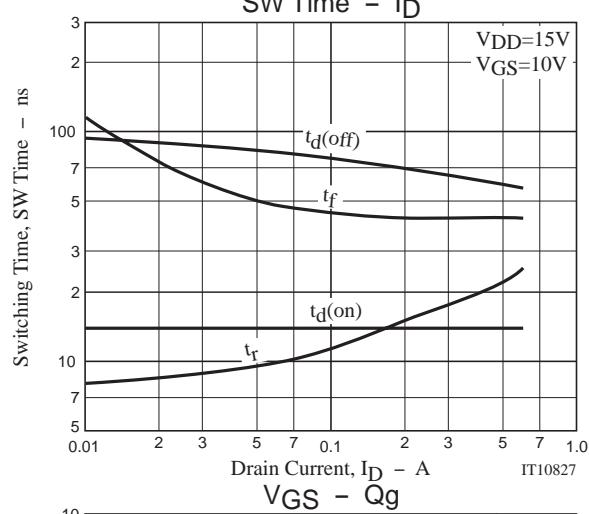
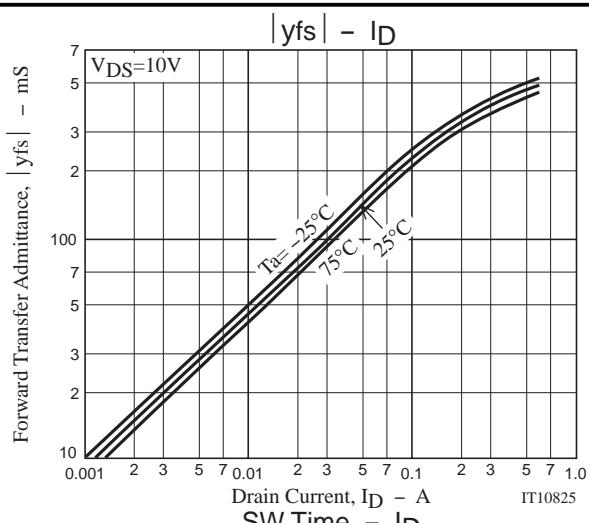
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## Switching Time Test Circuit



# 3HN04MH



## 3HN04MH

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Note on usage : Since the 3HN04MH is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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