



# 3HP04MH — P-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>		-200	mA
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-800	mA
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(BR)DSS	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V	-30			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</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>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-100μA	-1.2		-2.6	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-100mA	150	250		mS
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-100mA, V <sub>GS</sub> =-10V		1.4	1.9	Ω
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-50mA, V <sub>GS</sub> =-4V		2.8	4.0	Ω
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, f=1MHz		22		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-10V, f=1MHz		6.0		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =-10V, f=1MHz		3.5		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		34		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		59		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		435		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		250		ns

Marking : WZ

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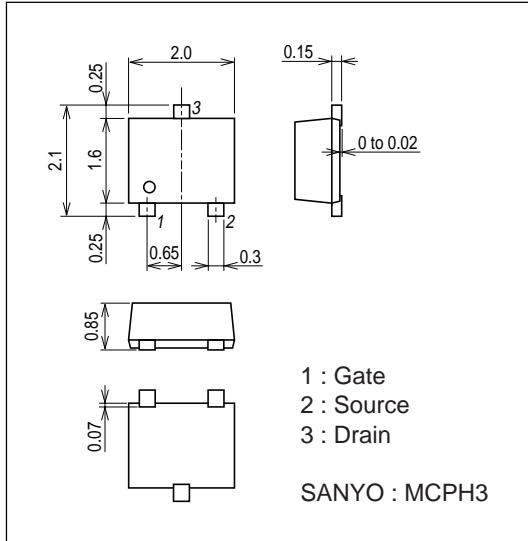
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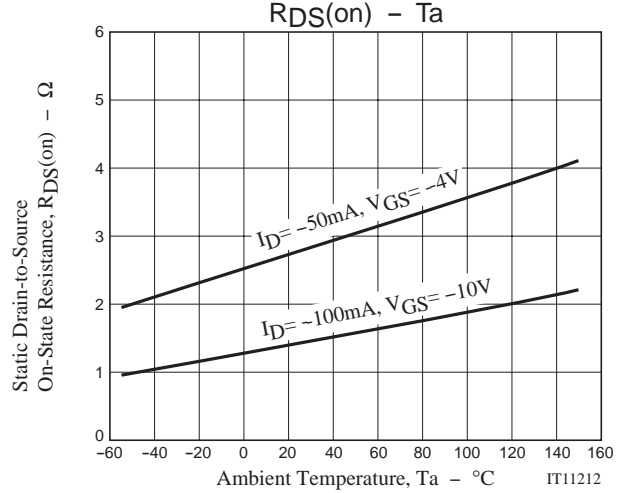
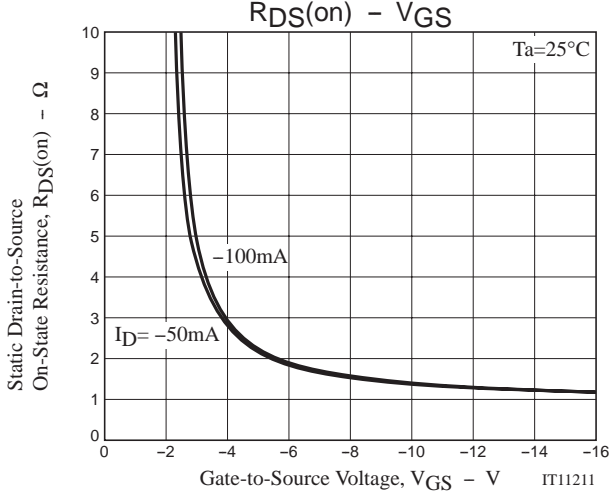
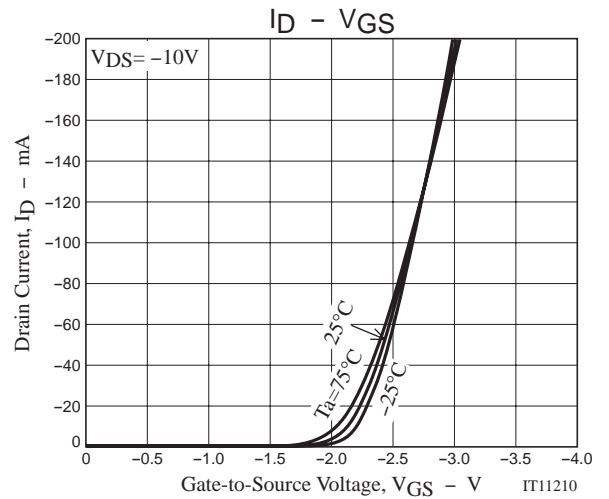
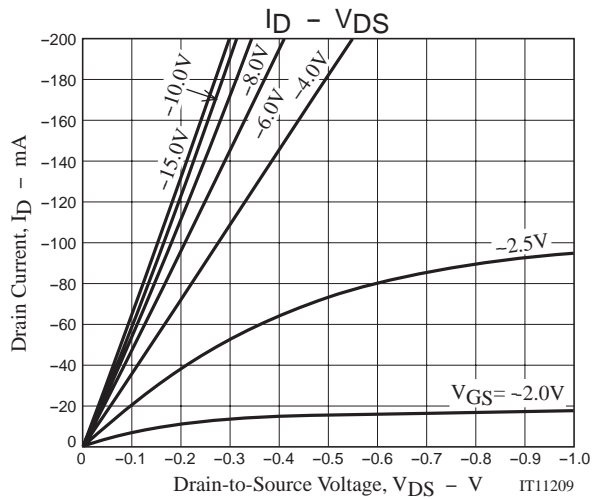
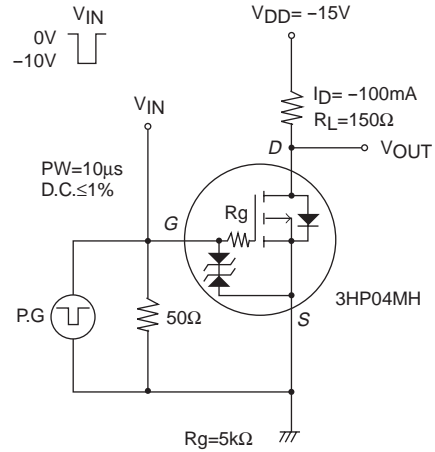
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-10V, I_D=-200mA$		1.6		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-10V, I_D=-200mA$		0.5		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-10V, I_D=-200mA$		0.1		nC
Diode Forward Voltage	VSD	$I_S=-200mA, V_{GS}=0V$		-0.86	-1.2	V

## Package Dimensions

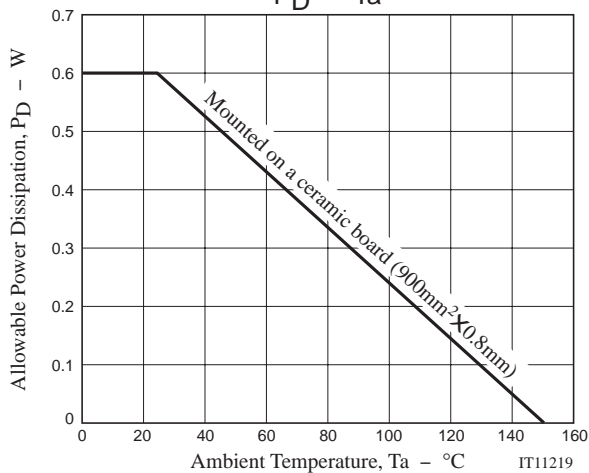
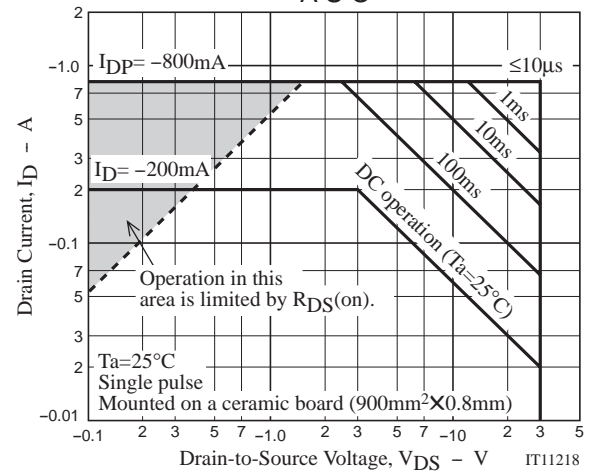
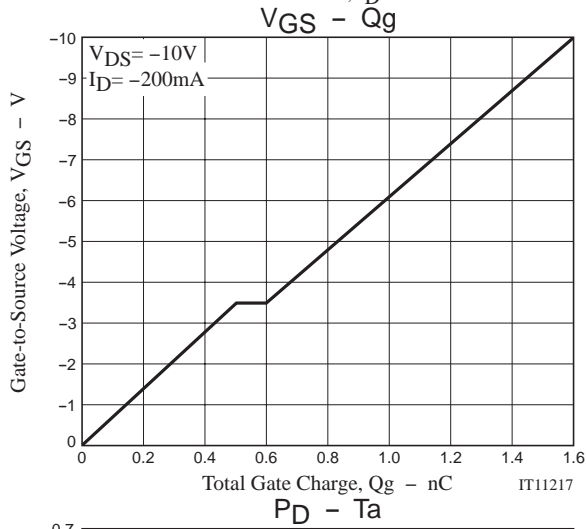
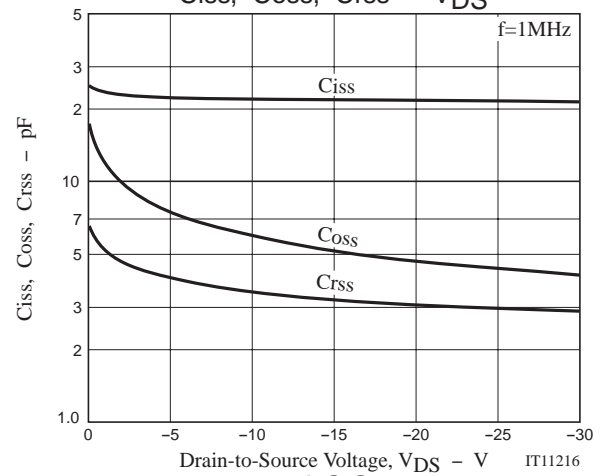
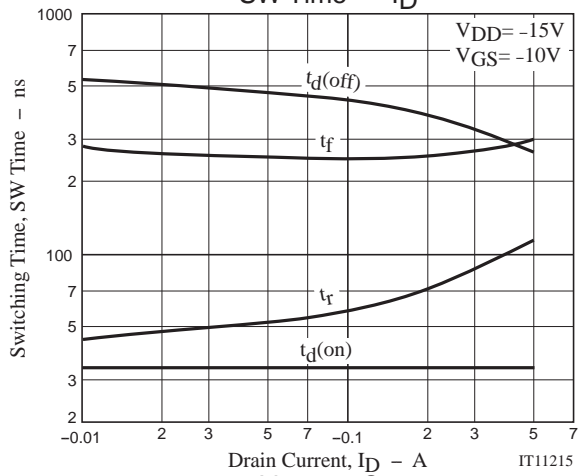
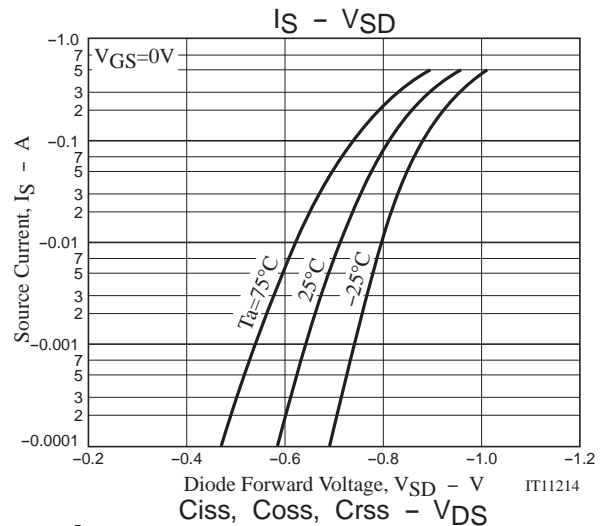
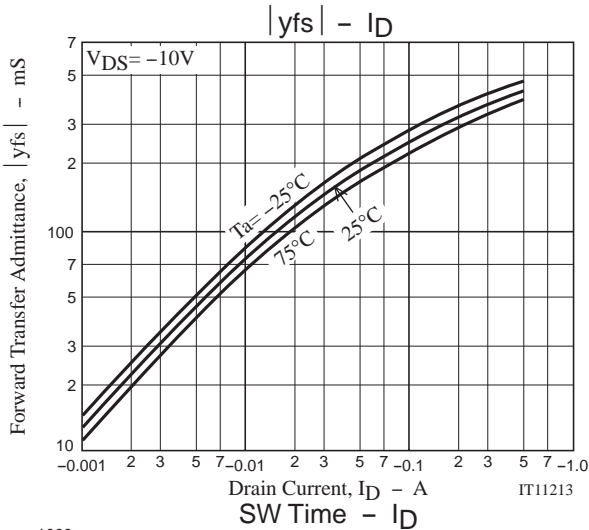
unit : mm  
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## Switching Time Test Circuit



# 3HP04MH



Note on usage : Since the 3HP04MH is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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