



SANYO Semiconductors

## DATA SHEET

# 4AM04MH5

ExPD (Excellent Power Device)

## Inverter with Open Drain Output (Low-side Switch)

### Features

- Low-side switch.  
(Buffer input)
- Enable to 25 voltage operation.
- Low power-loss.
- Open drain output.

### Truth Table

IN	OUT
L	Z
H	L

H : High level voltage

L : Low level voltage

Z : High impedance

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
DC Supply Voltage	V <sub>DD</sub>		-0.3 to +25	V
Input Voltage	V <sub>IN</sub>		-0.3 to V <sub>DD</sub> +0.3	V
Output Voltage	V <sub>OUT</sub>		-0.3 to +25	V
Input Current	I <sub>IN</sub>		±10	mA
Output Current	I <sub>OUT</sub>		75	mA
Allowable Power Dissipation	PD	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm)	0.8	W
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

#### Recommended Operating Conditions at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
DC Supply Voltage	V <sub>DD</sub>		3 to +25	V
Input Voltage	V <sub>IN</sub>		0 to V <sub>DD</sub>	V
Output Voltage	V <sub>OUT</sub>		0 to +25	V
Input Rise And Fall Time	Δt / Δv	V <sub>DD</sub> <5V	≤100	ns / V
		V <sub>DD</sub> ≥5V	≤20	ns / V
Operating Temperature	Topr		-40 to +85	°C

Marking : XK

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## DC Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
High-level Input Voltage	V <sub>IH</sub>	V <sub>DD</sub> =5V	3.5			V
		V <sub>DD</sub> =10V	7.0			V
		V <sub>DD</sub> =15V	11.0			V
		V <sub>DD</sub> =25V	18.0			V
Low-level Input Voltage	V <sub>IL</sub>	V <sub>DD</sub> =5V			1.5	V
		V <sub>DD</sub> =10V			3.0	V
		V <sub>DD</sub> =15V			4.0	V
		V <sub>DD</sub> =25V			7.0	V
Input Leakage Current	I <sub>IN</sub>	V <sub>DD</sub> =25V, V <sub>IN</sub> =25V			0.1	μA
		V <sub>DD</sub> =25V, V <sub>IN</sub> =0			0.1	μA
Low-level Output Voltage	V <sub>OL</sub>	V <sub>DD</sub> =5V, I <sub>O</sub> =1mA			0.5	V
		V <sub>DD</sub> =10V, I <sub>O</sub> =2.5mA			1.0	V
		V <sub>DD</sub> =15V, I <sub>O</sub> =5.0mA			1.5	V
		V <sub>DD</sub> =25V, I <sub>O</sub> =10mA			2.5	V
Supply Current	I <sub>DD</sub>	V <sub>DD</sub> =5V, V <sub>IN</sub> =V <sub>DD</sub> , GND			0.25	μA
		V <sub>DD</sub> =10V, V <sub>IN</sub> =V <sub>DD</sub> , GND			0.5	μA
		V <sub>DD</sub> =15V, V <sub>IN</sub> =V <sub>DD</sub> , GND			1.0	μA
		V <sub>DD</sub> =25V, V <sub>IN</sub> =V <sub>DD</sub> , GND			2.0	μA

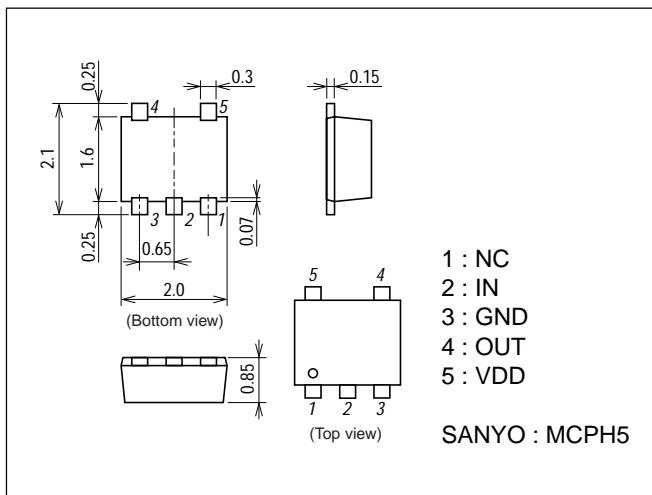
## AC Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Propagation Delay Time	t <sub>PZL</sub>	V <sub>DD</sub> =5V, R <sub>L</sub> =1.5kΩ		40		ns
		V <sub>DD</sub> =10V, R <sub>L</sub> =1kΩ		20		ns
		V <sub>DD</sub> =15V, R <sub>L</sub> =750Ω		15		ns
		V <sub>DD</sub> =25V, R <sub>L</sub> =500Ω		12		ns
	t <sub>PLZ</sub>	V <sub>DD</sub> =5V, R <sub>L</sub> =1.5kΩ		30		ns
		V <sub>DD</sub> =10V, R <sub>L</sub> =1kΩ		20		ns
		V <sub>DD</sub> =15V, R <sub>L</sub> =750Ω		15		ns
		V <sub>DD</sub> =25V, R <sub>L</sub> =500Ω		12		ns
Input Capacitance	C <sub>IN</sub>		8		pF	

## Package Dimensions

unit : mm

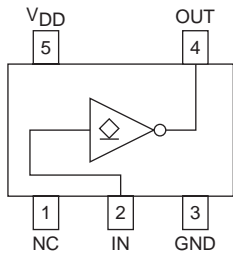
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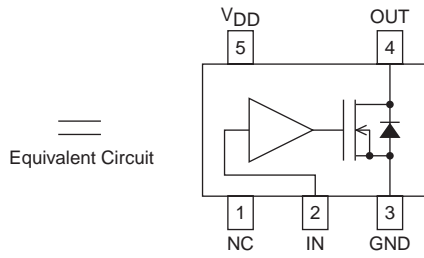
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## Block Diagram

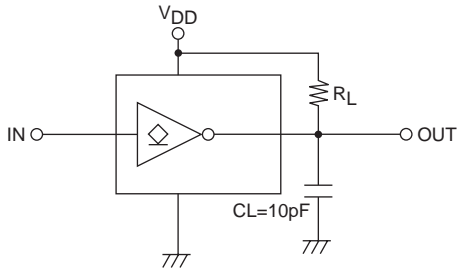
• Inverter (Open Drain)



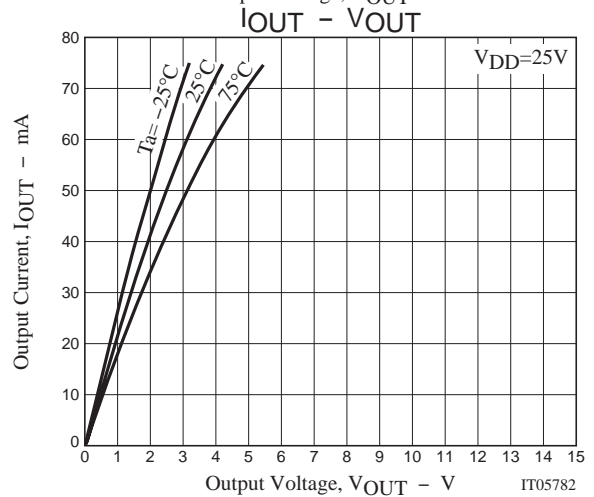
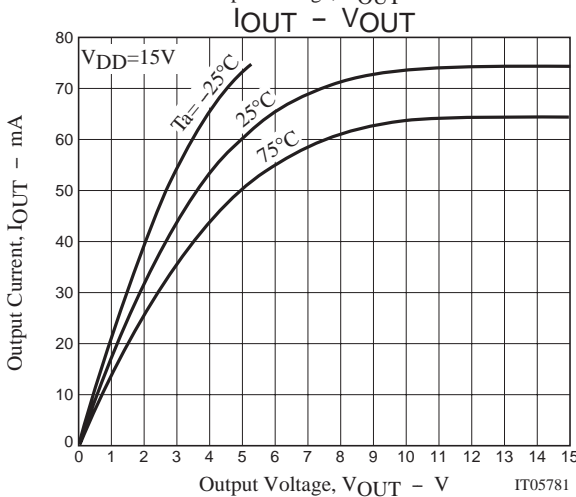
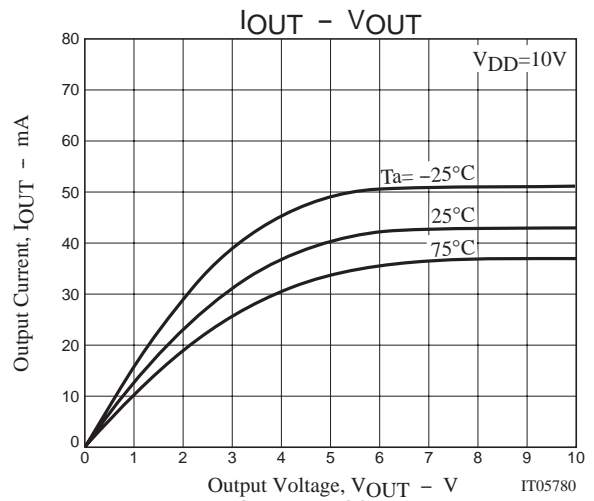
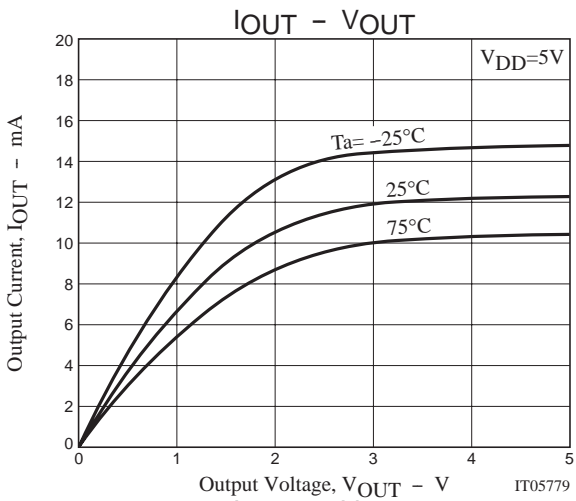
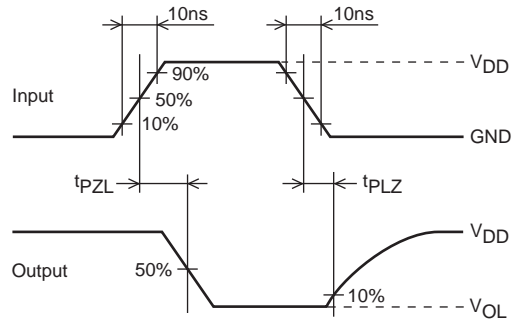
• Low-side Switch (Buffer input)



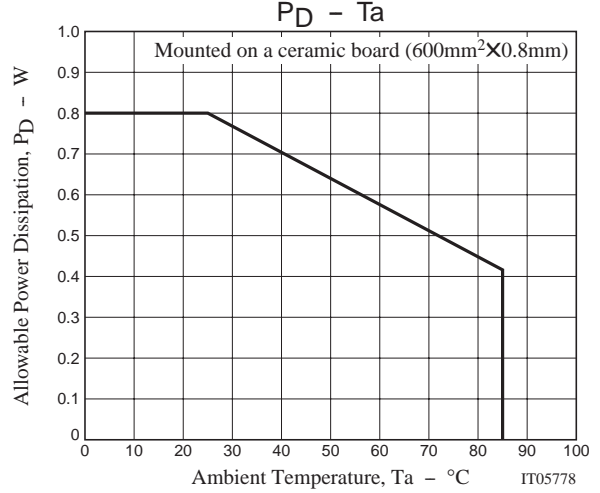
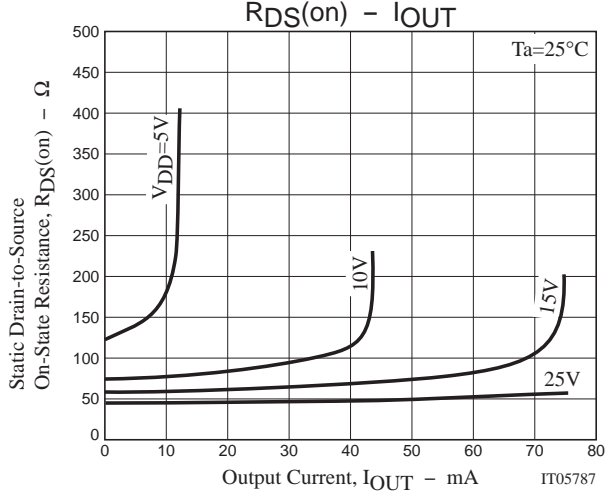
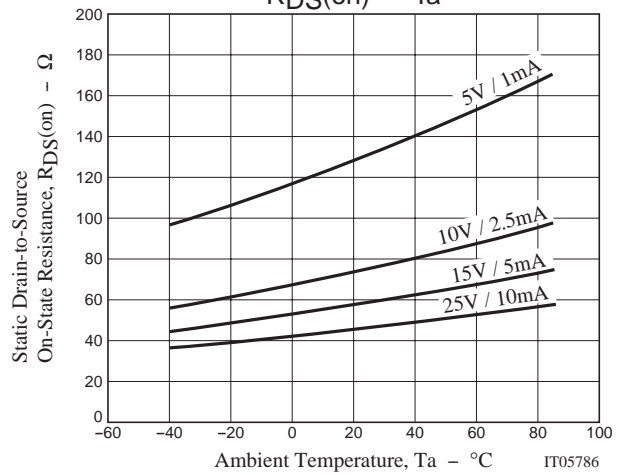
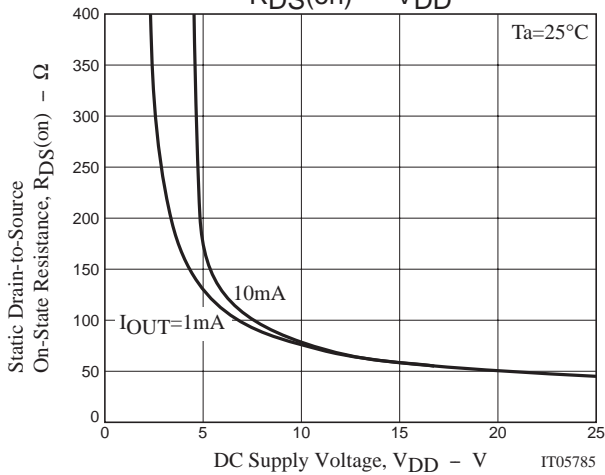
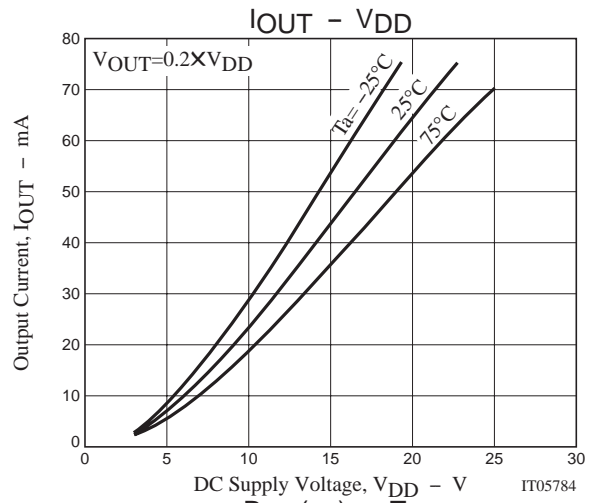
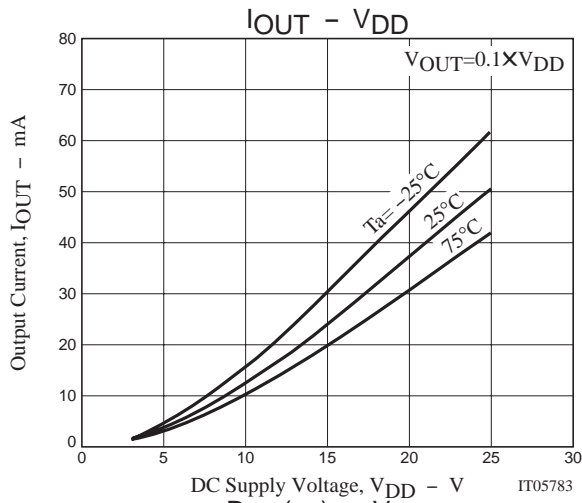
## Switching Time Test Circuit



## Switching Time Wave Form



# 4AM04MH5



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