

### Features

- Operation Voltage Range:4.5~5.5V
- Low Power Dissipation:ICC=1μA (Max.) @25°C
- ±8mA output drive at 5V
- Input compatible with TTL voltage
- ESD Protection Exceeds JESD 22
  - 2000-V Human-Body Model (A114-A)
  - 200-V Machine Model (A115-A)
  - 1000-V Charged-Device Model (C101)

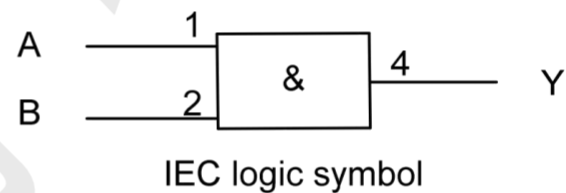
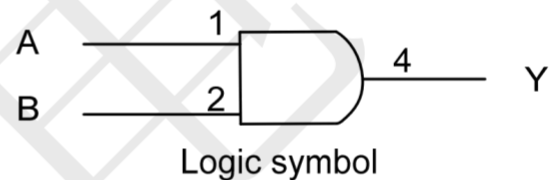
### General Description

The M74VHC1GT08 is a 2-input AND gate which provides the 3-Function  $Y=A \times B$

### Applications

- Motor control: Communication induction
- Graphics card
- Advanced Driver Assistance Systems (ADAS)
- Motor Drive&Control
- DLP positive projection system
- Server motherboard

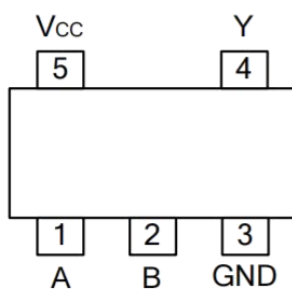
### Logic Diagram



### Ordering Information

ORDER NUMBER	PACKAGE DESCRIPTION	PACKAGE OPTION
M74VHC1GT08DTT1G-TP	SOT23-5	Tape and Reel,3000
M74VHC1GT08DFT2G-TP	SOT353	Tape and Reel,3000

### Pin Configuratio



SOT23-5 / SOT353

### Function Table

INPUT		OUTPUT
A	B	Y
L	L	L
L	H	L
H	L	L
H	H	H

### ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub>=25°C, unless otherwise specified) (Note 2)

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	-0.5 ~ 7	V
Input Voltage	V <sub>IN</sub>	-0.5 ~ 7	V
Output Voltage	V <sub>OUT</sub>	-0.5 ~ V <sub>CC</sub> +0.5	V
Input Clamp Current	I <sub>IK</sub>	-20	mA
Output Clamp Current	I <sub>OK</sub>	±20	mA
Output Current	I <sub>OUT</sub>	±25	mA
V <sub>CC</sub> or GND Current	I <sub>CC</sub>	±50	mA
Storage Temperature	T <sub>STG</sub>	-65 ~ +150	°C

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

2. The input and output voltage ratings may be exceeded if the input and output current ratings are observed.

### STATIC CHARACTERISTICS (Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
High-Level Input Voltage	V <sub>IH</sub>	V <sub>CC</sub> =4.5V~5.5V	2.0	--	--	V
Low-Level Input Voltage	V <sub>IL</sub>	V <sub>CC</sub> =4.5V~5.5V	--	--	0.8	V
High-Level Output Voltage	V <sub>OH</sub>	V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-50μA	4.4	4.5	--	V
		V <sub>CC</sub> =4.5V, I <sub>OH</sub> =-8mA	3.94	--	--	
Low-Level Output Voltage	V <sub>OL</sub>	V <sub>CC</sub> =4.5V, I <sub>OL</sub> =50μA	--	--	0.1	V
		V <sub>CC</sub> =4.5V, I <sub>OL</sub> =8mA	--	--	0.36	
Input Leakage Current	I <sub>I(LEAK)</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND	--	--	±0.1	μA
Quiescent Supply Current	I <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =V <sub>CC</sub> or GND I <sub>OUT</sub> =0	--	--	1	μA
Additional Quiescent Supply Current	ΔI <sub>Q</sub>	V <sub>CC</sub> =5.5V, V <sub>IN</sub> =3.4V; I <sub>OUT</sub> =0; other input at V <sub>CC</sub> or GND	--	--	1.35	mA
Input Capacitance	C <sub>IN</sub>	V <sub>IN</sub> =V <sub>CC</sub> or GND	--	4	10	pF

### DYNAMIC CHARACTERISTICS

(Input:  $t_R, t_F \leq 3\text{ns}$ ;  $\text{PRR} \leq 1\text{MHz}$ , Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Propagation delay from input (A or B) to output(Y)	$t_{PLH}$	$V_{CC}=5\pm 0.5\text{V}, C_L=15\text{pF}$	--	5	6.9	ns
	$t_{PHL}$		--	5	6.9	
	$t_{PLH}$	$V_{CC}=5\pm 0.5\text{V}, C_L=50\text{pF}$	--	5.5	7.9	
	$t_{PHL}$		--	5.5	7.9	

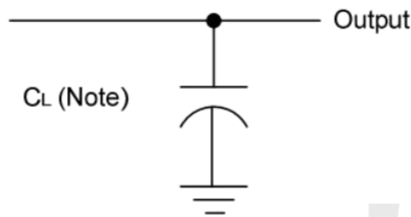
### OPERATING CHARACTERISTICS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Power Dissipation Capacitance	$C_{PD}$	$V_{CC}=5\text{V}, f=1\text{MHz}$ , No load	--	18	--	pF

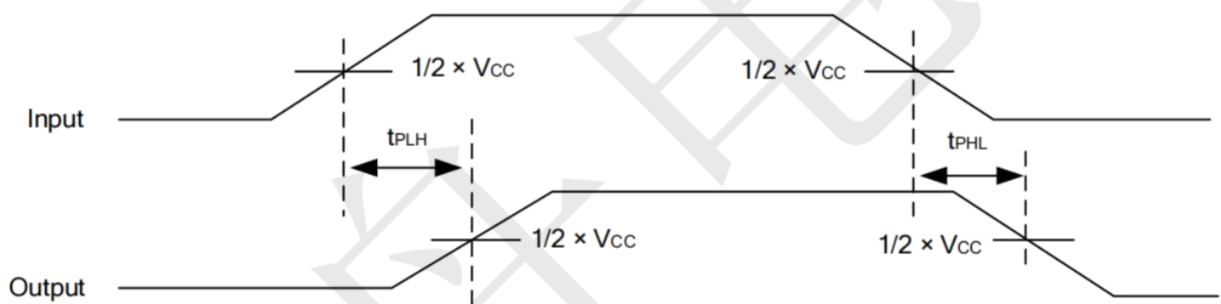
### RECOMMENDED OPERATING CONDITIONS

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$		4.5	--	5.5	V
Input Voltage	$V_{IN}$		0	--	5.5	V
Output Voltage	$V_{OUT}$		0	--	$V_{CC}$	V
Input Transition Rise or Fall Rate	$\Delta t/\Delta v$	$V_{CC}=5.0\pm 0.5\text{V}$	--	--	20	ns/V
Operating Temperature	$T_A$		-40	--	+125	$^\circ\text{C}$

**TEST CIRCUIT AND WAVEFORMS**

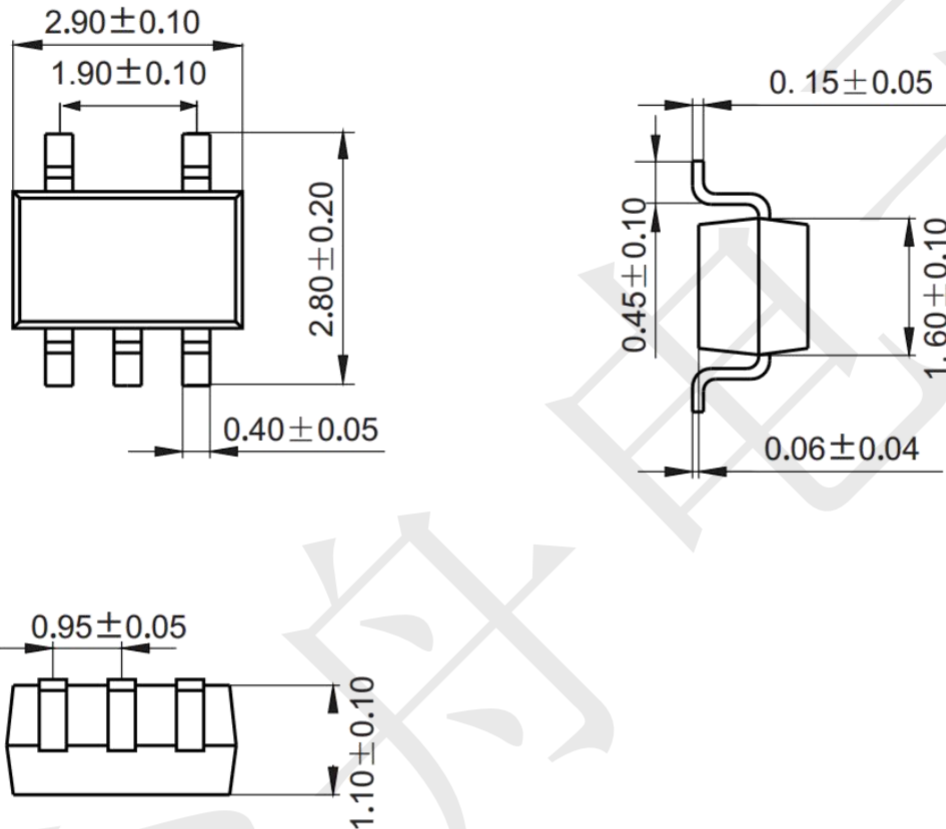


Note: CL includes probe and jig capacitance.

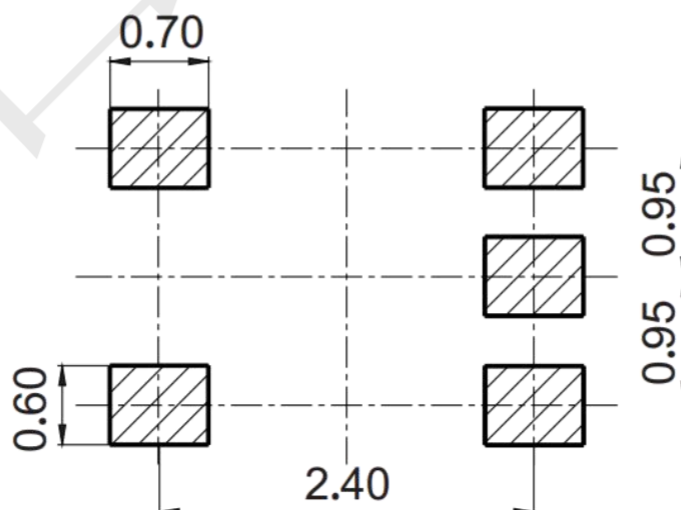


**Package information (Unit: mm)**

SOT23-5

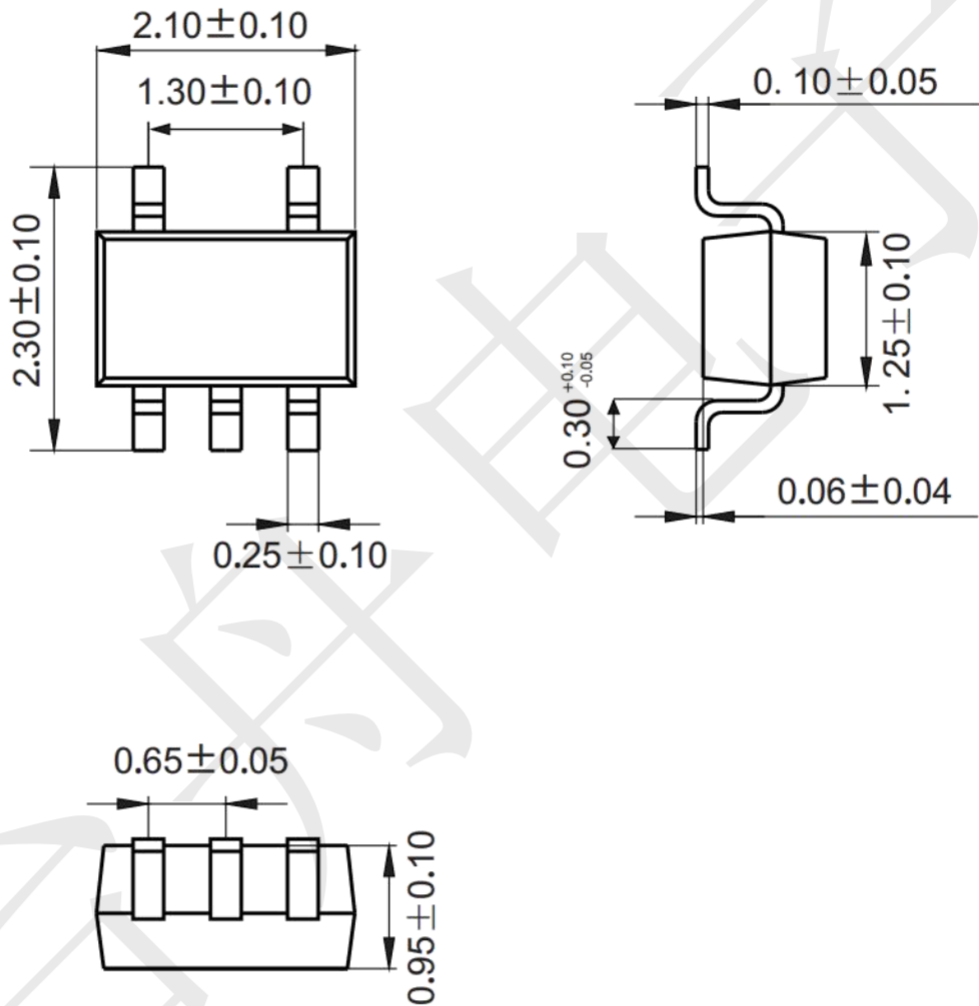


**Mounting Pad Layout (Unit: mm)**



### Package information

SOT353 (Unit: mm)



### Mounting Pad Layout (unit: mm)

