

# TA8316AS

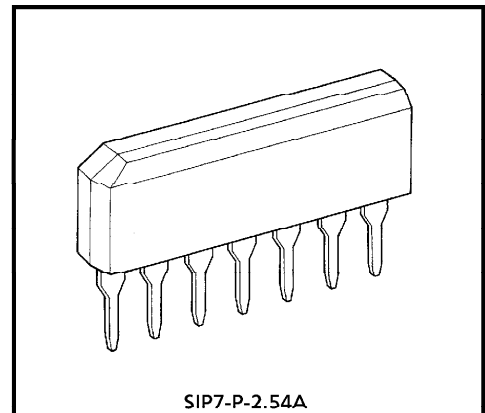
## IGBT GATE DRIVER

TA8316AS is a dedicated IC integrating IGBT gate drive circuits on a single chip.

A high current directly drives IGBT.

### FEATURES

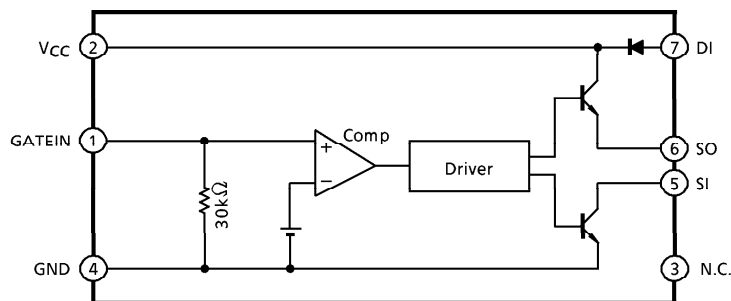
- Can directly control from a microcontroller
- Can directly drive the IGBT gate using a high current.  
Source current : -200mA (max), sink current 1A (max)
- Incorporates a diode to protect the IGBT gate at power on.



SIP7-P-2.54A

Weight : 0.72g (Typ.)

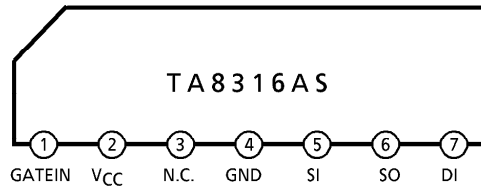
### BLOCK DIAGRAM



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**PIN CONNECTION**



**PIN FUNCTIONS**

PIN No.	PIN NAME	FUNCTION
1	GATEIN	Gate Signal Input Pin
2	VCC	System Power Supply
3	N.C.	Not Connected
4	GND	GND
5	SI	IGBT Gate Drive Pin 1 (Sink Side)
6	SO	IGBT Gate Drive Pin 2 (Source Side)
7	DI	IGBT Gate Protector Diode Pin

**MAXIMUM RATINGS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector Supply Voltage	VCC	25	V
Input Voltage	V <sub>in</sub>	GND - 0.3 ~ VCC + 0.3	V
Operating Temperature	T <sub>opr</sub>	- 20 ~ 85	°C
Storage Temperature	T <sub>stg</sub>	- 55 ~ 150	°C
Power Dissipation *	P <sub>D</sub>	925	mW

\* When Ta > 25°C, P<sub>D</sub> decreases 7.4mW per degree.

ELECTRICAL CHARACTERISTICS (Ta = 25°C, Unless otherwise specified, V<sub>CC</sub> = 20V)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Supply Voltage Block							
Operating Supply Voltage Range	V <sub>CC</sub>	—	—	7	—	24	V
Current Consumption 1	I <sub>CC1</sub>	—	V <sub>CC</sub> = 20V, GATEIN = "H", No Load	0.7	1.25	1.9	mA
Current Consumption 2	I <sub>CC2</sub>	—	V <sub>CC</sub> = 20V, GATEIN = "L", No Load	4.2	6.25	8.8	mA
(GATEIN Pin)							
Input Dynamic Range	V <sub>in</sub> GATEIN	—	—	0	—	V <sub>CC</sub> - 2.2	V
Threshold Voltage 1	V <sub>th</sub> GATE1	—	GATE Signal L→H	—	2.63	3	V
Threshold Voltage 2	V <sub>th</sub> GATE2	—	GATE Signal H→L	1.5	2.27	—	V
Input Current	I <sub>in</sub> GATE	—	V <sub>in</sub> = 5V	125	167	249	μA
Input Frequency (Reference)	f <sub>in</sub> GATE	—	When Load C = 5600pF, R = 10kΩ Connected	—	—	50	kHz
(SI Pin)							
"L" Level Output Voltage 1	V <sub>OL</sub> SI1	—	VGATEIN = 0V, I <sub>OL</sub> = 30mA	—	—	0.7	V
"L" Level Output Voltage 2	V <sub>OL</sub> SI2	—	VGATEIN = 0V, I <sub>OL</sub> = 1A	—	—	2	V
"L" Level Output Voltage 3	V <sub>OL</sub> SI3	—	V <sub>CC</sub> = 7V, VGATEIN = 0V, I <sub>OL</sub> = 30mA	—	—	1	V
"L" Level Output Voltage 4 (Output Voltage At Low Supply Voltage)	V <sub>OL</sub> SI4	—	2V ≤ V <sub>CC</sub> < 7V, VGATEIN = 0V, No Load	—	—	1	V
"L" Level Output Voltage 5 (Output Voltage At Low Supply Voltage)	V <sub>OL</sub> SI5	—	2V ≤ V <sub>CC</sub> < 7V, VGATEIN = 0V, I <sub>OL</sub> = 30mA	—	—	2	V
Off Leakage Current	I <sub>off</sub> SI	—	VGATEIN = 6V, V <sub>in</sub> = 20V	-1	—	1	μA
(SO Pin)							
"H" Level Output Voltage 1	V <sub>OH</sub> SO1	—	VGATEIN = 6V, I <sub>OH</sub> = -30mA	V <sub>CC</sub> - 2	—	—	V
"H" Level Output Voltage 2	V <sub>OH</sub> SO2	—	VGATEIN = 6V, I <sub>OH</sub> = -200mA	V <sub>CC</sub> - 5	—	—	V
Off Leakage Current	I <sub>off</sub> SO	—	VGATEIN = 0V, V <sub>in</sub> = 0V	-1	—	1	μA
(DI Pin)							
Input Clamp Voltage 1	V <sub>F</sub> DI1	—	I <sub>in</sub> = 500mA	—	—	V <sub>CC</sub> + 1.5	V
Input Clamp Voltage 2	V <sub>F</sub> DI2	—	V <sub>CC</sub> = 0V, I <sub>in</sub> = 300mA	—	—	V <sub>CC</sub> + 1.0	V

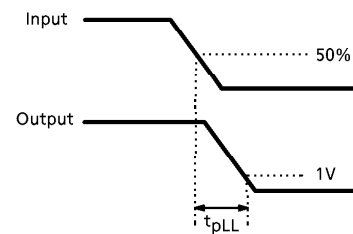
AC CHARACTERISTICS (Ta = 25°C, Unless otherwise specified, VCC = 20V)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Propagation Delay Time 1	$t_{pLL}$	—	See test circuit diagram	—	—	2	$\mu s$
Propagation Delay Time 2	$t_{pHH}$	—	See test circuit diagram	—	—	2	$\mu s$
Output Fall Time	$t_f$	—	See test circuit	—	—	0.5	$\mu s$

AC CHARACTERISTICS TEST CONDITIONS

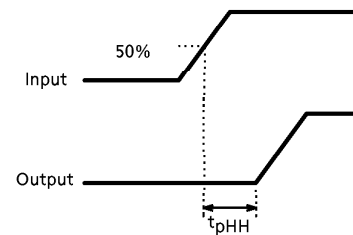
① Propagation delay time 1 ( $t_{pLL}$ )

Time from input of "L" level to GATEIN pin until output reaches 1V



② Propagation delay time 2 ( $t_{pHH}$ )

Time from input of "H" level to GATEIN pin until output starts to rise



③ Output fall time ( $t_f$ )

Output fall time from 90% to 10%

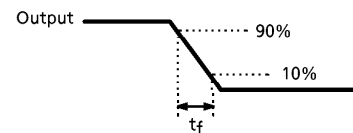
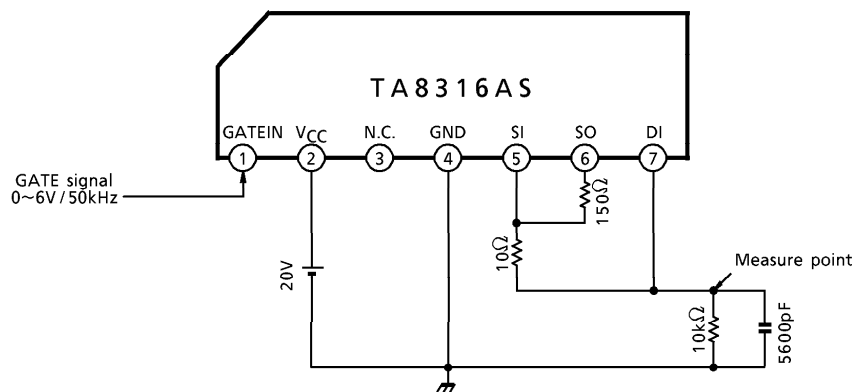
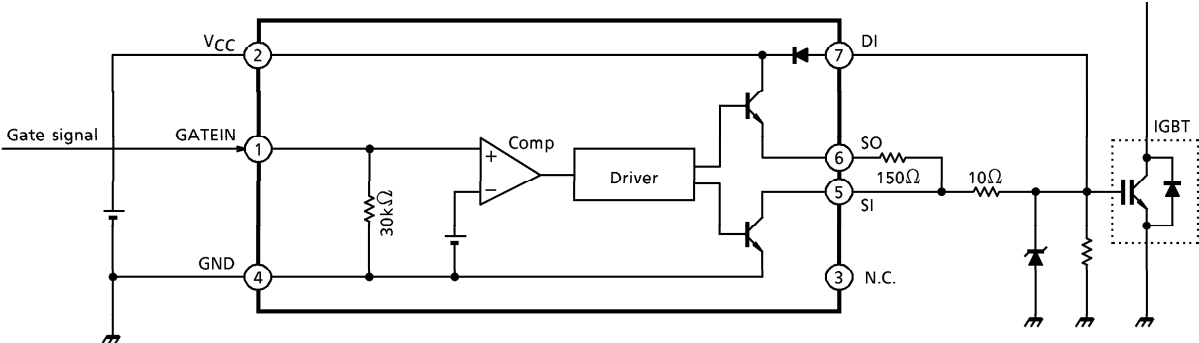


DIAGRAM OF AC CHARACTERISTICS TEST CIRCUIT

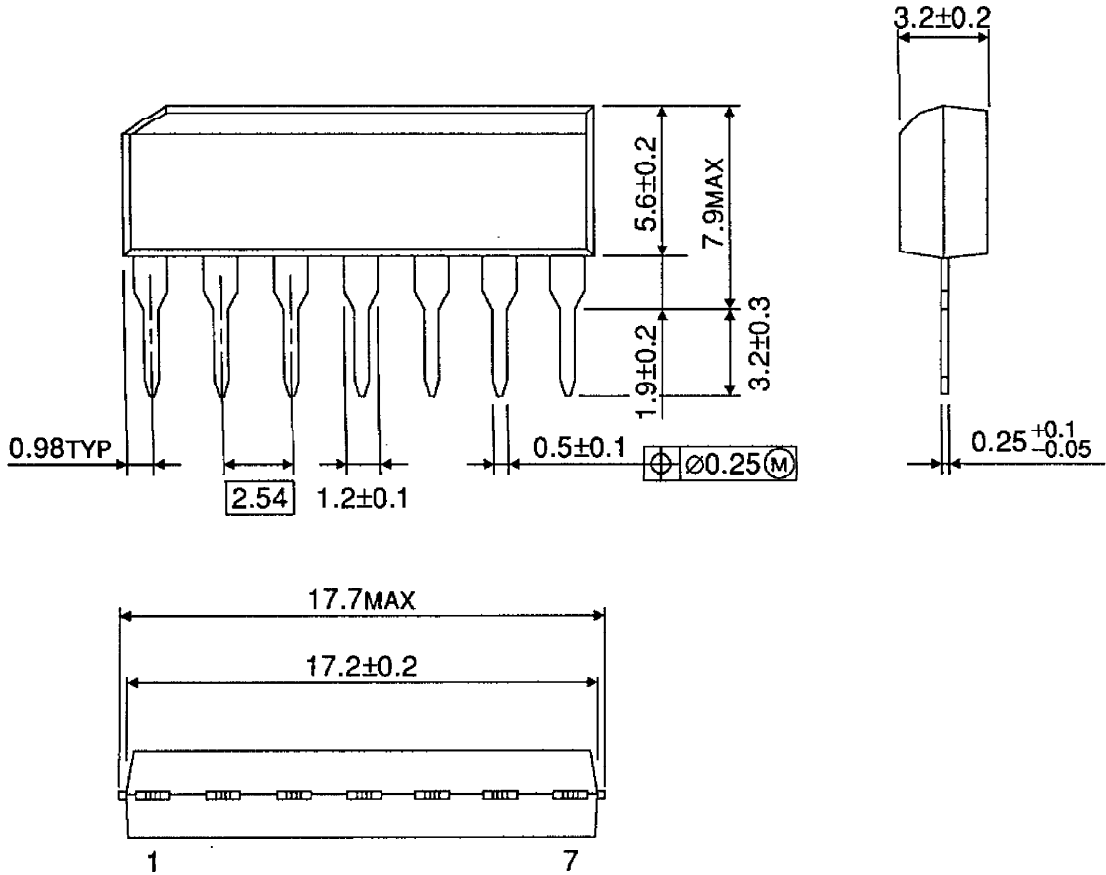


APPLICATION CIRCUIT



OUTLINE DRAWING  
SIP7-P-2.54A

Unit : mm



Weight : 0.72g (Typ.)