

# TA8316AS

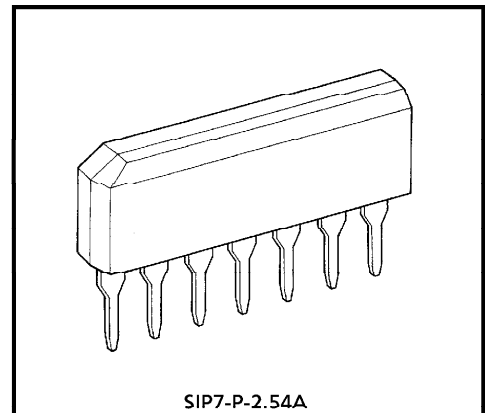
## IGBT GATE DRIVER

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

A high current directly drives IGBT.

### FEATURES

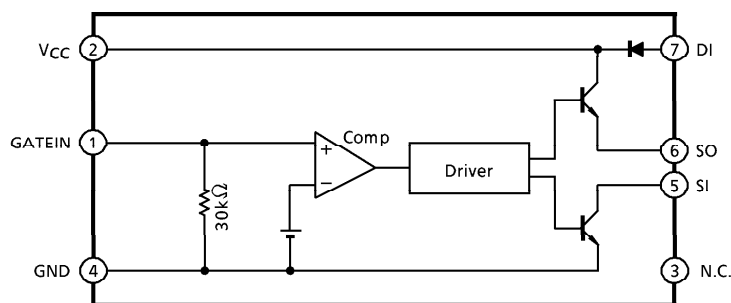
- Can directly control from a microcontroller
- Can directly drive the IGBT gate using a high current.  
Source current : -200mA (max), sink current 1A (max)
- Incorporates a diode to protect the IGBT gate at power on.



SIP7-P-2.54A

Weight : 0.72g (Typ.)

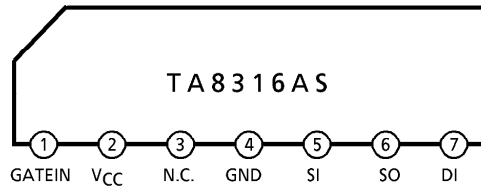
### BLOCK DIAGRAM



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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, VCC = 20V)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
<b>Supply Voltage Block</b>							
Operating Supply Voltage Range	VCC	—	—	7	—	24	V
Current Consumption 1	ICC1	—	VCC = 20V, GATEIN = "H", No Load	0.7	1.25	1.9	mA
Current Consumption 2	ICC2	—	VCC = 20V, GATEIN = "L", No Load	4.2	6.25	8.8	mA
<b>(GATEIN Pin)</b>							
Input Dynamic Range	Vin GATEIN	—	—	0	—	VCC - 2.2	V
Threshold Voltage 1	Vth GATE1	—	GATE Signal L→H	—	2.63	3	V
Threshold Voltage 2	Vth GATE2	—	GATE Signal H→L	1.5	2.27	—	V
Input Current	Iin GATE	—	Vin = 5V	125	167	249	μA
Input Frequency (Reference)	f <sub>in</sub> GATE	—	When Load C = 5600pF, R = 10kΩ Connected	—	—	50	kHz
<b>(SI Pin)</b>							
"L" Level Output Voltage 1	VOL SI1	—	VGATEIN = 0V, IOL = 30mA	—	—	0.7	V
"L" Level Output Voltage 2	VOL SI2	—	VGATEIN = 0V, IOL = 1A	—	—	2	V
"L" Level Output Voltage 3	VOL SI3	—	VCC = 7V, VGATEIN = 0V, IOL = 30mA	—	—	1	V
"L" Level Output Voltage 4 (Output Voltage At Low Supply Voltage)	VOL SI4	—	2V ≤ VCC < 7V, VGATEIN = 0V, No Load	—	—	1	V
"L" Level Output Voltage 5 (Output Voltage At Low Supply Voltage)	VOL SI5	—	2V ≤ VCC < 7V, VGATEIN = 0V, IOL = 30mA	—	—	2	V
Off Leakage Current	Ioff SI	—	VGATEIN = 6V, Vin = 20V	-1	—	1	μA
<b>(SO Pin)</b>							
"H" Level Output Voltage 1	VOH SO1	—	VGATEIN = 6V, IOH = -30mA	VCC - 2	—	—	V
"H" Level Output Voltage 2	VOH SO2	—	VGATEIN = 6V, IOH = -200mA	VCC - 5	—	—	V
Off Leakage Current	Ioff SO	—	VGATEIN = 0V, Vin = 0V	-1	—	1	μA
<b>(DI Pin)</b>							
Input Clamp Voltage 1	VF DI1	—	Iin = 500mA	—	—	VCC + 1.5	V
Input Clamp Voltage 2	VF DI2	—	VCC = 0V, Iin = 300mA	—	—	VCC + 1.0	V

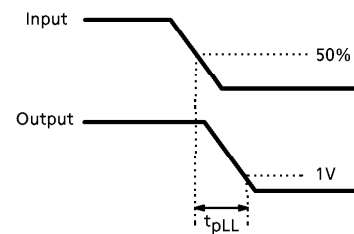
**AC CHARACTERISTICS** (Ta = 25°C, Unless otherwise specified, VCC = 20V)

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Propagation Delay Time 1	t <sub>pLL</sub>	—	See test circuit diagram	—	—	2	μs
Propagation Delay Time 2	t <sub>pHH</sub>	—	See test circuit diagram	—	—	2	μs
Output Fall Time	t <sub>f</sub>	—	See test circuit	—	—	0.5	μs

**AC CHARACTERISTICS TEST CONDITIONS**

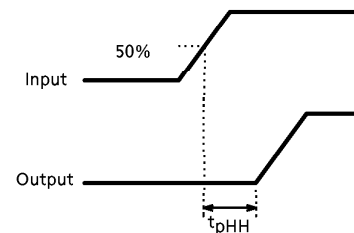
① Propagation delay time 1 (t<sub>pLL</sub>)

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



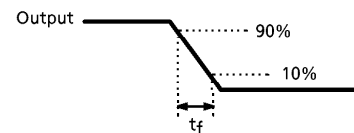
② Propagation delay time 2 (t<sub>pHH</sub>)

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

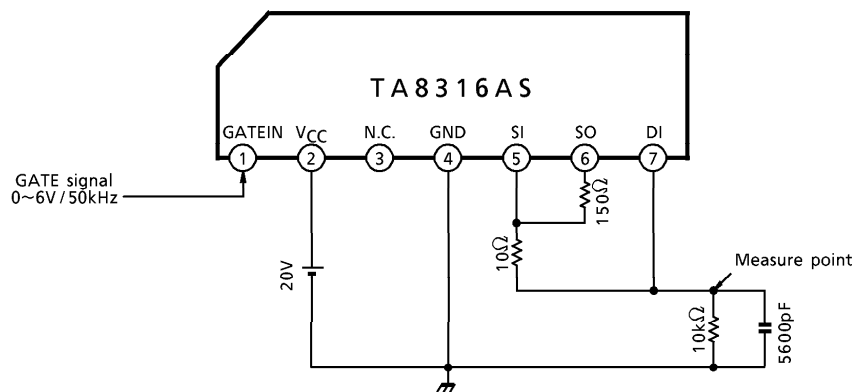


③ Output fall time (t<sub>f</sub>)

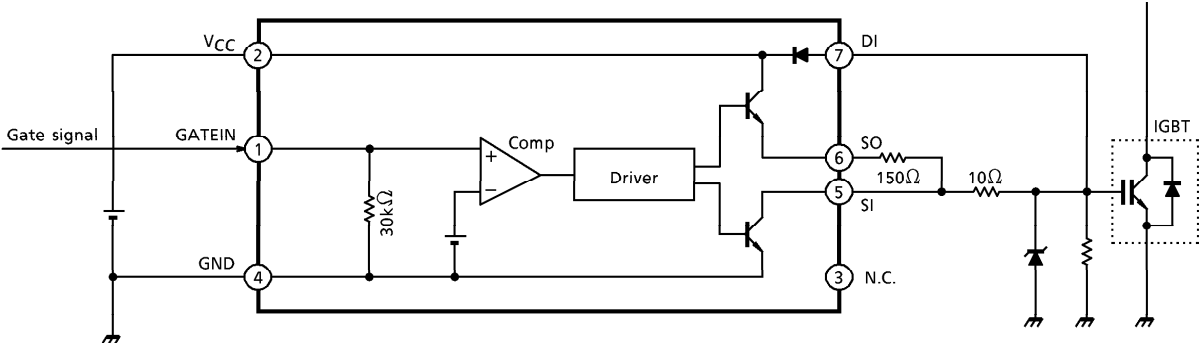
Output fall time from 90% to 10%



**DIAGRAM OF AC CHARACTERISTICS TEST CIRCUIT**

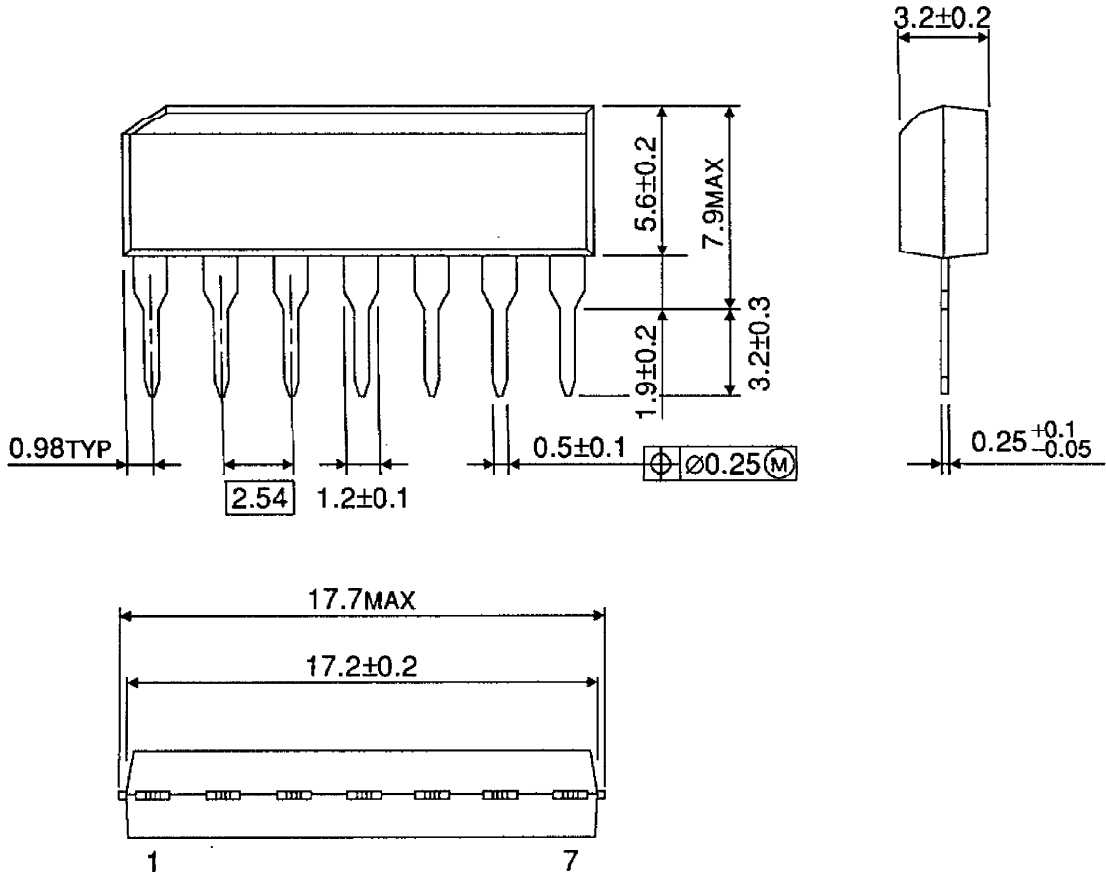


APPLICATION CIRCUIT



OUTLINE DRAWING  
SIP7-P-2.54A

Unit : mm



Weight : 0.72g (Typ.)