

TA8316AS

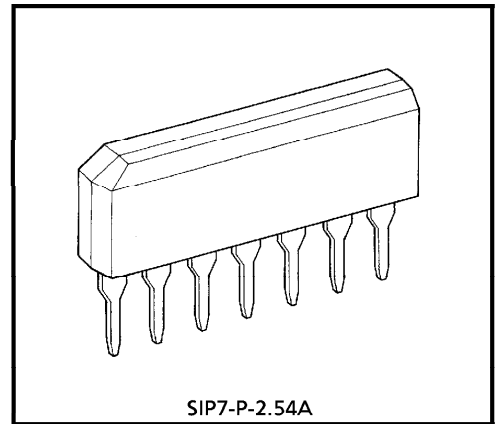
IGBT GATE DRIVER

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

A high current directly drives IGBT.

FEATURES

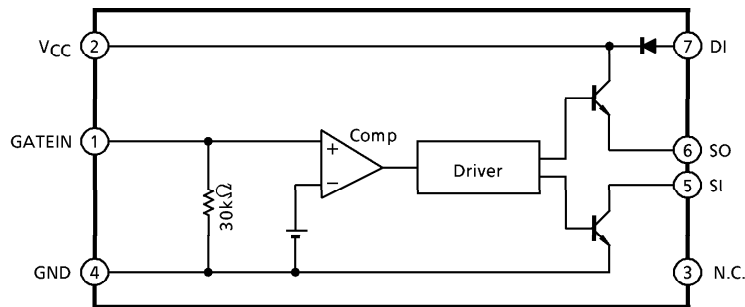
- Can directly control from a microcontroller
- Can directly drive the IGBT gate using a high current.
Source current : -200mA (max), sink current 1A (max)
- Incorporates a diode to protect the IGBT gate at power on.



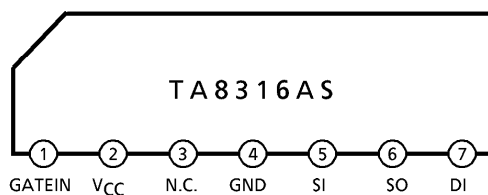
SIP7-P-2.54A

Weight : 0.72g (Typ.)

BLOCK DIAGRAM



PIN CONNECTION



PIN FUNCTIONS

PIN No.	PIN NAME	FUNCTION
1	GATEIN	Gate Signal Input Pin
2	V _{CC}	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	V _{CC}	25	V
Input Voltage	V _{in}	GND - 0.3~V _{CC} + 0.3	V
Operating Temperature	T _{opr}	- 20~85	°C
Storage Temperature	T _{stg}	- 55~150	°C
Power Dissipation *	P _D	925	mW

* When Ta > 25°C, P_D decreases 7.4mW per degree.

ELECTRICAL CHARACTERISTICS (Ta = 25°C, Unless otherwise specified, V_{CC} = 20V)

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

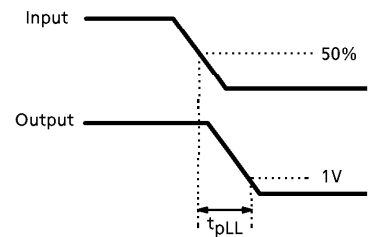
AC CHARACTERISTICS (Ta = 25°C, Unless otherwise specified, VCC = 20V)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Propagation Delay Time 1	t_{pLL}	—	See test circuit diagram	—	—	2	μS
Propagation Delay Time 2	t_{pHH}	—	See test circuit diagram	—	—	2	μS
Output Fall Time	t_f	—	See test circuit	—	—	0.5	μS

AC CHARACTERISTICS TEST CONDITIONS

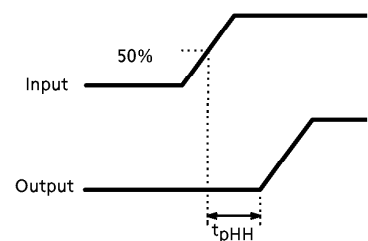
① Propagation delay time 1 (t_{pLL})

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%

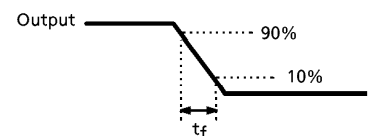
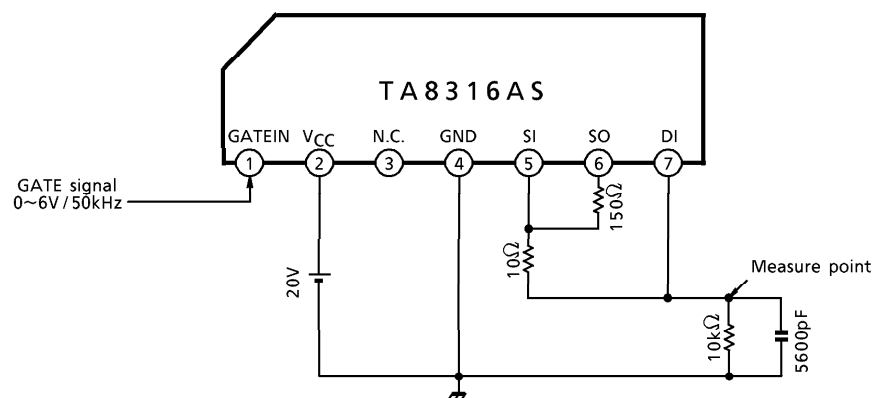
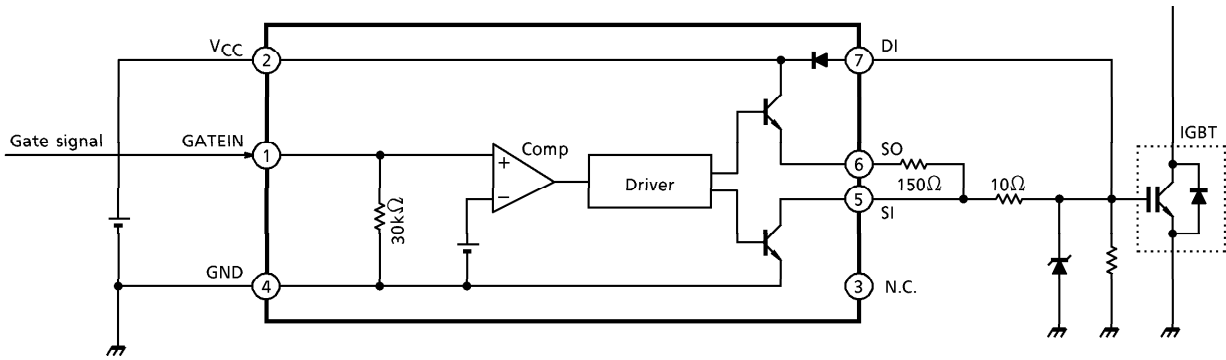


DIAGRAM OF AC CHARACTERISTICS TEST CIRCUIT

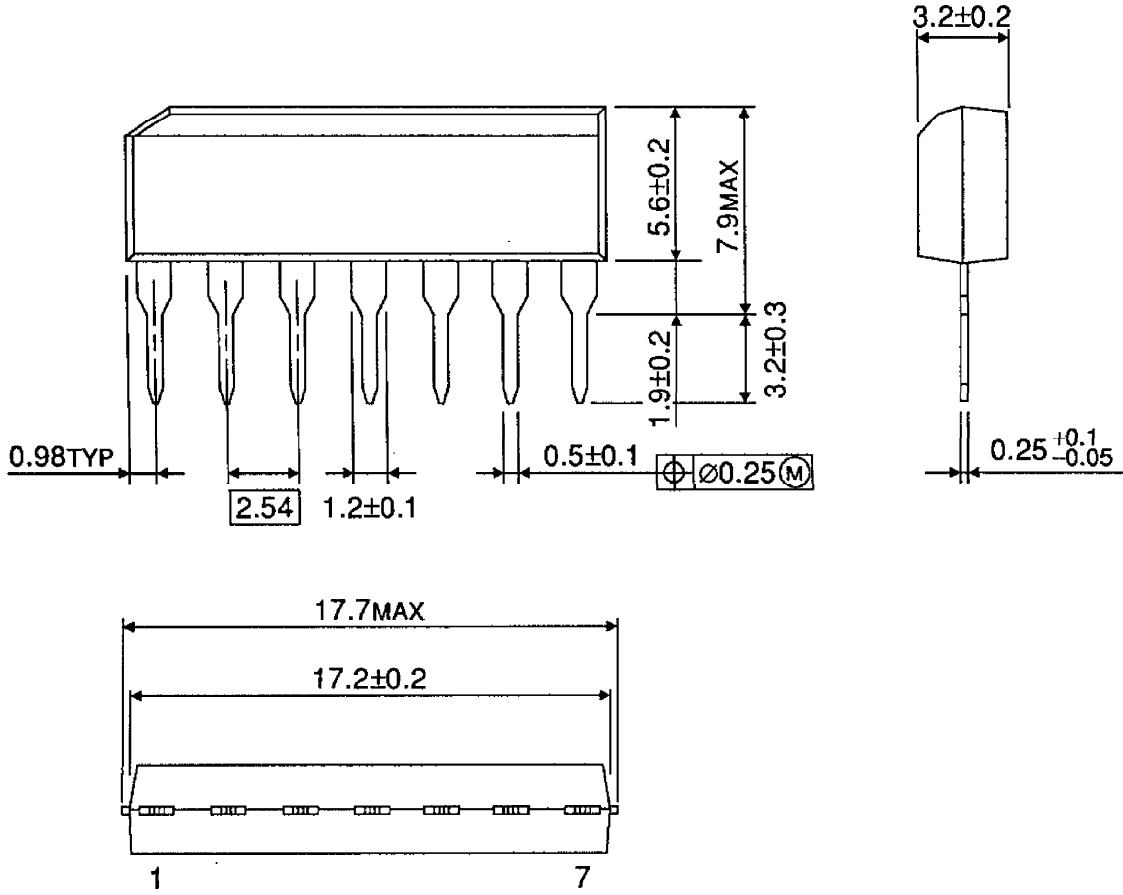


APPLICATION CIRCUIT



PACKAGE DIMENSIONS
SIP7-P-2.54A

Unit : mm



Weight : 0.72g (Typ.)

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