



UA8316

Preliminary

LINEAR INTEGRATED CIRCUIT

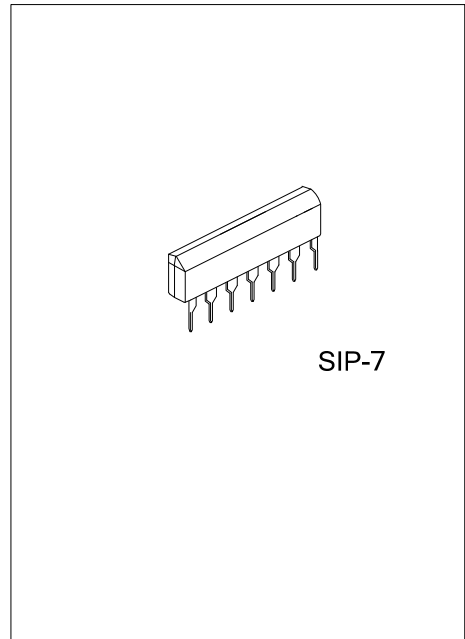
IGBT GATE DRIVER

DESCRIPTION

Integrating IGBT gate drive circuits on a single chip, The UTC **UA8316** is a dedicated IC and a high current can directly drive IGBT.

FEATURES

- * A high current can directly drive IGBT
- * Can directly control from a microcontroller
Source current: -200mA (max), sink current 1A (max)
- * Protect the IGBT gate at power on via a diode



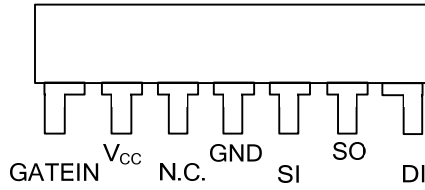
ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UA8316L-G07-T	UA8316G-G07-T	SIP-7	Tube

Note: xx: Output Voltage, refer to Marking Information.

<p>UA8316L-G07-T</p> <p>(1) Packing Type (2) Package Type (3) Lead Free</p>	<p>(1) T: Tube (2) G07: SIP-7 (3) G: Halogen Free, L: Lead Free</p>
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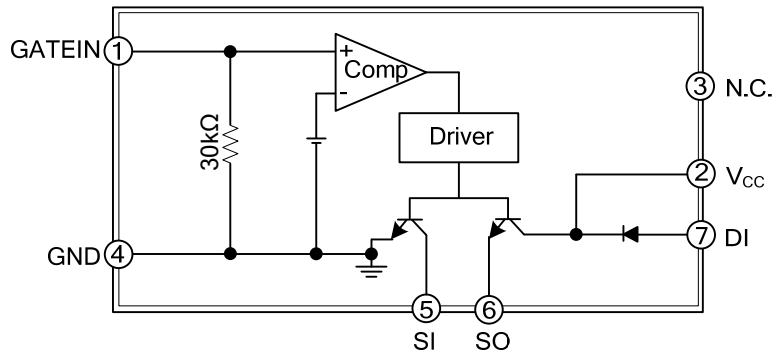
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.	PIN NAME	DESCRIPTION
1	GATEIN	Gate Signal Input
2	V _{CC}	Power Supply
3	N.C.	Not Connected
4	GND	Ground
5	SI	IGBT Gate Drive (Sink Side)
6	SO	IGBT Gate Drive (Source Side)
7	DI	IGBT Gate Protector Diode

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING (T_A=25°C, Unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector Supply Voltage	V _{CC}	25	V
Input Voltage	V _{IN}	GND-0.3~V _{CC} +0.3	V
Power Dissipation (Note 2)	P _D	925	mW
Operating Temperature	T _{OPR}	-20~+85	°C
Storage Temperature	T _{STG}	-55~+150	°C

Note: 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. When T_A>25°C, P_D decreases 7.4mW per degree.

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

PARAMETER	SYMBOL	TEST CONDITIONS	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

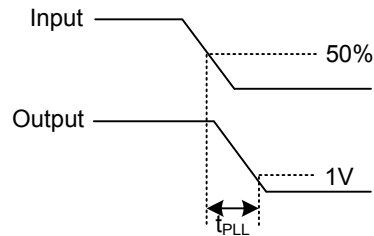
■ AC CHARACTERISTICS (V_{CC}=20V, T_A=25°C, Unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	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

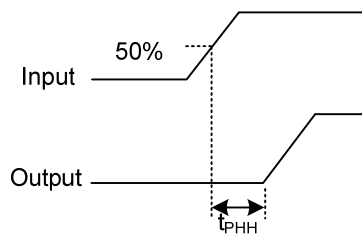
A. Propagation delay time 1 (t_{PLL})

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



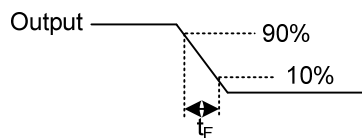
B. Propagation delay time 2 (t_{PHH})

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

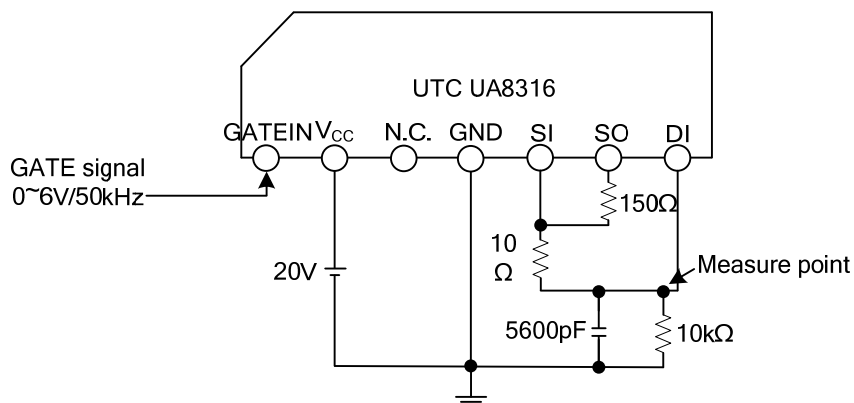


C. Output fall time (t_F)

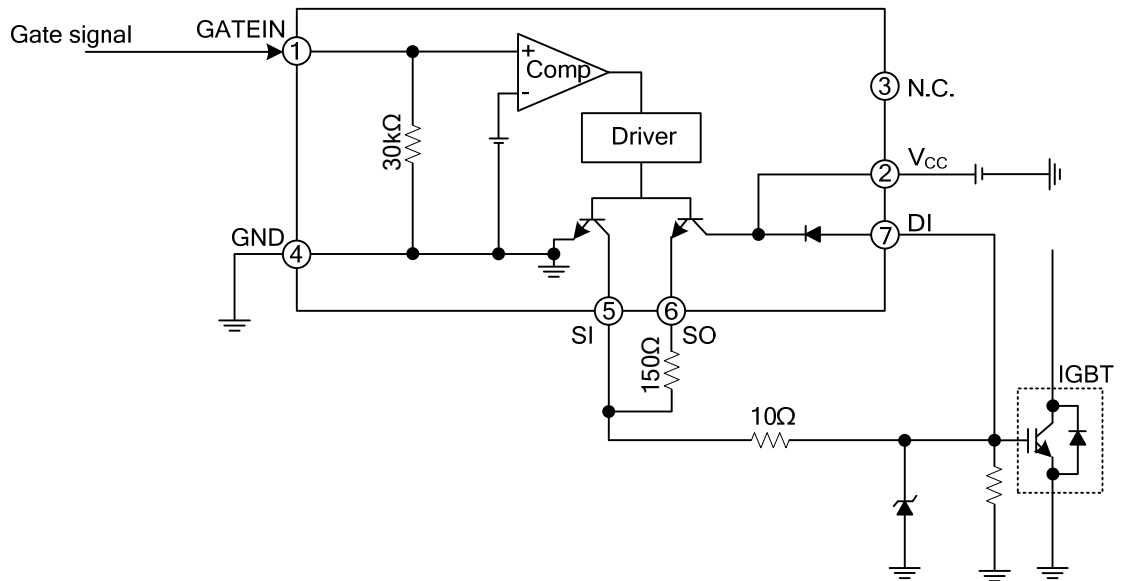
Output fall time from 90% to 10%



■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



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