



Silicore

IGBT GATE DRIVER D8316

DESCRIPTION

D8316 is a dedicated IC integrating IGBT gate drive circuit on a single chip.

A high current directly drives IGBT.

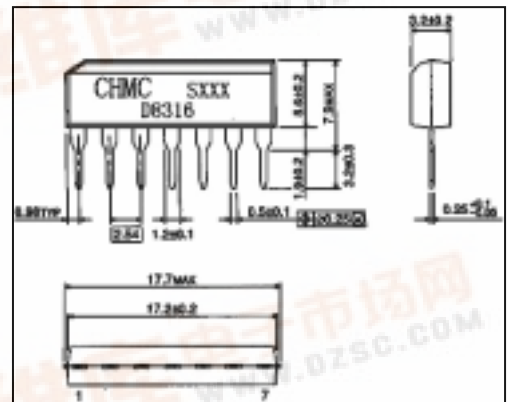
FEATURE

- Can directly control from a microcontroller.
- Can directly drive the IGBT gate using a high current.

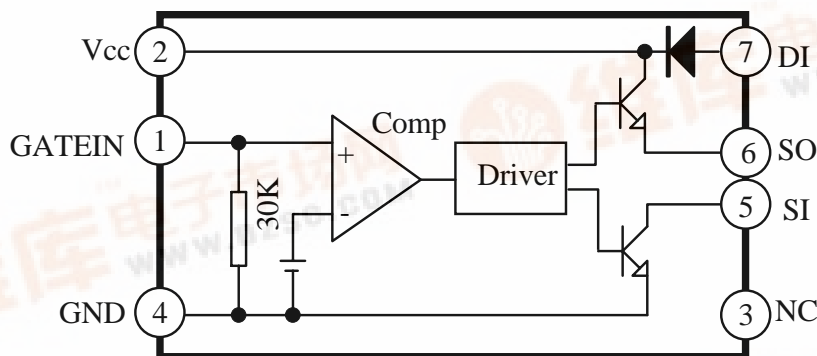
Source current:-200mA (max.), sink current 1A (max.)

- Incorporates a diode to protect the IGBT gate at power on.

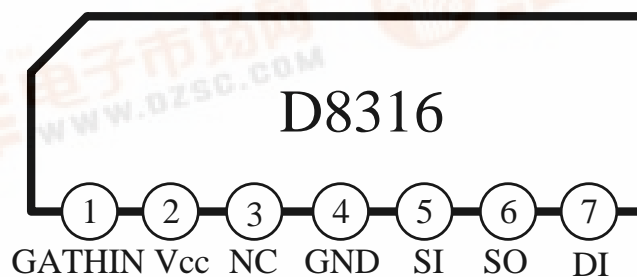
Outline Drawing



BLOCK DIAGRAM



PIN CONNECTION



PIN FUNCTIONS

PIN NO	PIN NAME	FUNCTION	PIN NO.	PIN NAME	FUNCTION
1	GATEIN	Gate signal input pin	5	SI	IGBT gate drive pin1 (sink side)
2	Vcc	System power supply	6	SO	IGBT gate drive pin2 (source side)
3	NC	Not connected	7	DI	IGBT gate protector diode pin
4	GND	GND			

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

Characteristic	Symbol	Value	Unit
Collector Supply Voltage	Vcc	25	V
Input Voltage	VIN	GND-0.3~Vcc+0.3	V
Power Dissipation*	Pd	925	mW
Operating Temperature	Tamb	-20~85	°C
Storage Temperature	Tstg	-55~150	°C

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



ELECTRICAL CHARACTERISTICS

(Unless otherwise specified: Ta=25°C, Vcc=20V)

Characteristic	Test condition	Symbol	Min	Typ	Max	Unit
Supply Voltage Block						
Operating Supply Voltage Range		V _{CC}	7		24	V
Current consumption 1	GATHIN= " H "	I _{CC1}	0.7	1.25	1.9	mA
Current consumption 2	GATHIN= " L "	I _{CC2}	4.2	6.25	8.8	mA
GATEIN Pin						
Input Dynamic Range		V _{IN GATHIN}	0		V _{CC} -2.2	V
Threshold Voltage 1	GATE Signal L→H	V _{TH GATH1}		2.63	3	V
Threshold Voltage 1	GATE Signal H→L	V _{TH GATH2}	1.5	2.27		V
Input Current	V _{IN} =5V	I _{TH GATH}	125	167	249	μA
Input Frequency (Reference)	When load C=5600pF , R=10kΩ connected	f _{TH GATH}			50	kHz
SI Pin						
"L" level output Voltage 1	V _{GATHIN} =0V , I _{OL} =30mA	V _{OL S11}			0.7	V
"L" level output Voltage 2	V _{GATHIN} =0V , I _{OL} =1A	V _{OL S12}			2	V
"L" level output Voltage 3	V _{CC} =7V , V _{GATHIN} =0V , I _{OL} =30mA	V _{OL S13}			1	V
"L" level output Voltage 4 (Output Voltage at Low Supply Voltage)	2V ≤ V _{CC} < 7V , V _{GATHIN} =0V , No Load	V _{OL S14}			1	V
"L" level output Voltage 5 (Output Voltage at Low Supply Voltage)	2V ≤ V _{CC} < 7V , V _{GATHIN} =0V , I _{OL} =30mA	V _{OL S15}			2	V
Off Leakage Current	V _{GATHIN} =6V , V _{IN} =20V	I _{OFF S1}	-1		1	μA
SO Pin						
"H" level output Voltage 1	V _{GATHIN} =6V , I _{OH} =-30mA	V _{OH SO1}	V _{CC} -2			V
"H" level output Voltage 2	V _{GATHIN} =6V , I _{OH} =-200mA	V _{OH SO2}	V _{CC} -5			V
Off Leakage Current	V _{GATHIN} =0V , V _{IN} =0V	I _{OFF SO}	-1		1	μA
DI Pin						
Input Clamp Voltage 1	I _{IN} =500mA	V _{F DI1}			V _{CC} +1.5	V
Input Clamp Voltage 2	V _{CC} =0V , I _{IN} =300mA	V _{F DI2}			V _{CC} +1	V



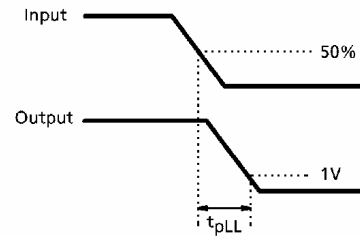
AC CHARACTERISTICS (Unless otherwise specified , Vcc=20V , Tamb=25)

Characteristic	Test condition	Symbol	Min	Typ	Max	Unit
Propagation Delay Time 1	See test circuit diagram	t_{pLL}			2	μs
Propagation Delay Time 2	See test circuit diagram	t_{pHH}			2	μs
Output Fall Time	See test circuit	t_f			0.5	μs

AC CHARACTERISTICS TEST CONDITIONS

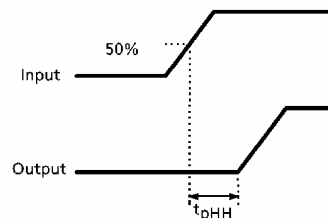
1 . Propagation Delay Time 1 (t_{pLL})

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

Output fall time from 90% to 10%.

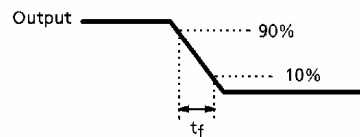
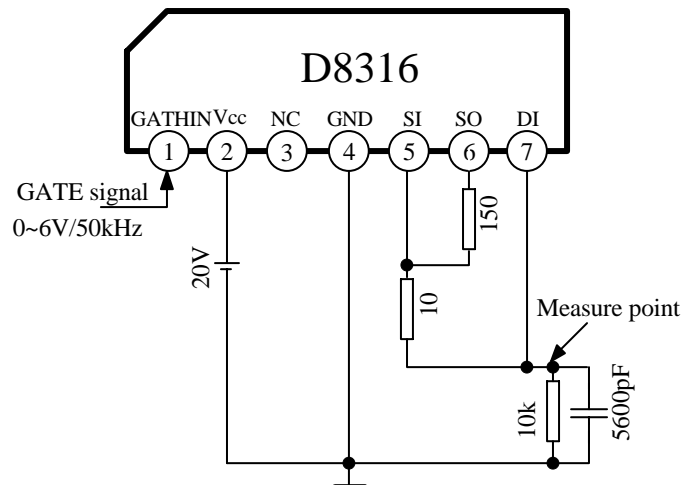


DIAGRAM OF AC CHARACTERISTICS TEST CIRCUIT



APPLICATION CIRCUIT

