

HIC05-AA-01

# Halfbridge Inverter Driver IC

## (SEM2005)



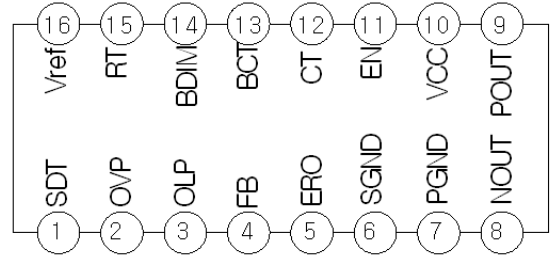
**SAMSUNG**  
**ELECTRO-MECHANICS**

**Samsung Electro-Mechanics**

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## ■ FEATURES

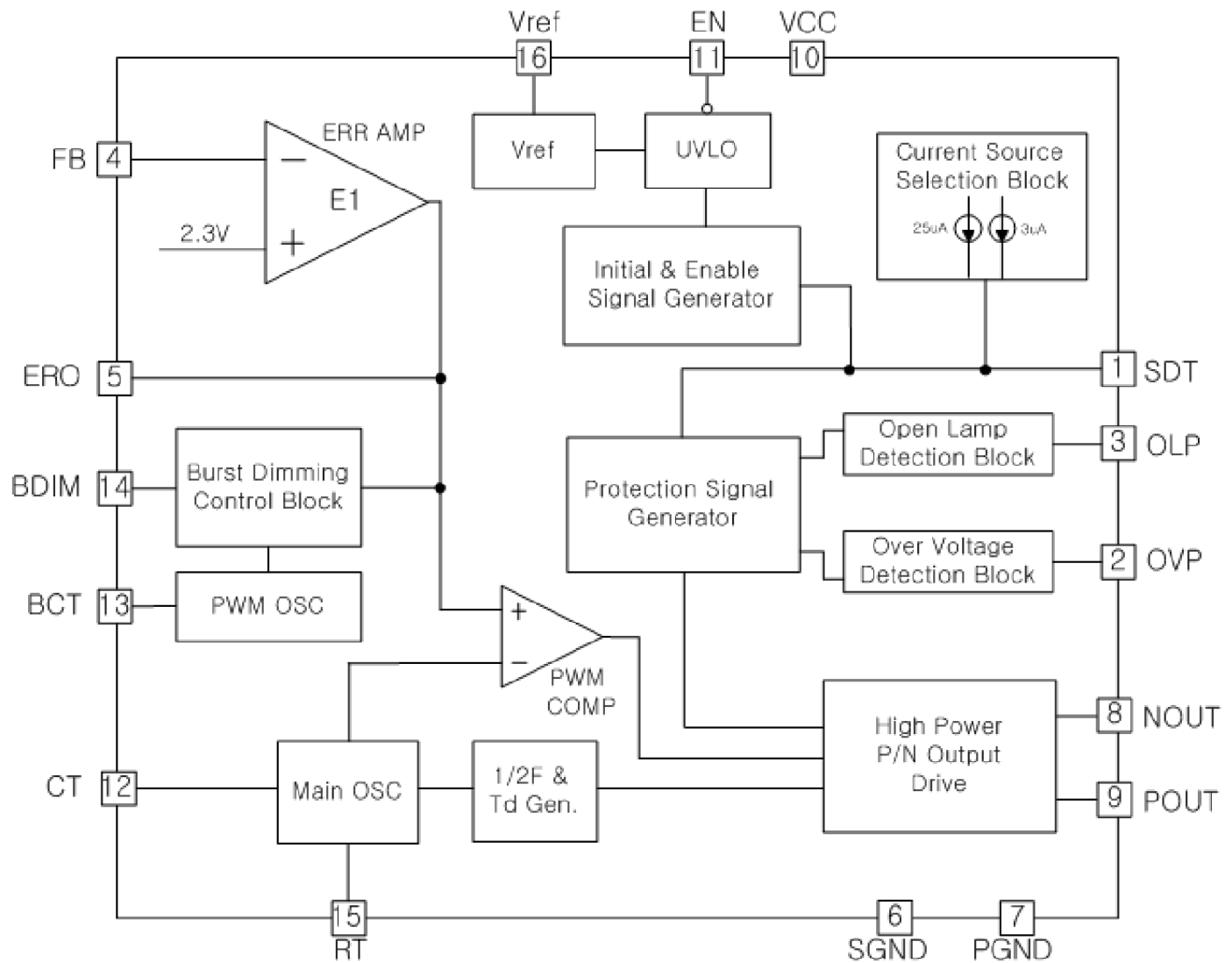
- High Frequency Voltage Mode PWM Control
- Latched Mode Protection
- Totem Pole Output
- Built-In Low Frequency PWM Generator
- Built-In UVLO function
- Adjustable Shut-down time
- Easy Burst Dimming Control
- Variable Protection function



## ■ PIN DESCRIPTION

Pin No	Symbol	I/O	Description
1	SDT	I	Shut Down Timing Capacitor 연결단자
2	OVP	I	Over Voltage Detection Input
3	OLP	I	Open Lamp Detection Input
4	FB	I	Error Amplifier의 Inverting Input
5	ERO	O	Error Amplifier의 Output
6	SGND	I/O	Signal Ground
7	PGND	I/O	Power Ground
8	NOUT	O	N-type MOSFET Driver Output
9	POUT	O	P-type MOSFET Driver Output
10	VCC	I	Power Supply
11	EN	I	On/Off Control 단자
12	CT	I/O	Oscillator Timing Capacitor 연결단자
13	BCT	I/O	Burst Dimming용 OSC Timing Cap. 연결단자
14	BDIM	I	Burst Dimming Input
15	RT	I	Oscillator Timing Resistor 연결단자
16	Vref	O	5V/10mA Reference Voltage Output

**■ BLOCK DIAGRAM**



**■ ORDERING INFORMATION**

Device	Package	Operating Temperature
SEM2005	16-SOP	-25 ~ 85°C

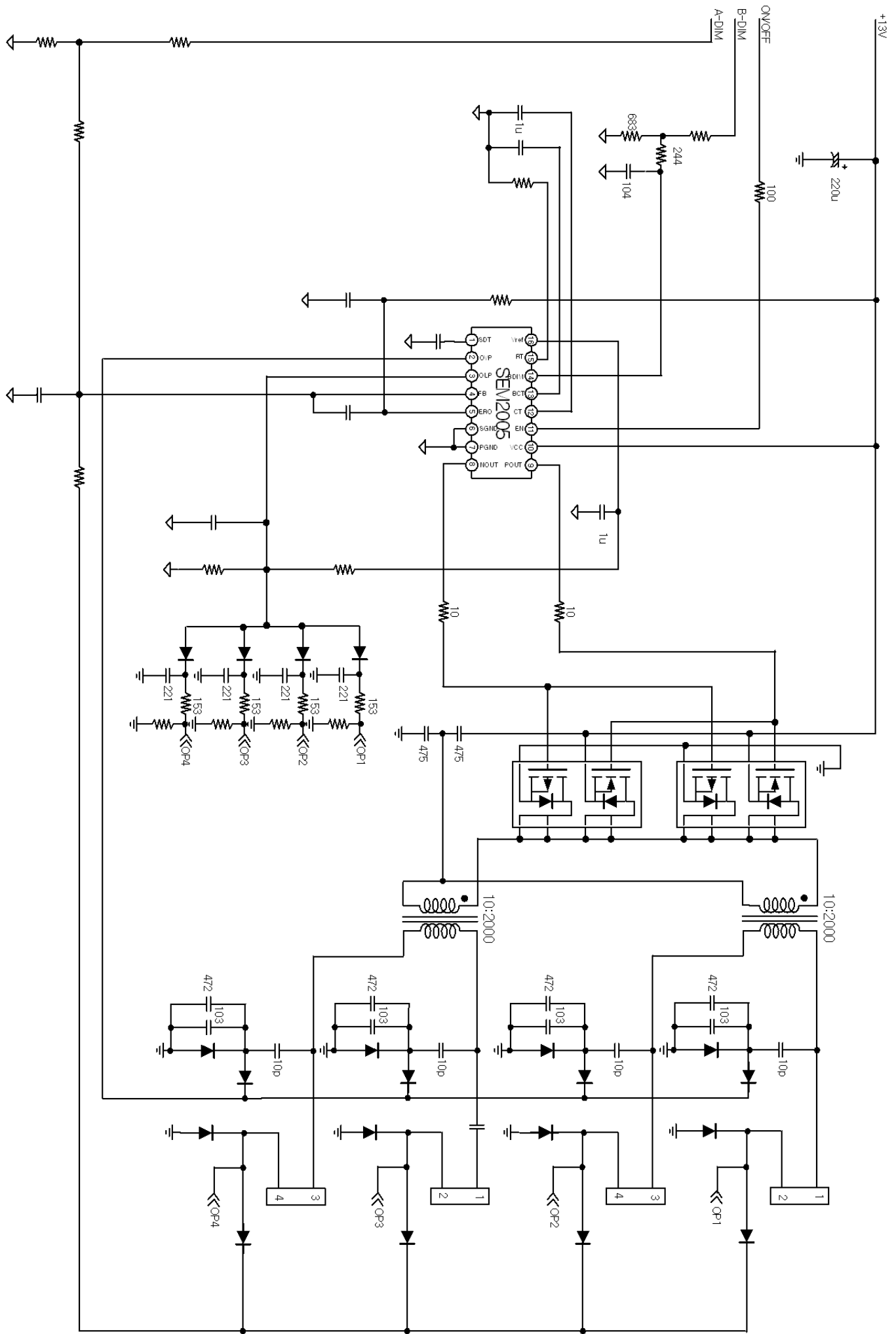
**■ ABSOLUTE MAXIMUM RATINGS**

Characteristic	Symbol	Value	Ut
Supply Voltage	Vcc	32	V
Operating Temperature	Topr	-25 ~ 85	°C
Storage Temperature	Tstg	-55 ~ 125	
Power Dissipation	Pd	1.0	W
Maximum Junction Temperature	Tjmax	125	°C

■ ELECTRICAL CHARACTERISTICS (V<sub>cc</sub>=15V, T<sub>j</sub>=25°C ; unless otherwise specified)

Characteristic	Symbol	Test Condition	Min	Typ	Max	Ut
<b>▶ OVERALL SECTION</b>						
Start Threshold Voltage	V <sub>th(st)</sub>	-	7.0	7.5	8.0	V
Start-Up Current	I <sub>st</sub>	V <sub>cc</sub> = 7.0V	-	0.1	0.2	mA
Operating Supply Current	I <sub>op</sub>	V <sub>cc</sub> ≤ 24V	-	6	9	mA
Enable On Voltage	V <sub>en(on)</sub>	-	2.0	-	-	V
Enable Off Voltage	V <sub>en(off)</sub>	-	-	-	1.0	V
<b>▶ REFERENCE SECTION</b>						
Reference Output Voltage	V <sub>ref</sub>	T <sub>j</sub> =25°C, I <sub>ref</sub> =1mA	4.80	5.00	5.20	V
Line Regulation (8~24V)	ΔV <sub>ref1</sub>	V <sub>cc</sub> =8V~24V	-	5	20	mV
Load Regulation (0~10mA)	ΔV <sub>ref2</sub>	I <sub>ref</sub> =1mA~10mA	-	5	20	mV
<b>▶ MAIN OSCILLATOR SECTION</b>						
Main Oscillation Frequency	F <sub>osc</sub>	T <sub>j</sub> =25°C, C <sub>T</sub> =120pF	40	44	48	kHz
Starting Frequency	F <sub>hf</sub>	V <sub>sdt</sub> >0.3V, V <sub>olp</sub> <1.5V	60	68	76	kHz
<b>▶ FEEDBACK SECTION</b>						
FB Input Voltage	V <sub>fb</sub>	-	2.1	2.3	2.5	V
<b>▶ PWM OSCILLATOR SECTION</b>						
Burst Oscillation Frequency	F <sub>bosc</sub>	T <sub>j</sub> =25°C, BCT=5.5nF	300	330	360	Hz
<b>▶ PROTECTION SECTION</b>						
SDT Pin Current 1	I <sub>sdt1</sub>	V <sub>sdt</sub> < V <sub>init</sub>	23	28	33	uA
SDT Pin Current 2	I <sub>sdt2</sub>	V <sub>sdt</sub> > V <sub>enb</sub>	1	3	5	uA
Initial Threshold Voltage	V <sub>init</sub>	-	0.25	0.3	0.35	V
Protection Enable Voltage	V <sub>enb</sub>	-	0.6	0.7	0.8	V
Over Current Protection	V <sub>olp</sub>	-	1.3	1.5	1.7	V
Over Voltage Protection	V <sub>ovp</sub>	-	2.25	2.5	2.75	V
SDT Threshold Voltage	V <sub>sdt</sub>	V <sub>olp</sub> <1.5V or V <sub>ovp</sub> >2.5V	2.7	3.0	3.3	V
<b>▶ OUTPUT SECTION</b>						
Nout Output Voltage	V <sub>on</sub>	T <sub>j</sub> =25°C, C <sub>load</sub> =2nF	10.0	11.0	-	V
Nout Rise Time	T <sub>rn</sub>		-	100	-	ns
Nout Fall Time	T <sub>fn</sub>		-	100	-	ns
Pout Output Voltage	V <sub>op</sub>		-10.0	-11.0	-	V
Pout Rise Time	T <sub>rp</sub>		-	100	-	ns
Pout Fall Time	T <sub>fp</sub>		-	100	-	ns

■ APPLICATION EXAMPLE



■ PACKAGE DIMENSION

# 16-SOP-225

Dimensions in millimeters/inches

