

HIC06-AA-01

# CCFL Inverter Driver IC

## (SEM2006)

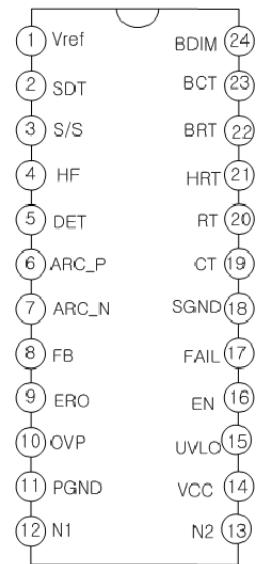
**SAMSUNG  
ELECTRO-MECHANICS**

### Samsung Electro-Machanics

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## ■ FEATURES

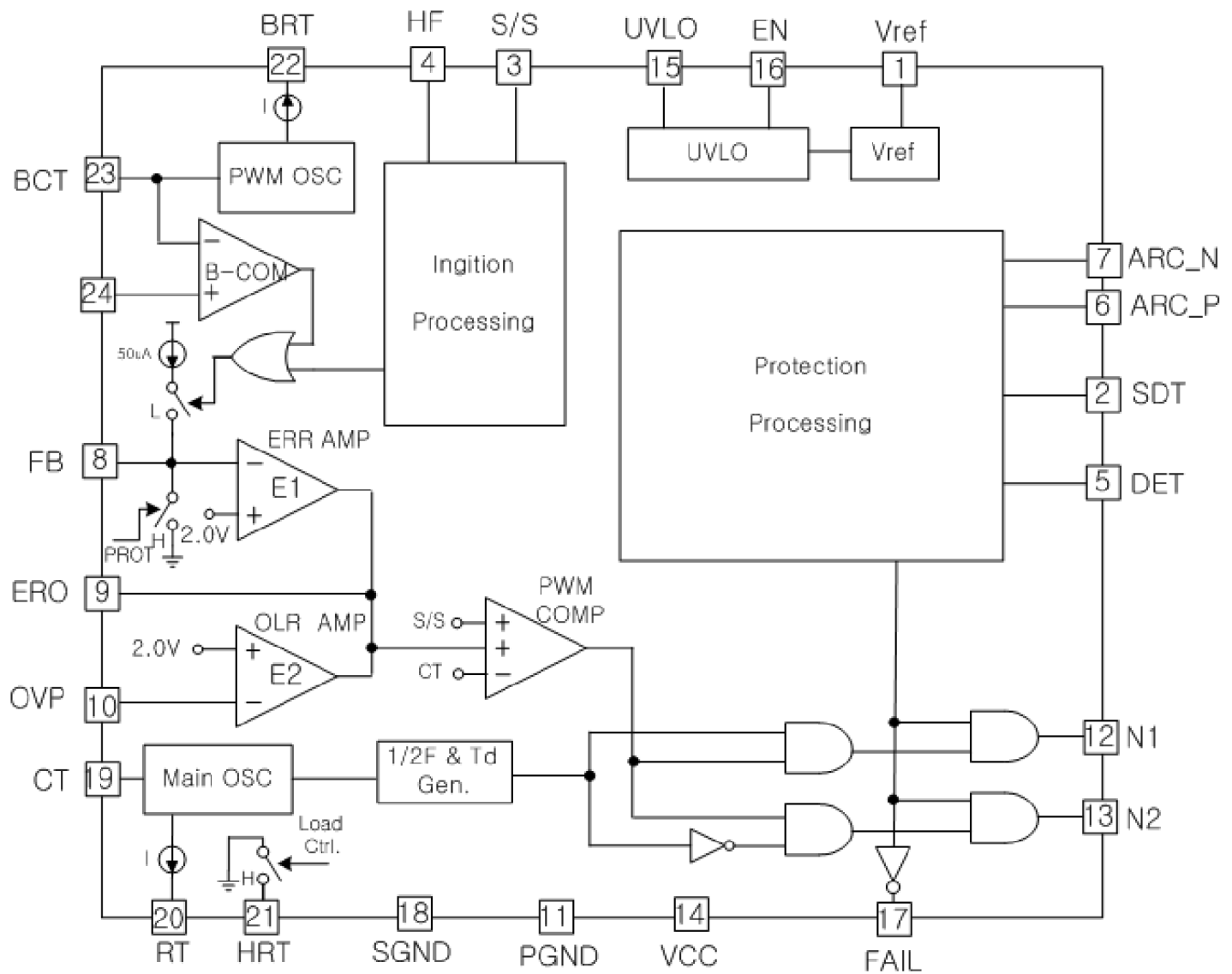
- Single N/N type Inverter
- High Frequency Voltage Mode PWM Control
- Easy Burst Dimming Control
- Built-In Soft Strat Function
- Built-In Low Frequency PWM Generator
- External UVLO function
- Latched Mode Protection
- Adjustable Shut-down time
- Variable Protection function



## ■ PIN DESCRIPTION

Pin No	Symbol	I/O	Description
1	VREF	O	5V/30mA Reference Voltage Output
2	SDT	I	Shut Down Timing Capacitor 연결단자
3	S/S	I	Soft Start 용 Cap. 연결단자
4	HF	I	High Frequency Timing Capacitor 연결단자
5	DET	I	Protection Detecting Input
6	ARC_P	I	Positive ARC Protection Pin
7	ARC_N	I	Negative ARC Protection Pin
8	FB	I	Error Amplifier의 Inverting Input
9	ERO	O	Error Amplifier의 Output
10	OVP	I	Over Voltage Protection
11	PGND	I/O	Power Ground
12	N1	O	N1 Channel MOSFET Driver Output
13	N2	O	N2 Channel MOSFET Driver Output
14	VCC	I	Supply Voltage
15	UVLO	I	Line Voltage Monitor
16	EN	I	Enable Pin
17	Fail	O	Latched Protection Flag
18	SGND	I/O	Signal Ground
19	CT	I/O	Oscillator Timing Capacitor 연결단자
20	RT	I	Oscillator Timing Resistor 연결단자
21	HRT	I	High Frequency용 Resistor 연결단자
22	BRT	I	Burst Dimming용 OSC Timing Resistor 연결단자
23	BCT	I/O	Burst Dimming용 OSC Timing Cap. 연결단자
24	BDIM	I	Burst Dimming Input

## ■ BLOCK DIAGRAM



## ■ ORDERING INFORMATION

Device	Package	Operating Temperature
SEM2006	24-SOP	-25 ~ 95°C

## ■ ABSOLUTE MAXIMUM RATINGS

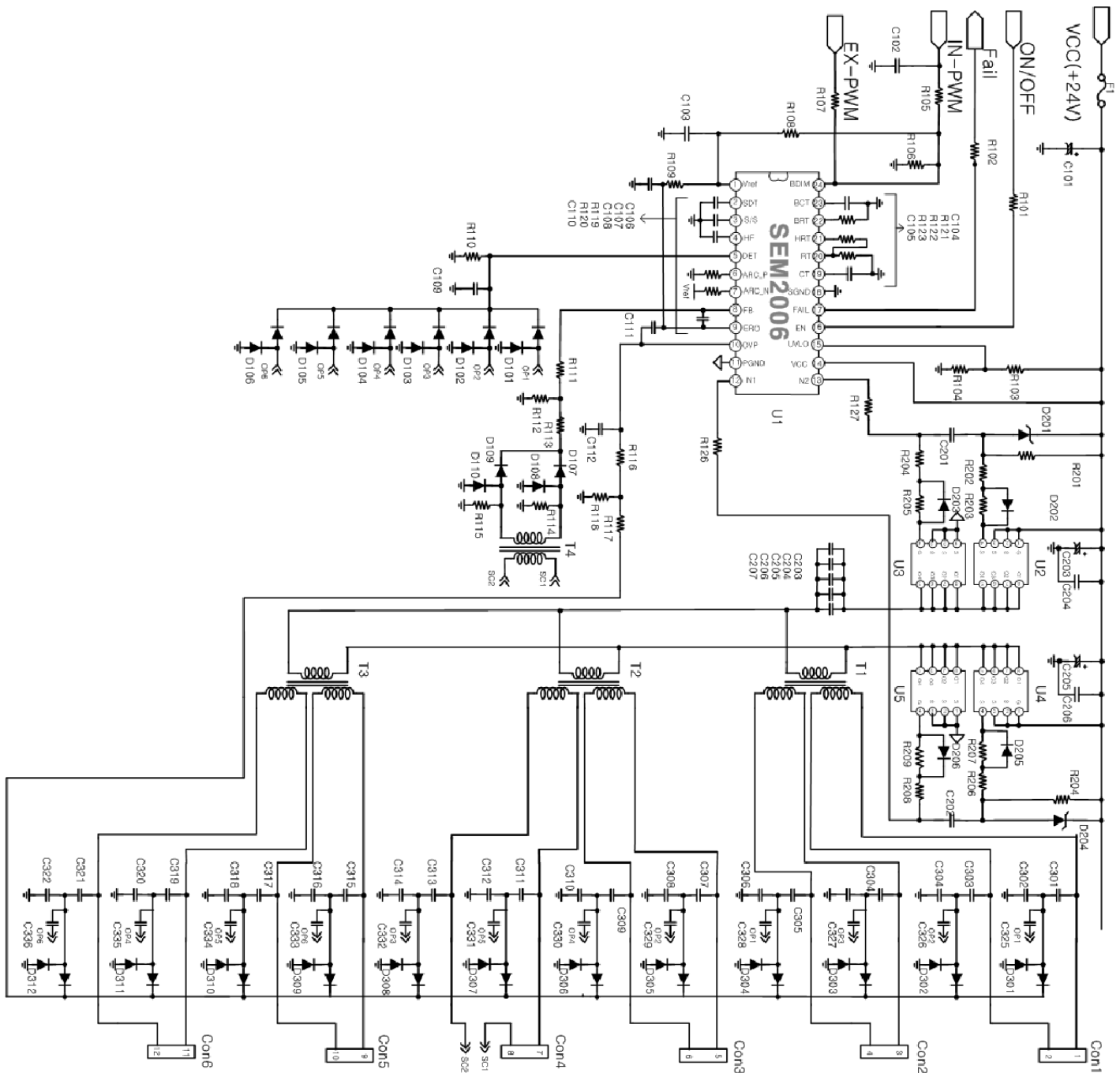
Characteristic	Symbol	Value	Ut
Supply Voltage	VCC	36	V
Operating Temperature	Topr	-25 ~ 95	°C
Storage Temperature	Tstg	-55 ~ 125	
Power Dissipation	Pd	1.0	W
Maximum Junction Temperature	Tjmax	125	°C

**■ 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-up Current	I <sub>st</sub>	V <sub>cc</sub> =15V, V <sub>uv</sub> = 3.5V	-	200	400	uA
Operating Supply Current	I <sub>op</sub>	V <sub>cc</sub> = 15V	-	10	15	mA
Enable On Voltage	V <sub>en(on)</sub>	-	2.0	-	-	V
Enable Off Voltage	V <sub>en(off)</sub>	-	-	-	1.0	V
<b>▶ UVLO SECTION</b>						
Start Voltage	V <sub>st</sub>	-	3.8	4.0	4.2	V
Hysteresis Voltage	V <sub>hys</sub>	-	0.15	0.20	0.25	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	ΔV <sub>ref1</sub>	12V ≤ V <sub>cc</sub> ≤ 20V	-	5	20	mV
Load Regulation	ΔV <sub>ref2</sub>	1mA ≤ I <sub>ref</sub> ≤ 10mA	-	5	20	mV
<b>▶ MAIN OSCILLATOR SECTION</b>						
Main Oscillation Frequency	F <sub>osc</sub>	T <sub>j</sub> =25°C, R <sub>T</sub> =18.4K	49.5	52	54.5	kHz
High Frequency	F <sub>hf</sub>	HRT=90K	63	70	77	kHz
Frequency Change	ΔF <sub>osc</sub>	-25°C ≤ T <sub>a</sub> ≤ 85°C (Note1)	-	5	-	%
Main Oscillation High Voltage	V <sub>osch</sub>	-	2.8	3.0	3.2	V
Main Oscillation Low Voltage	V <sub>oscl</sub>	-	0.8	1.0	1.2	V
<b>▶ FEEDBACK SECTION</b>						
FB Source Current	I <sub>fb</sub>	-	30	50	70	uA
FB Input Voltage	V <sub>fb</sub>	-	1.8	2.0	2.2	V
OVP Input Voltage	V <sub>ovp</sub>	-	1.8	2.0	2.2	V
<b>▶ PWM OSCILLATOR SECTION</b>						
Burst Oscillation Frequency	F <sub>bosc</sub>	T <sub>j</sub> =25°C, BRT=66K	140	150	160	Hz
Burst Oscillation High Voltage	V <sub>bosch</sub>	-	2.9	3.0	3.1	V
Burst Oscillation Low Voltage	V <sub>boscl</sub>	-	0.9	1.0	1.1	V
<b>▶ PROTECTION SECTION</b>						
S/S Source Current	I <sub>ss</sub>	-	-	2.0	4.0	uA
SDT Source Current	I <sub>sdt</sub>	-	-	2.0	4.0	uA
HF Source Current	I <sub>hf</sub>	-	-	2.0	4.0	uA
DET Threshold Voltage	V <sub>det</sub>	-	2.7	3.0	3.3	V
OVP Threshold Voltage	V <sub>ovpt</sub>	-	1.6	1.8	2.0	V
INIT Threshold Voltage	V <sub>init</sub>	-	0.5	0.7	0.9	V
HF Threshold Voltage	V <sub>hf</sub>	-	2.7	3.0	3.3	V
SDT Threshold Voltage	V <sub>sdt</sub>	-	2.7	3.0	3.3	V
<b>▶ OUTPUT SECTION</b>						
N1 Output Voltage	V <sub>no1</sub>	T <sub>j</sub> =25°C, C <sub>load</sub> =2nF (Note1)	6.5	7.5	-	V
N2 Output Voltage	V <sub>no2</sub>		6.5	7.5	-	V
N1 Rise Time	T <sub>n1-r</sub>		-	100	-	ns
N1 Fall Time	T <sub>n1-f</sub>		-	100	-	ns
N2 Rise Time	T <sub>n2-r</sub>		-	100	-	ns
N2 Fall Time	T <sub>n2-f</sub>		-	100	-	ns

\* Note1 : Only verified by simulation. Not 100% tested

APPLICATION EXAMPLE



- \* 현 회로는 ARC Protection 미 사용시임.
- \* ARC Protection 사용시 6번, 7번 Pin을 사용함.

■ PACKAGE DIMENSION

# 24-SOP-375

Dimensions in millimeters/inches

