

AN5902S

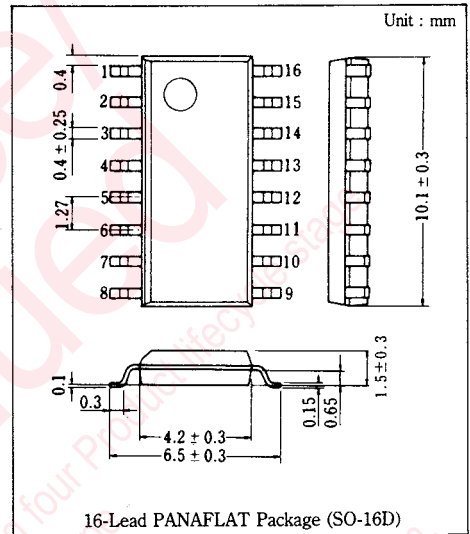
Switching Regulator Control Circuit

Outline

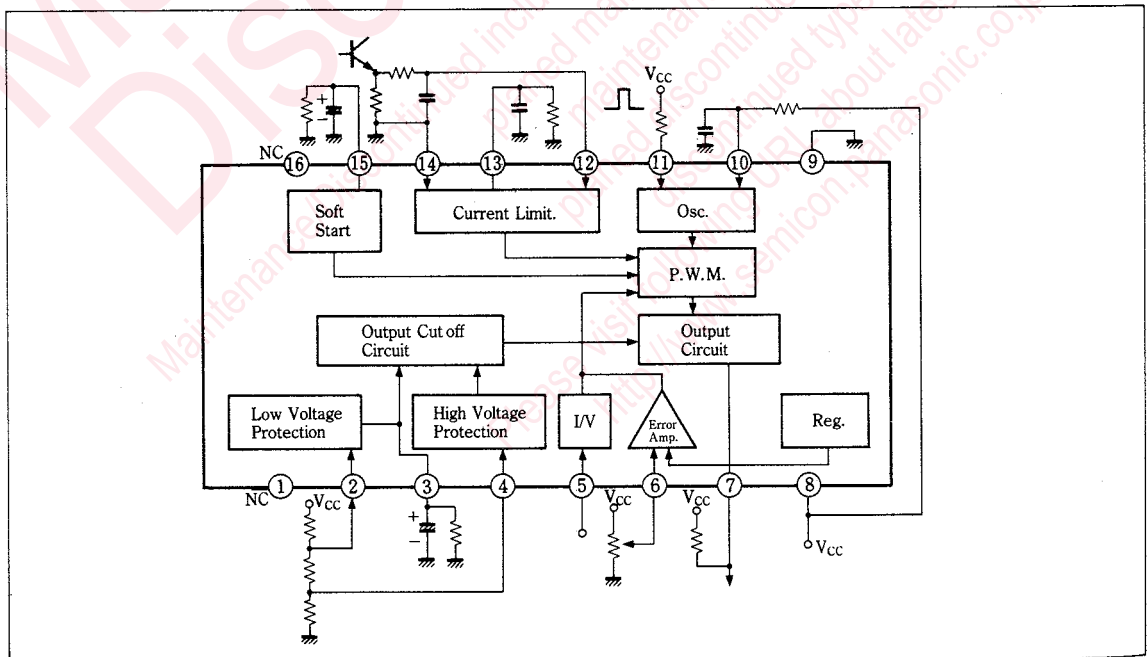
The AN5902S is an integrated circuit designed for switching regulator control circuit for battery driving small equipment and suitable for insulated type and non-insulated type.

Features

- Low supply voltage operation: oscillation start voltage is 2.6V
- Output transistor protection of current limit and cut off
- Soft start circuit
- External trigger possible



Block Diagram



■ Pin

Pin No.	Pin Name	Pin No.	Pin Name
1	NC	9	GND
2	Low Voltage Protector	10	Osc. RC
3	Low Voltage Protector CR	11	Trigger Input
4	High Voltage Protector	12	Over Current Judgement Input(1)
5	Photo Coupler Input	13	Over Current Cut Off CR
6	Error Amp. Input	14	Over Current Judgement Input(2)
7	Output	15	Soft Start CR
8	V _{cc}	16	NC

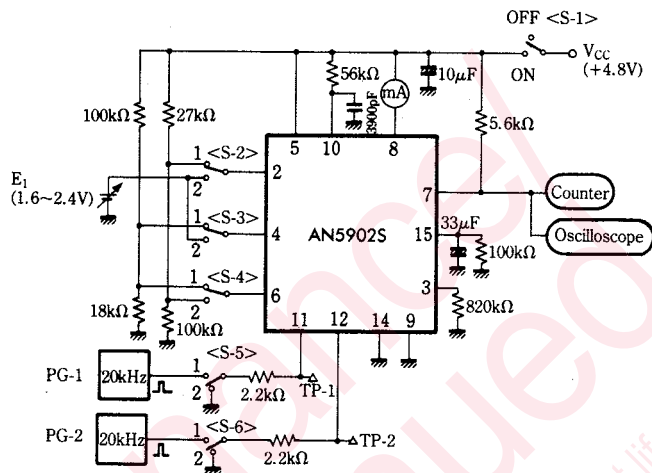
■ Absolute Maximum Ratings(T_a=25°C)

Item	Symbol	Rating	Unit
Supply Voltage	V _{CC} (V ₈₋₉)	14.4	V
Supply Current	I _S	12.5	mA
Power Dissipation	P _D	180	mW
Operating Ambient Temperature	T _{opr}	-20~+70	°C
Storage Temperature	T _{stg}	-40~+125	°C

■ Electrical Characteristics(V_{CC}=4.8V, T_a=25°C)

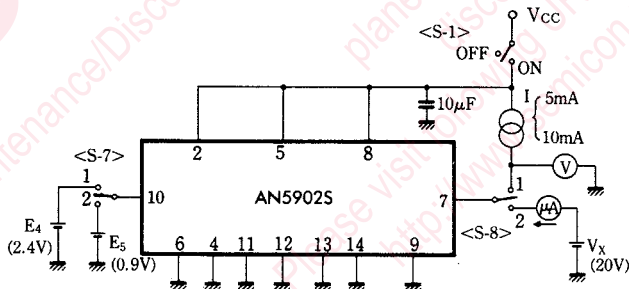
Item	Symbol	Test Circuit	Condition	min.	typ.	max.	Unit
Circuit Current	I _{CC}	1	V _{CC} =4.8V	2.1	2.8	3.6	mA
Oscillation Frequency	f _O	1	V _{CC} =4.8V	12.4	12.8	13.2	kHz
Output Pulse Duty(max.)	t _{W(max.)}	1	V _{CC} =4.8V	65	74	85	%
Output Pulse Duty(min)	t _{W(min.)}	1	V _{CC} =4.8V		0	0	%
Output Saturation Voltage (1)	V _{sat(1)}	2	I ₇ =5mA, V _{CC} =4.8V		0.1	0.3	V
Output Saturation Voltage (2)	V _{sat(2)}	2	I ₇ =10mA, V _{CC} =10V		0.5	0.8	V
Output Tr. Collector Breakdown	BV ₇₋₉	2		20			V
High Supply Voltage Protector	V _{HVP}	1	V _{CC} =4.8V	1.85	2.0	2.1	V
Low Supply Voltage Protector	V _{LVP}	1	V _{CC} =4.8V	1.85	2.0	2.1	V
External Trigger Operation Starting Voltage	V _{P(tri)}	1	V _{CC} =4.8V		0.75	0.95	V
Over-current Protector (1)	ΔV _{ocp(1)}	1	Pulse width 2μs, V _{CC} =4.8V	45	70	95	mV
Over-current Protector (2)	ΔV _{ocp(2)}	1	Pulse width 5μs, V _{CC} =4.8V	70	90	115	mV

Test Circuit 1 (I_{CC} , f_o , $t_{W(max.)}$, $t_{W(min.)}$, V_{HVP} , V_{LVP} , $V_{P(tri)}$, $\Delta V_{ocp(1)}$, $\Delta V_{ocp(2)}$)



Item	S ₁	S ₂	S ₃	S ₄	S ₅	S ₆	Measuring Instrument
I_{CC}	ON	1	1	1	2	2	Ammeter
f_o	ON	1	1	1	2	2	Counter
$t_{W(max.)}$	ON	1	1	1	2	2	Oscilloscope
$t_{W(min.)}$	ON	1	1	2	2	2	Oscilloscope
V_{HVP}	ON	1	2	1	2	2	Oscilloscope
V_{LVP}	ON	2	1	1	2	2	Oscilloscope
$V_{P(tri)}$	ON	1	1	1	1	2	Oscilloscope
$\Delta V_{ocp(1)}$	ON	1	1	1	1	1	Oscilloscope
$\Delta V_{ocp(2)}$	ON	1	1	1	1	1	Oscilloscope

Test Circuit 2 ($V_{sat(1)}$, $V_{sat(2)}$, BV_{7-9})



Item	S ₁	S ₇	S ₈	I	Conditions	Measuring Instrument
$V_{sat(1)}$	ON	1	1	5mA	$V_{CC}=4.8V$	Digital Voltmeter
$V_{sat(1)}$	ON	1	1	10mA	$V_{CC}=10V$	Digital Voltmeter
BV_{7-9}	ON	2	2	—	$V_{CC}=4.8V$	Ammeter

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