

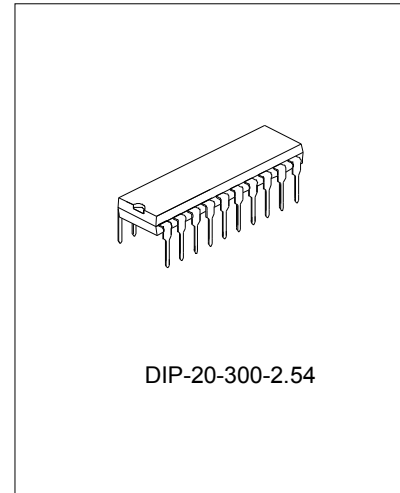
VOLTAGE MODE PWM POWER SUPPLY WITH BUILT-IN SUPERVISOR, PROTECTION AND REGULATION

DESCRIPTION

The SC6105 is a switching mode power supply controller for computers. It can regulator the output voltages by providing PWM signals to drive a transformer. It monitors and protects the 3.3V/±5V/±12V outputs. Two internal TL431 shunt regulators provide stable reference voltage for 3.3V and 5V-standby regulator. Remote ON/OFF control, power good circuitry, over voltage and under voltage protection circuitry and over power protection circuitry is implemented.

FEATURES

- * Over voltage protection for 3.3V/5V/12V
- * Under voltage protection for 3.3V/±5V/±12V
- * Over power protection
- * Short circuit protection
- * AC-input under voltage protection
- * Power good circuitry
- * PSON for remote controller
- * Delay time for PSON or PG signals
- * Two shunt regulators for 3.3V and 5V-standby
- * soft start and maximum 93% duty cycle



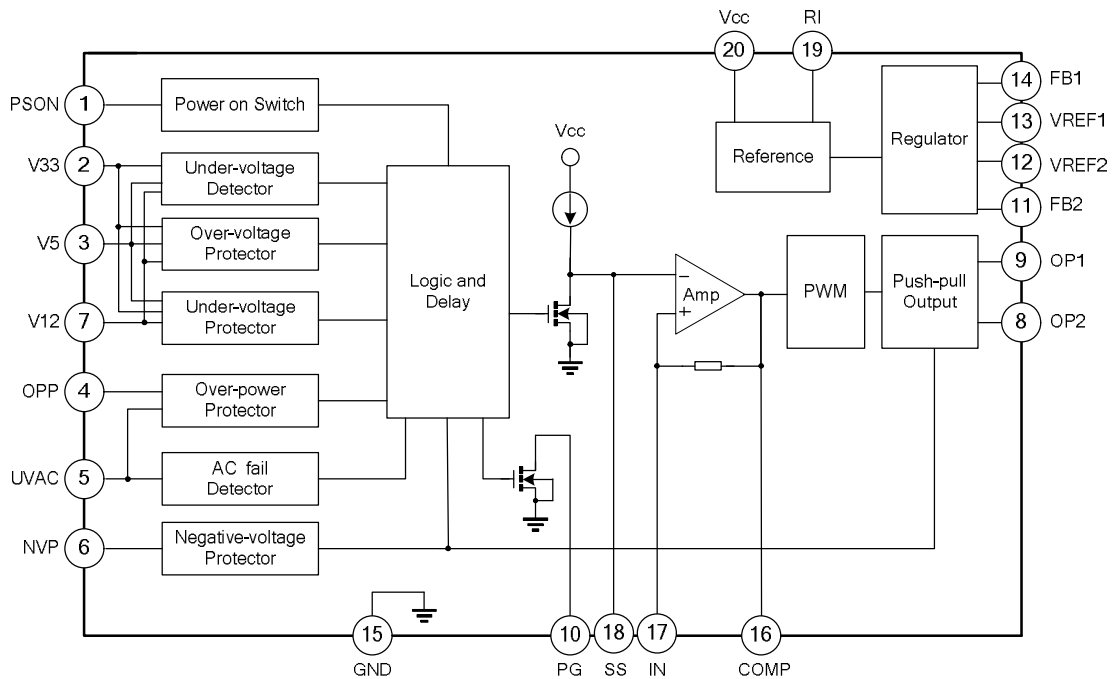
APPLICATIONS

- * Switching mode power supply for computers.

ORDERING INFORMATION

Part	Package
SC6105B	DIP-20-300-2.54

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATING

Characteristics	Symbol	Rating	Unit
Supply Voltage(pin20)	VCC	12	V
Regulator Output At FB1, FB2 Pins	VFB	16	V
Output Current At PG, FB1, FB2 Pins	IOUT	30	mA
Power Dissipation(Tamb=25°C)	PD	1.5	W
Power Dissipation(Tamb=90°C)	PD	0.5	W
Thermal Resistance, Junction-To-Air	RθJA	82.5	°C/W
Operating Temperature Range	Tamb	-30 ~ +125	°C
Storage Temperature Range	Tstg	-55~+155	°C

ELECTRICAL CHARACTERISTICS (Unless otherwise stated, VCC=5V, Tamb=25°C)

Characteristics	Symbol	Test condition	Min.	Typ.	Max.	Unit
Supply Voltage	VCC	All function is normal.	4.5	5.0	7.0	V
Supply Current	ICC	PG High	--	5	10	mA
Over-Voltage Protection 3.3V	VOVP1	-	3.9	4.1	4.3	V
Over-Voltage Protection 5V	VOVP2	-	5.8	6.1	6.5	V
Over-Voltage Protection 12V	VOVP3	-	13.9	14.5	14.9	V
Under-Voltage Protection 3.3V	VUVP1	-	2.0	2.6	2.8	V

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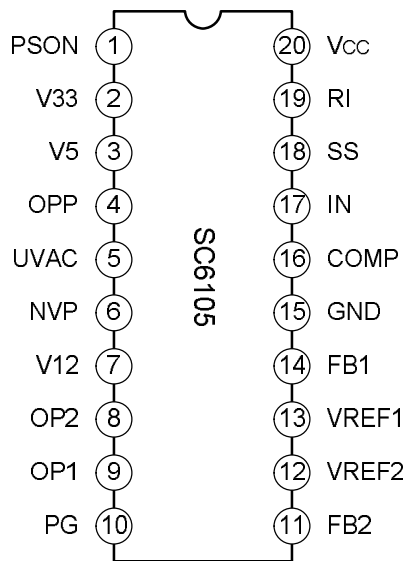
Characteristics		Symbol	Test condition	Min.	Typ.	Max.	Unit
Under-Voltage Protection 5V		VUVP2	-	3.0	3.6	3.9	V
Under-Voltage Protection 12V		VUVP3	-	6.0	7.2	8.0	V
Under-Voltage Sense 3.3V For PG Low		VUVS1	-	2.5	2.8	3.0	V
Under-Voltage Sense 5V For PG Low		VUVS2	-	4.0	4.3	4.5	V
Under-Voltage Sense 12V For PG Low		VUVS3	-	9.4	10.1	10.4	V
Over-Power Protection.		VOPPS	VUVAC = 1.5V	2.02	2.4	2.66	V
Negative Voltage Protection: Voltage Level		VNVP	-	2.0	2.1	2.2	V
Negative Voltage Protection: Source Current		INVP	RI = 75KΩ	57	64	72	μA
Timing For Over-Voltage Protection		tOVP	RI = 75KΩ	0.5	0.7	1.3	ms
Timing For Under-Voltage Protection		tUVP	RI = 75KΩ	0.9	2.4	3.8	ms
Timing For Under-Voltage Sense for PG Low		tUVS	RI = 75KΩ	0.5	1.2	1.9	ms
Timing for Over-Power-Protection		tOPP	RI = 75KΩ	4.0	7.0	10.0	ms
Timing for Negative Voltage Protection		tNVP	RI = 75KΩ	4.0	7.0	10.0	ms
Shunt	Reference Voltage	VREF	IFB = 0.5mA, Tamb = 25°C	2.475	2.5	2.525	V
Regulator (FB1, VREF1, FB2, VREF2)	Line Regulation	REGLI-FB	4 < VFB < 16V	-	1	-	MV/V
	Output Sinking Current Capability	IOUT-FB	VFB > 2V	10	-	-	mA
Power Good	Timing for PG Delay	tPG	RI = 75KΩ	200	300	400	ms
	UVAC Voltage Sense for PG	VUVAC	-	0.65	0.7	0.75	V
	PG Good Output Rising Time	tR	CL = 100pF	-	1	-	us
	PG Good Falling Time	tF	CL = 100pF	-	300	-	ns
	Power Good Output Saturation Level	VOL2	IPG = 5mA	-	-	0.5	V
	Power Good Leakage Current Collector	ION2	VPG = 5V	-	-	1	μA
Remote On/Off	PSON Input Threshold Level	VPSON	-	1	1.4	2.0	V
	Remote Input Driving Current	IPSON	-	-	-	0.5	mA
	Timing PSON to On/Off	tPSON(ON) tPSON(OFF)	RI = 75kΩ	20	40	50	ms
	On Off (PS-off)			10	20	30	ms
	Timing PG low to Power Off	tPSOFF	RI = 75kΩ	2	4.8	6.5	ms

(To be continued)

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Characteristics		Symbol	Test condition	Min.	Typ.	Max.	Unit
Error Amplifier	Reference Voltage	V2.5	-	2.45	2.5	2.55	V
	Input Bias Current	IIB	-	-	-	0.1	μA
	Open-Loop Voltage Gain	AVOL	-	50	60	-	dB
	Unity Gain Bandwidth	BW	-	0.3	1	-	MHz
	Power Supply Rejection Ratio	PSRR	-	50	-	-	dB
Oscillator	PWM Frequency	FOSC	RI = 75kΩ	60	65	70	kHz
Soft-Start	Charge Current	ISS	RI = 75kΩ	4.0	5.7	7.0	μA
	Duty Cycle	DC	-	85	-	93	%
PWM Output	Output Voltage Low	VOL	Io = 5mA	-	-	0.5	V
	Output Voltage High	VOH	V12 = 12V	4	-	-	V
	Output Impedance of VOH	RO	-	1.5	-	3.3	kΩ

PIN CONFIGURATIONS



PIN DESCRIPTIONS

Pin No.	Pin Name	Description
1	PSON	Remote On/Off logic input for CPU or controller. Turn on/off the PWM Output.
2	V33	3.3V over-voltage/under-voltage control sense input.
3	V5	5V over-voltage/under-voltage control sense input.
4	OPP	Over-power sense input.
5	UVAC	AC fail detection.
6	NVP	The protection input for negative output.
7	V12	12V over-voltage/under-voltage control sense input.

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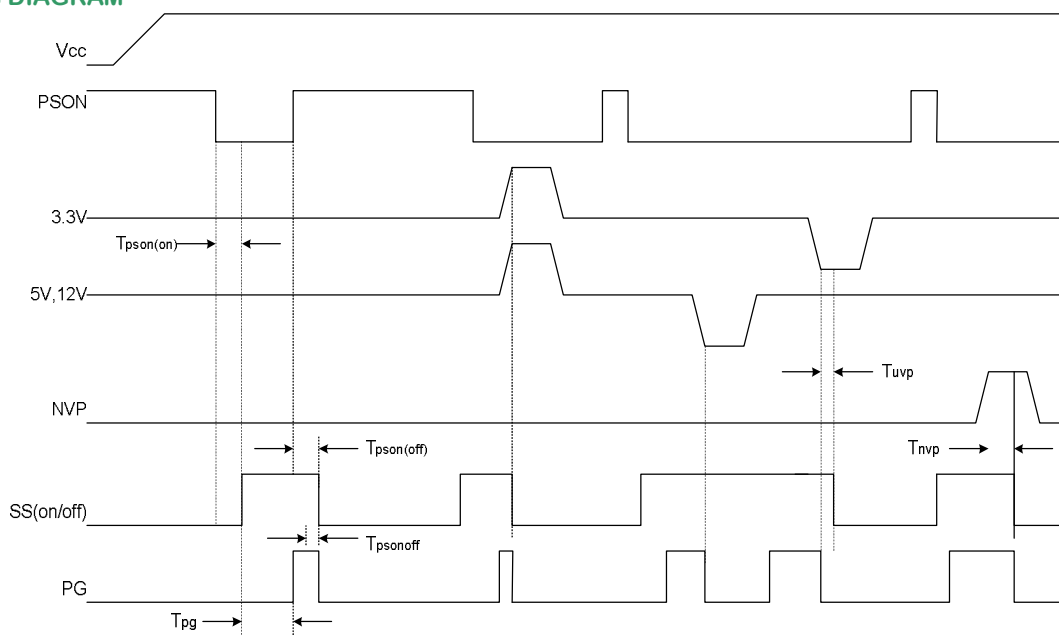
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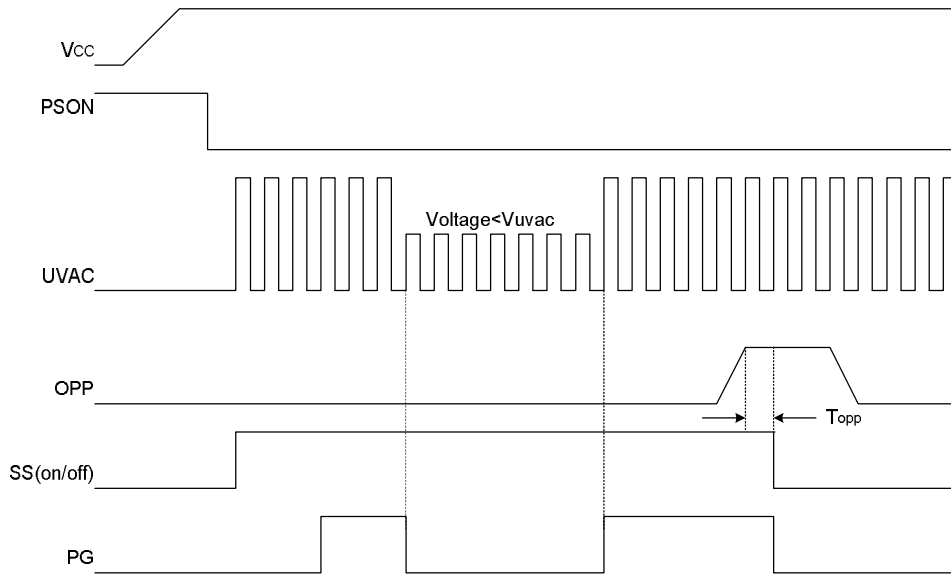
Pin No.	Pin Name	Description
8	OP2	The totem-pole output drivers of push-pull PWM. The maximum duty cycle on an output (OP1 or OP2) is 46%.
9	OP1	The totem-pole output drivers of push-pull PWM.
10	PG	Power Good logic output, 0 or 1 (open-collector). PG=1 means that the power is good for operation.
11	FB2	Output for second converter regulation loop.
12	VREF2	Reference comparison input for second converter regulation loop. 2.5V.
13	VREF1	Reference comparison input for first converter regulation loop. 2.5V.
14	FB1	Output for first converter regulation loop.
15	GND	Ground.
16	COMP	Error amplifier output and the input of the PWM comparator.
17	IN	The negative input of error amplifier. The positive input of error amplifier is a 2.5V reference voltage.
18	SS	The soft-start. It is settable through external capacitor. The current source output at this pin is 5.7uA and the voltage is clamped at 2.5V.
19	RI	Connected to external resistor for the reference setting.
20	VCC	Supply voltage. It is connected to 5V-standby.

FUNCTION DESCRIPTION

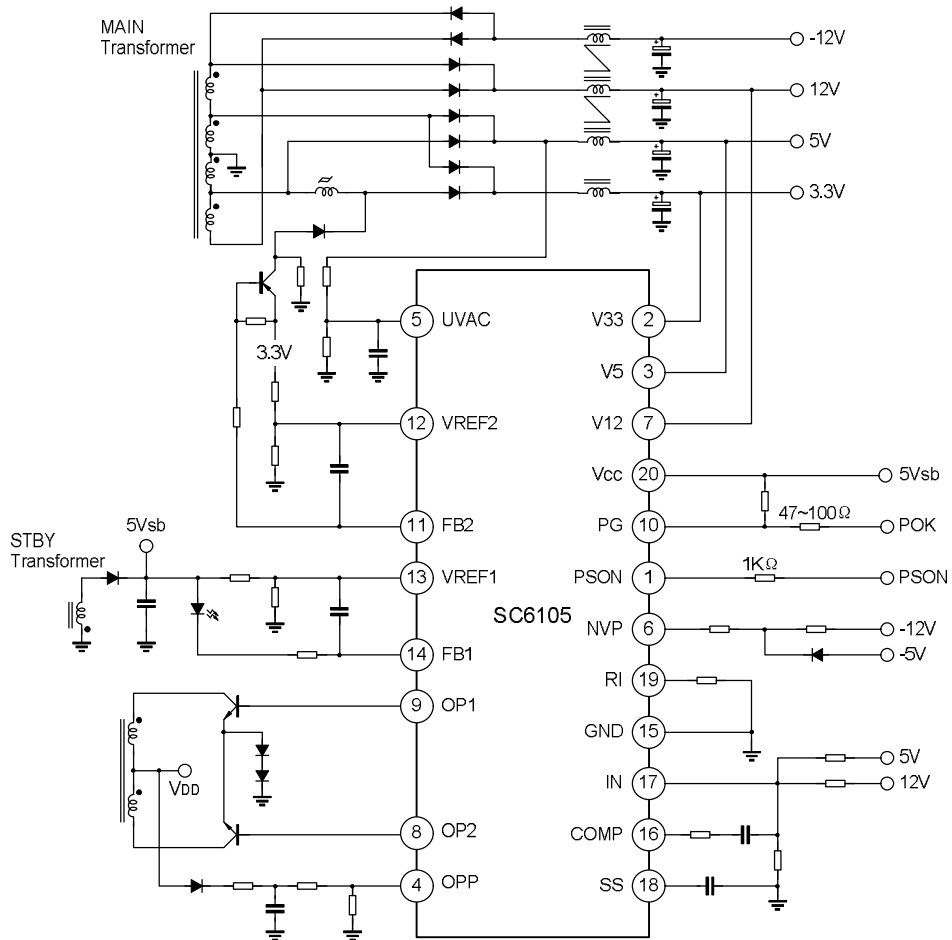
SC6105 have functions below: AC Power-down Detection, Over Power Protection (OPP), Negative Voltage Protection, Over-voltage and under-voltage protection, Power-down warning for power good signal, Power good signal and power-fail lockup, Remote on/off control, Complete pulse width modulation (PWM) control circuitry, On-chip oscillator, Programmable Soft-Start and so on.

TIMING DIAGRAM



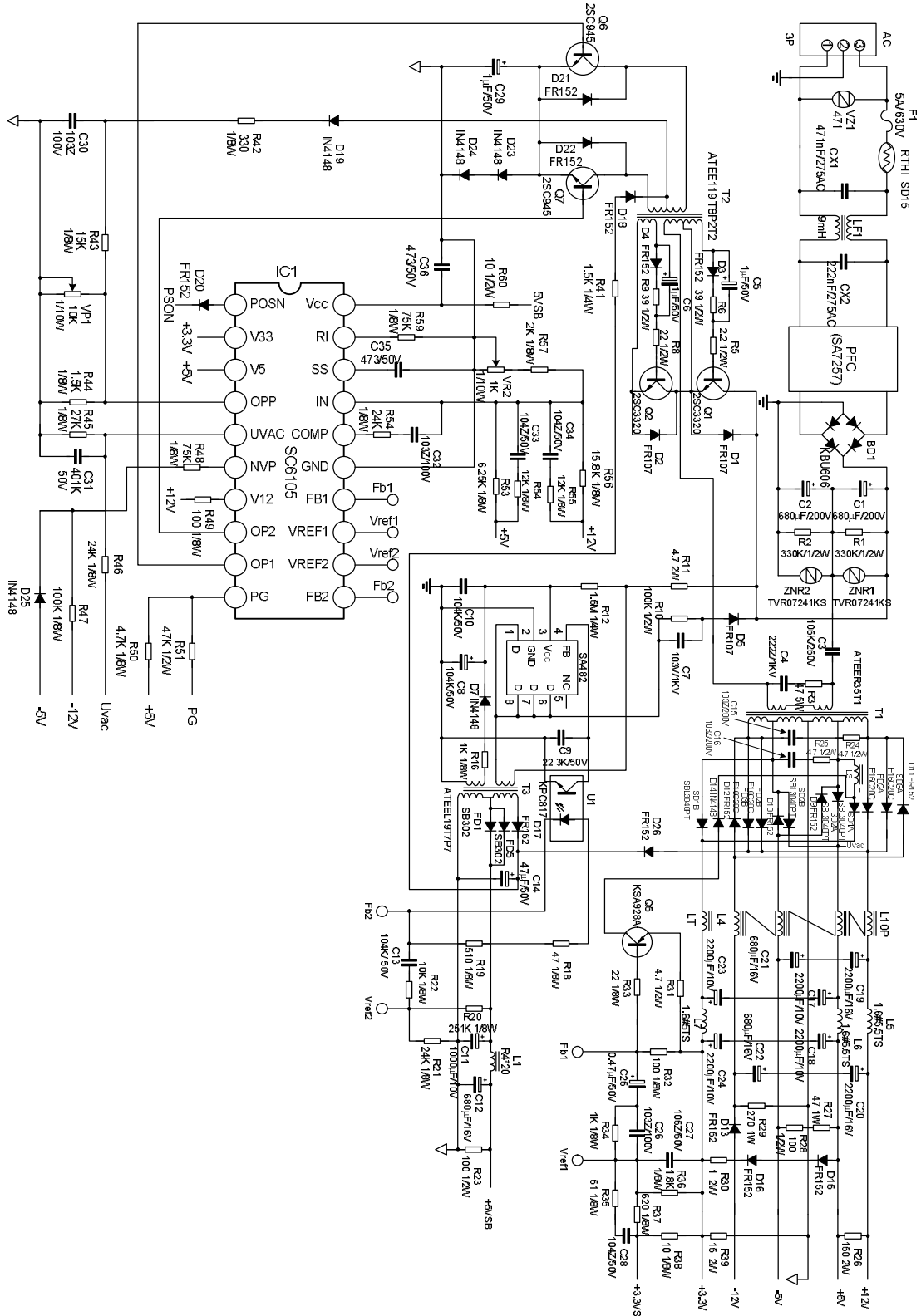


TYPICAL APPLICATION CIRCUIT

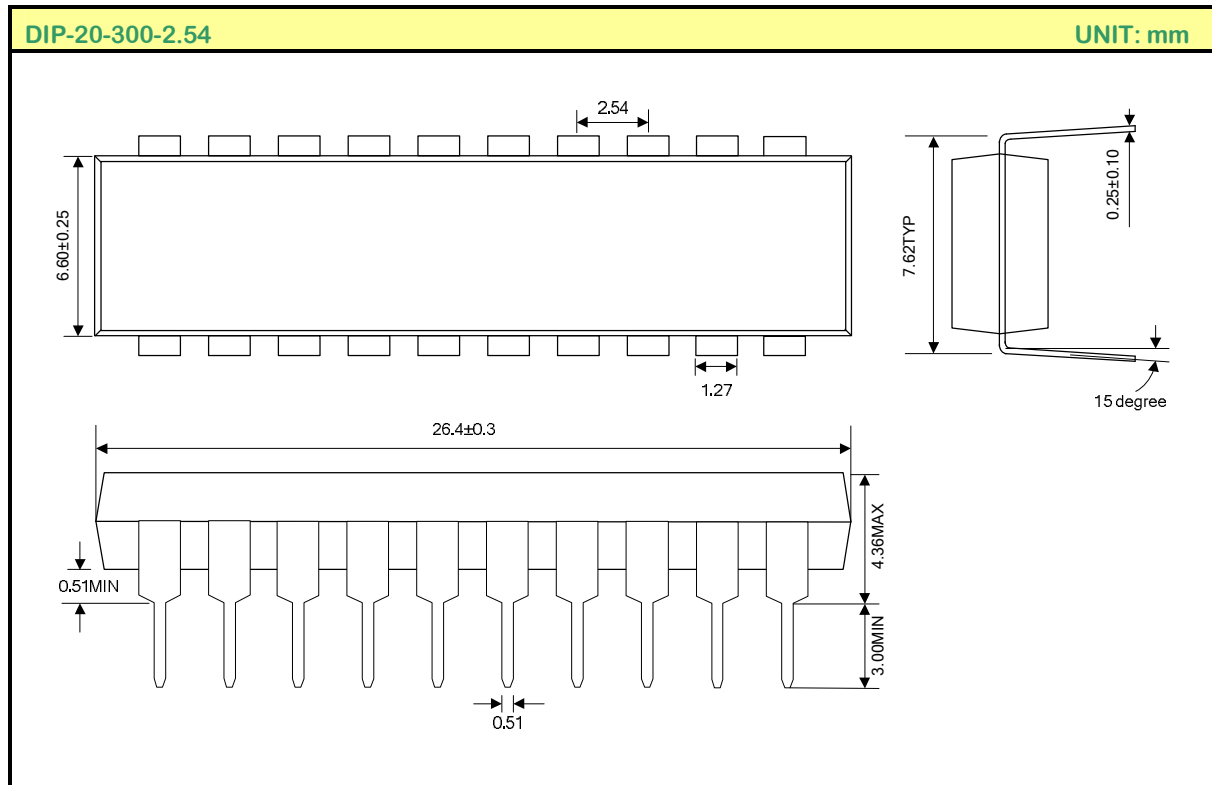


Note: The circuit and parameters are reference only, please set the parameters of the real application circuit based on the real test .

DETAIL APPLICATION CIRCUIT



PACKAGE OUTLINE



HANDLING MOS DEVICES:

Electrostatic charges can exist in many things. All of our MOS devices are internally protected against electrostatic discharge but they can be damaged if the following precautions are not taken:

- Persons at a work bench should be earthed via a wrist strap.
- Equipment cases should be earthed.
- All tools used during assembly, including soldering tools and solder baths, must be earthed.
- MOS devices should be packed for dispatch in antistatic/conductive containers.