

悅達電子有限公司

YETDA INDUSTRY LIMITED

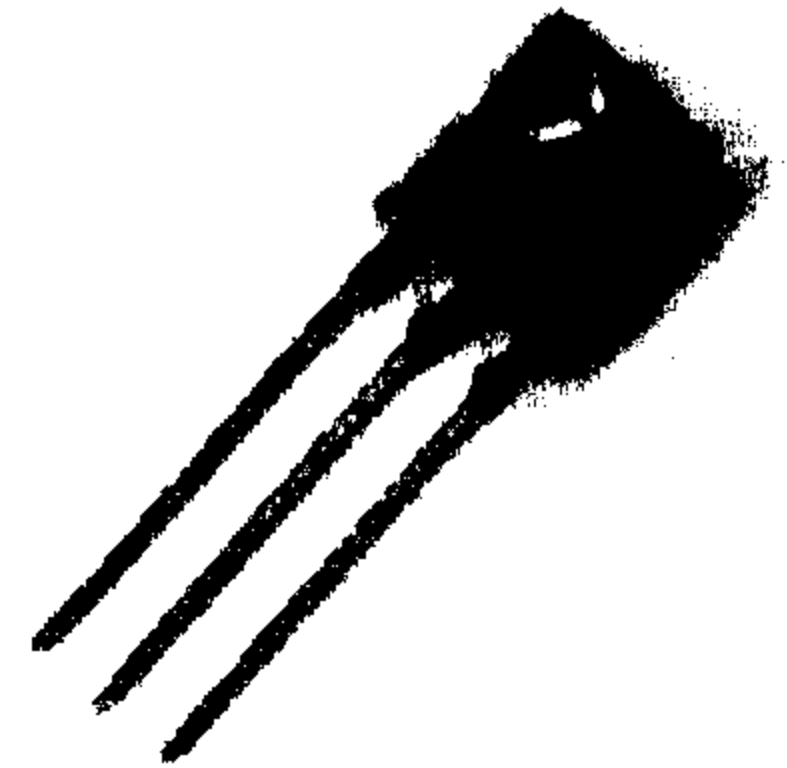
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HRM-3800-K

Description

The HRM-3800-K series are miniaturized receivers for infrared remote control systems. PIN diode and preamplifier are assembled on lead frame, the epoxy package is designed as IR filter.

The demodulated output signal can directly be decoded by microprocessor. The main benefit is the reliable function even in disturbed ambient and the protection against uncontrolled output pulses.



Features

- Photo detector and preamplifier in one package
- Wide operating supply voltage 2.7V~5.5V
- High immunity against disturbance light
- Internal filter for PCM frequency
- TTL and CMOS compatibility
- Output active low
- No external components necessary
- Suitable burst length ≥ 10 cycles/burst

PRELIMINARY

Special Features

- Enhanced disturbance suppression.
- No occurrence of disturbance pulsed at the output
- Supports most IR codes

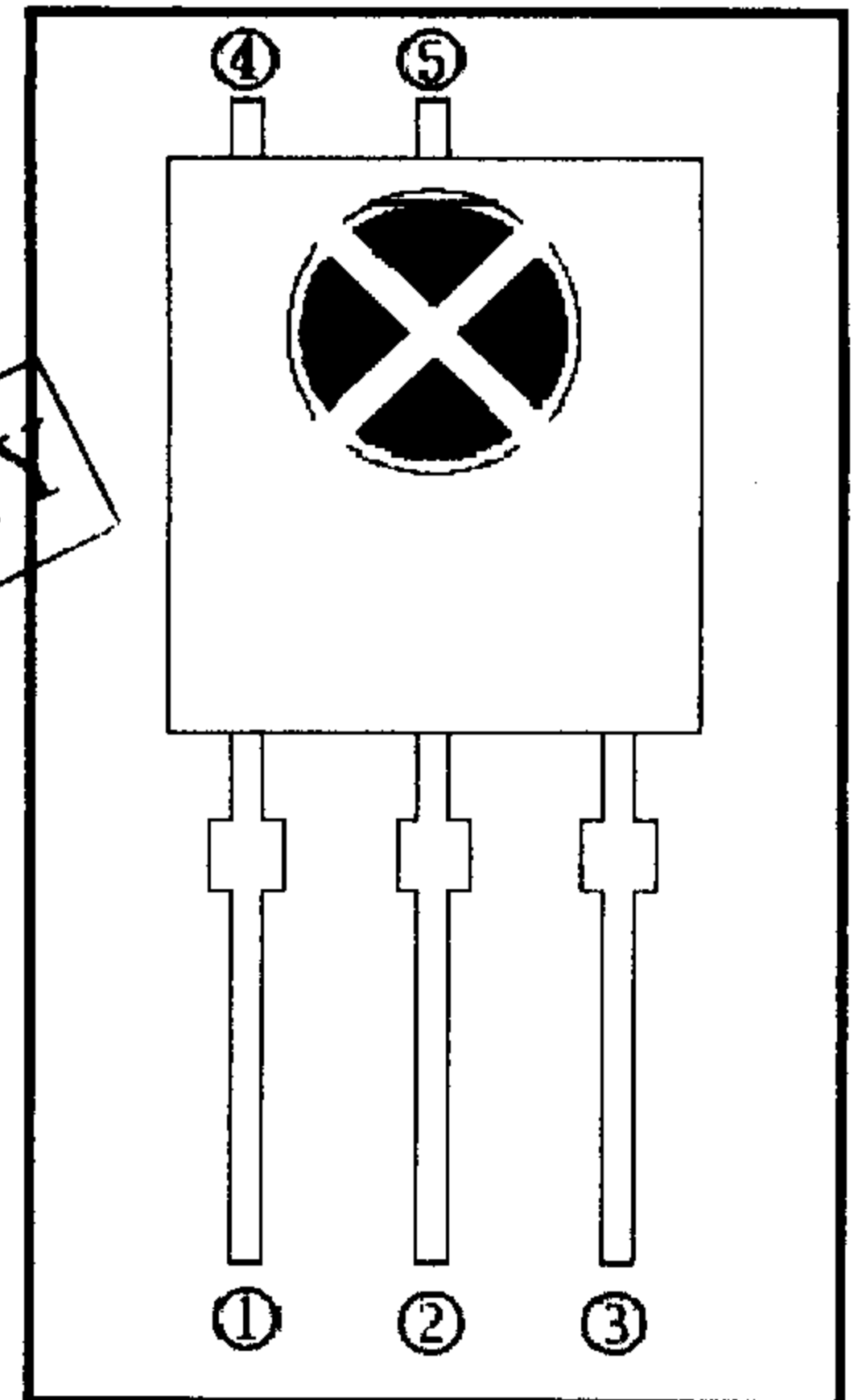


Fig.1

Pin No.	Pin Name	Description
1	Vout	Signal output
2	Gnd	Ground
3	Vin	Positive power supply
4	---	No Use
5	Gnd	Ground

Table 1.

Block Diagram

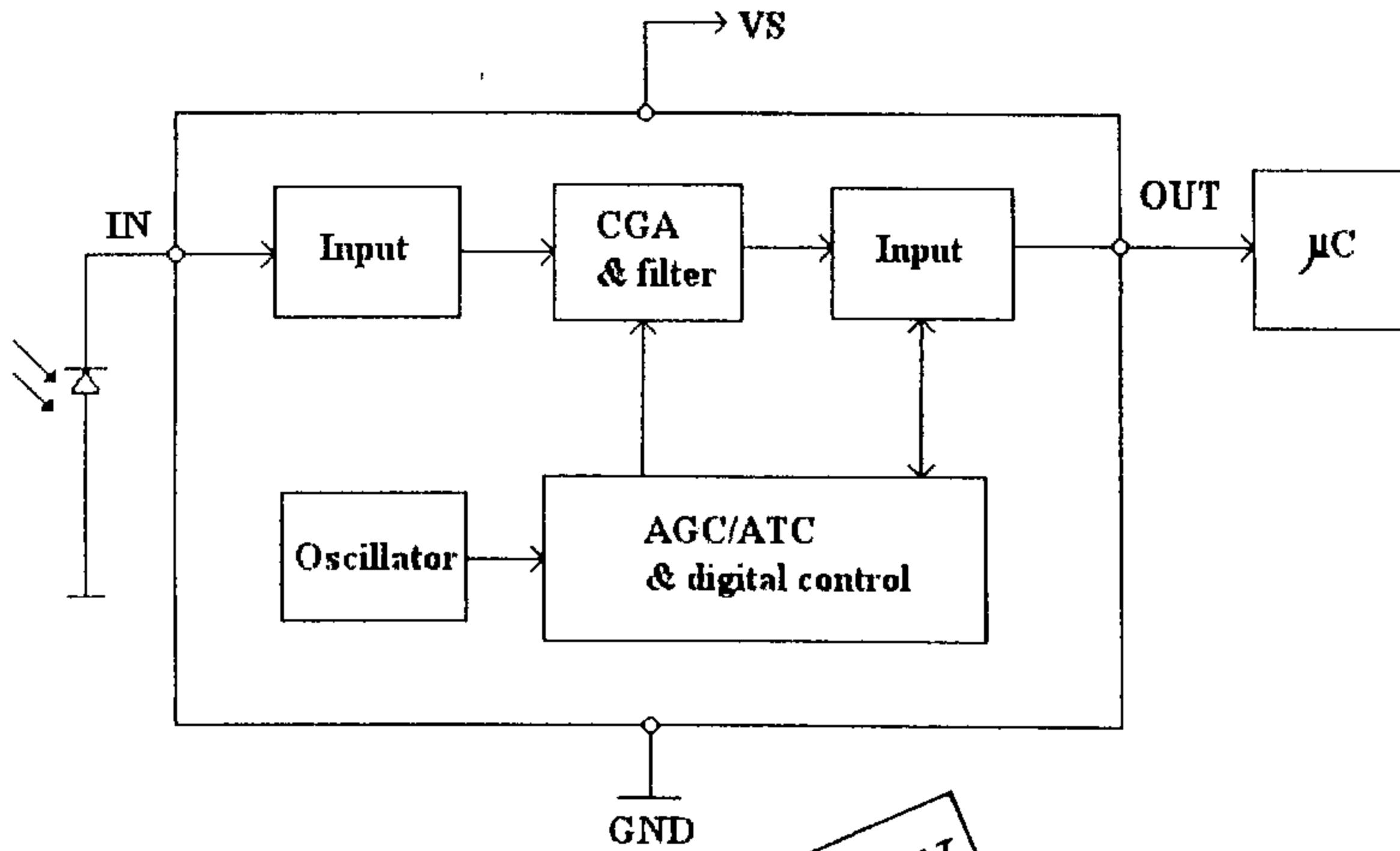


Fig. 2

Absolute Maximum Ratings

$T_a = 25^\circ\text{C}$

PRELIMINARY

Parameter	Test Conditions	Symbol	Value	Unit
Supply Voltage	(Pin 3)	V_s	-0.3...6.0	V
Supply Current	(Pin 3)	I_s	2.5	mA
Output Voltage	(Pin 1)	V_o	-0.3... V_s	V
Output Current	(Pin 1)	I_o	10	mA
Junction Temperature		T_j	100	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	-25...+85	$^\circ\text{C}$
Operating Temperature Range		T_a	-25...+85	$^\circ\text{C}$
Soldering Temperature	$T \leq 5\text{sec}$, 1 mm from case	T_{sd}	260	$^\circ\text{C}$

Table 2.

Basic Characteristics

Ta=25°C

Parameter	Test Conditions	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage (Pin 3)		V _{cc}	2.4	3	5.5	V
Supply Current (Pin 3)	V _s = 5 V, E _v = 0	I _{SD}		1.2	2.5	mA
Transmission Distance	E _v = 0, test signal see fig.4, IR diode RY502IRA743, I _F = 300mA	L	8	10		m
Output Voltage Low (Pin 1)	I _{OSL} = 0.5 mA, E _e = 0.7 mW/m ² , f = f ₀	V _{OSL}			250	mV
Irradiance (30 – 40 KHz)	Pulse width tolerance : T _{pi} – 5/f ₀ < t _{po} < t _{pi} + 5/f ₀ , Test signal	E _e min		0.3	0.5	mW/ m ²
Directivity	Angle of half transmission distance	φ 1/2		±45		deg
Response wavelength		λ _r		940		nm
Tuning frequency		f ₀		38		KHz

Table 3.

- ※ 1. The burst waveform mentioned below is to be transmitted from standard transmitter measure the pulse width after 10th pulse from transmission.
- ※ 2.ON/OFF pulse width is to be satisfied within 0.5 cm ~ arrival distance.

Detection Length Test

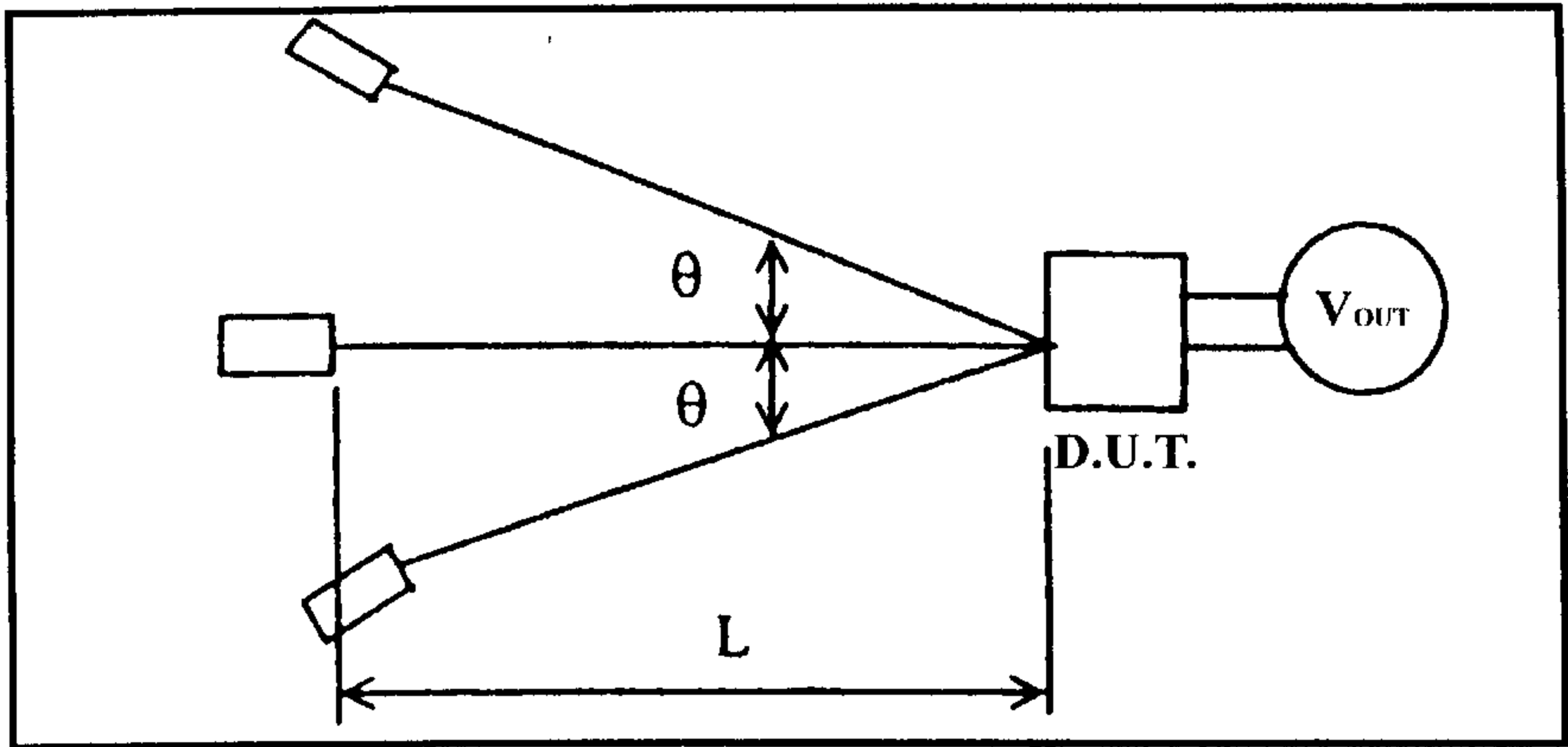


Fig.3

Pulse Width Test

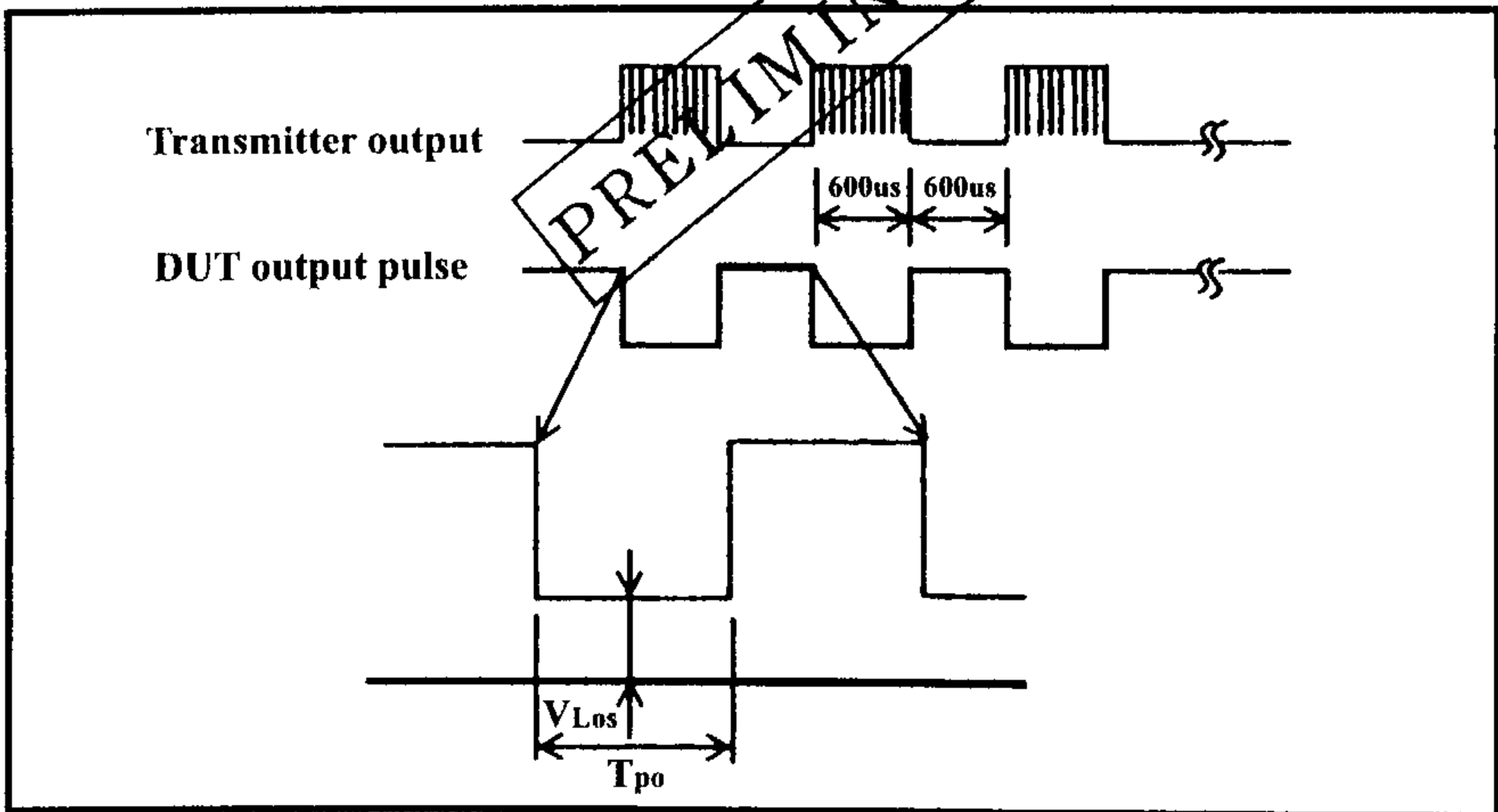


Fig.4

Typical Characteristics (Ta=25°C unless otherwise specified)

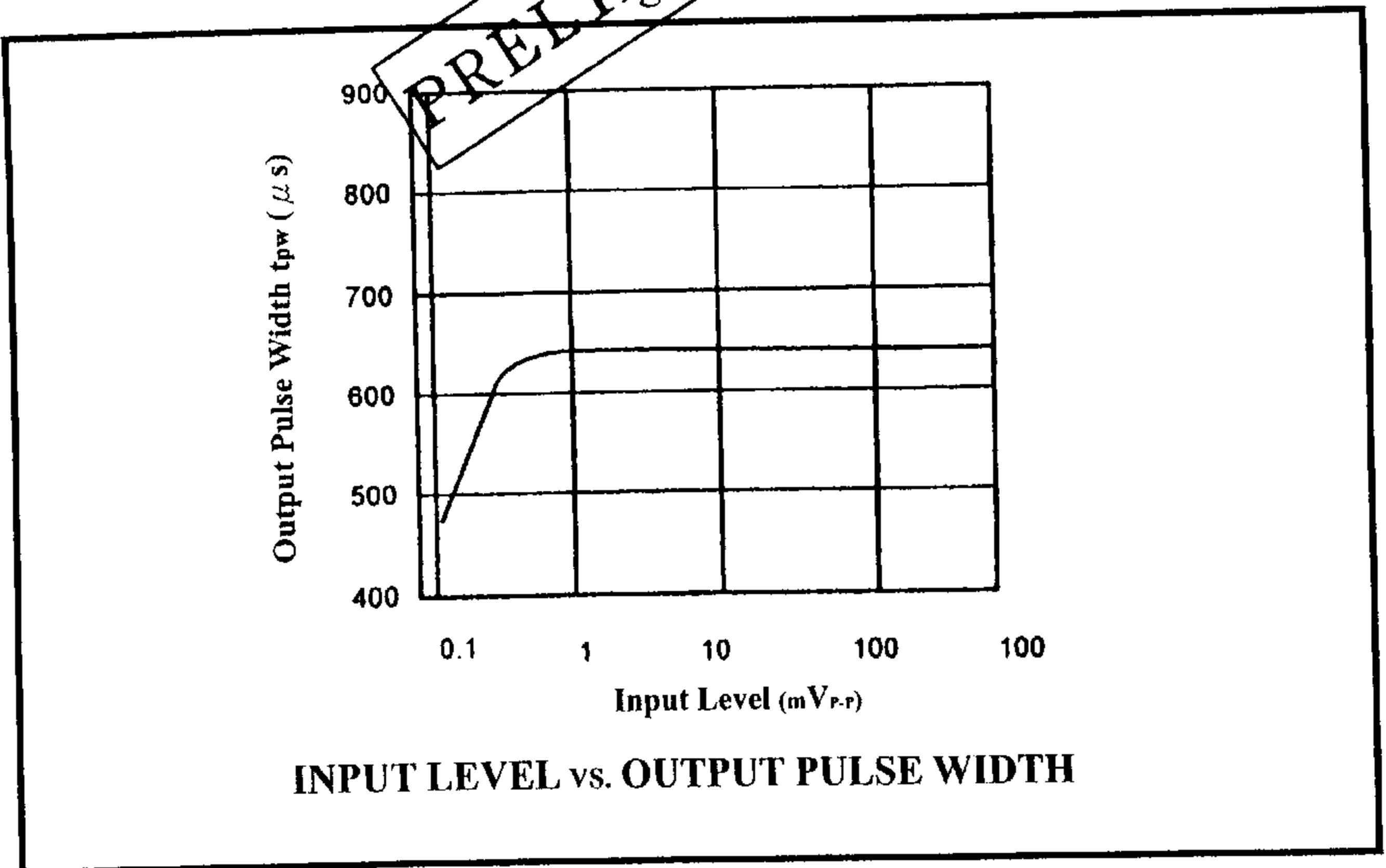
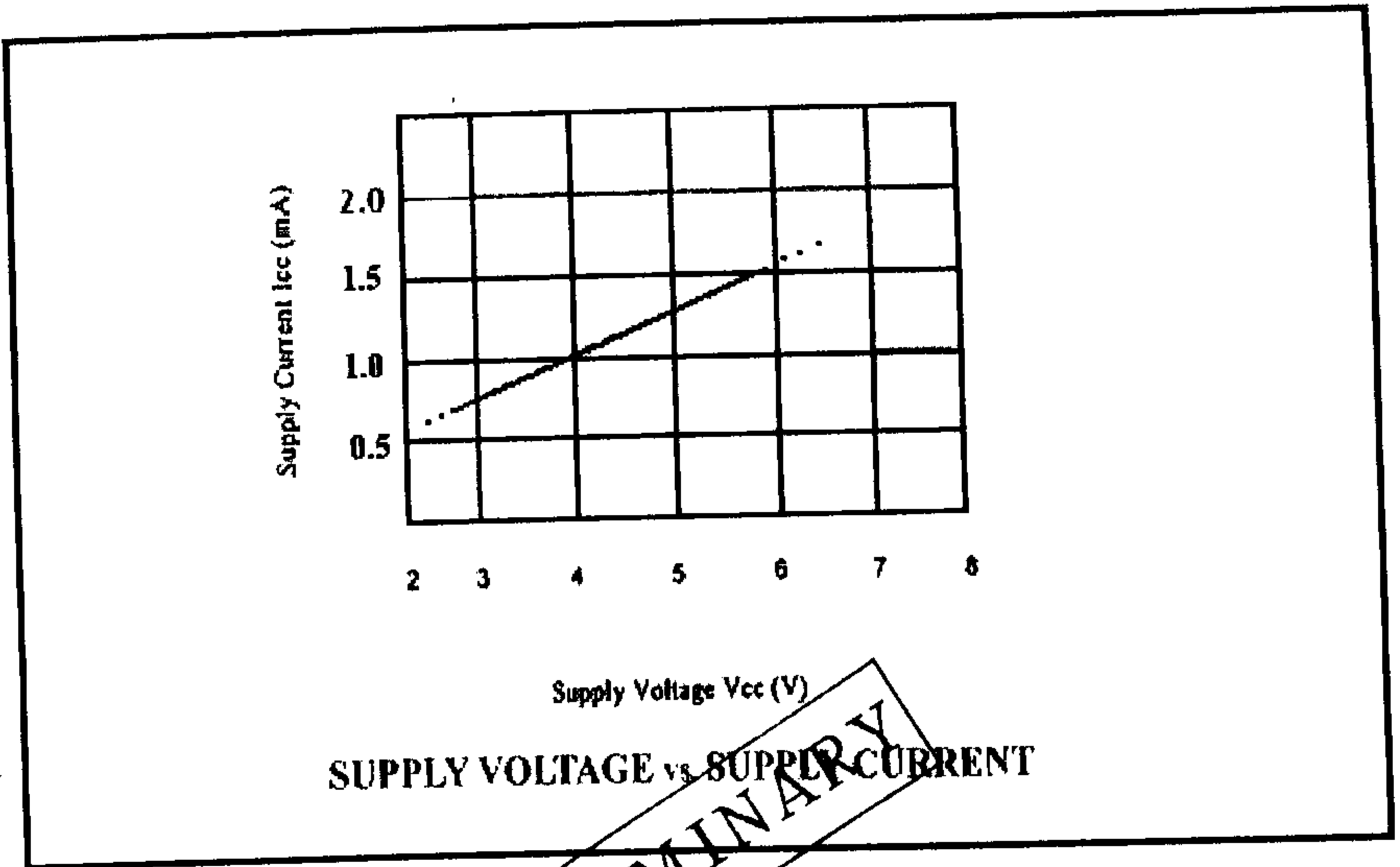
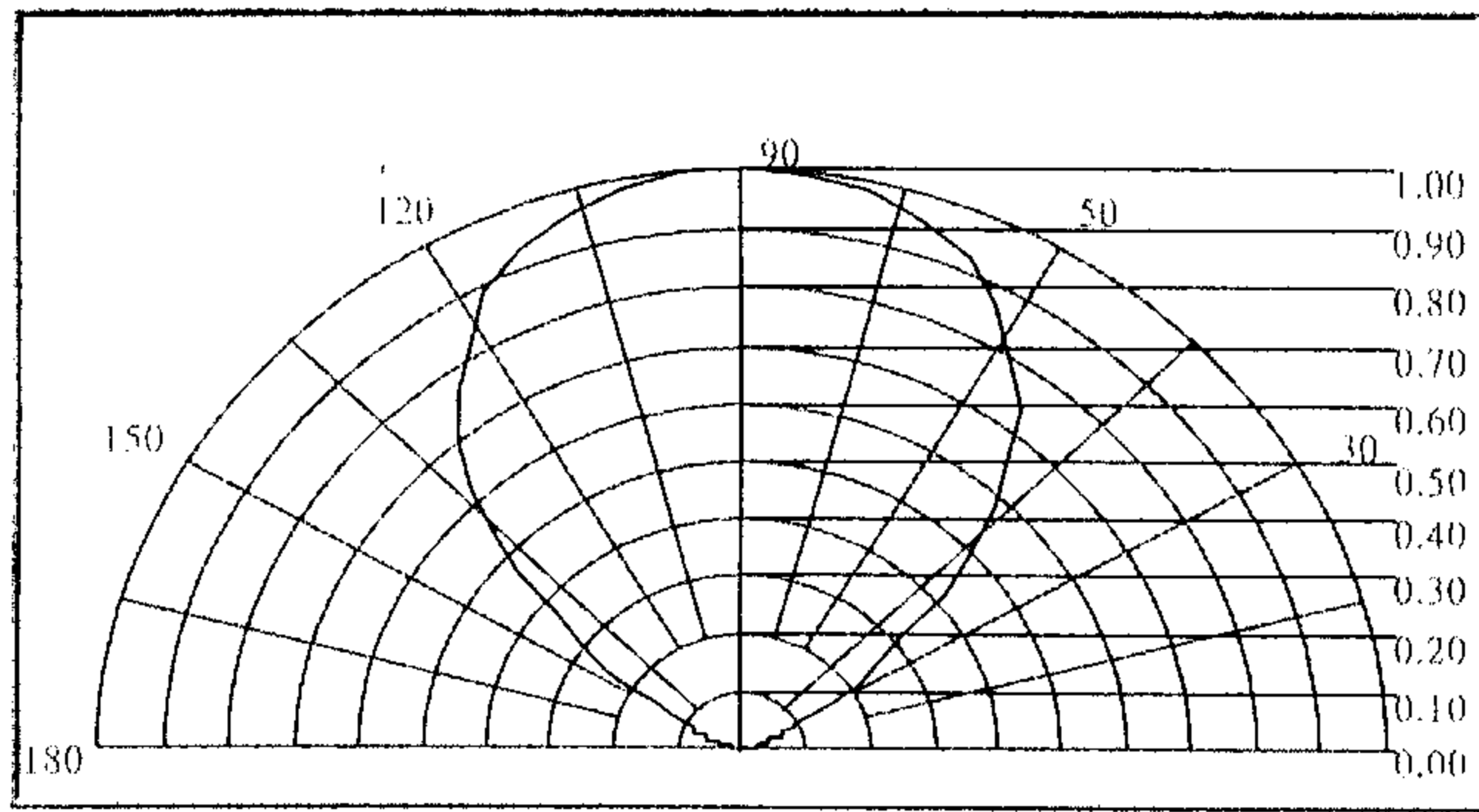


Fig.6



Sensitivity Angle (Horizontal Direction) Characteristics 【TYP.】

for reference

PRELIMINARY

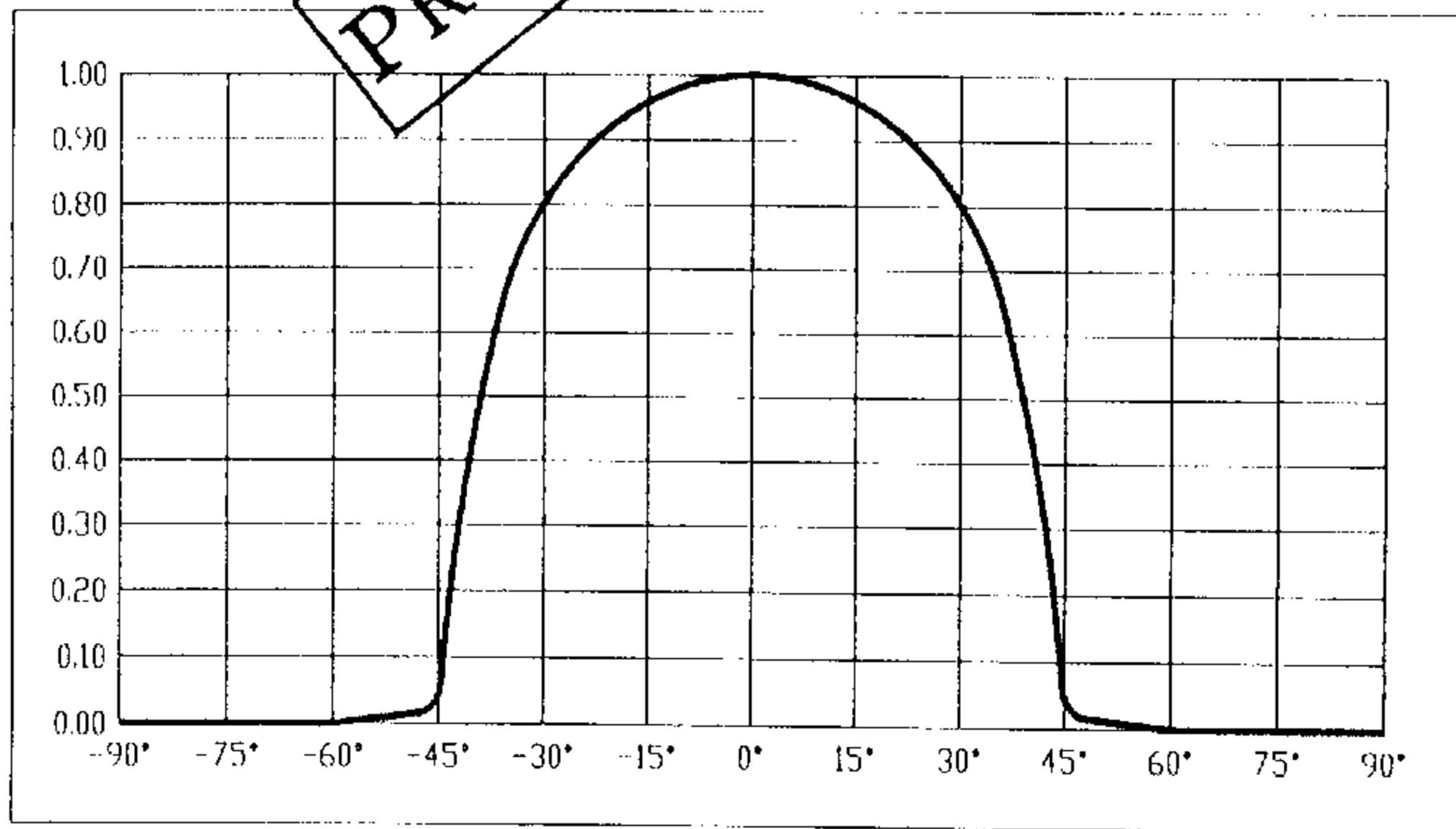


Fig.8

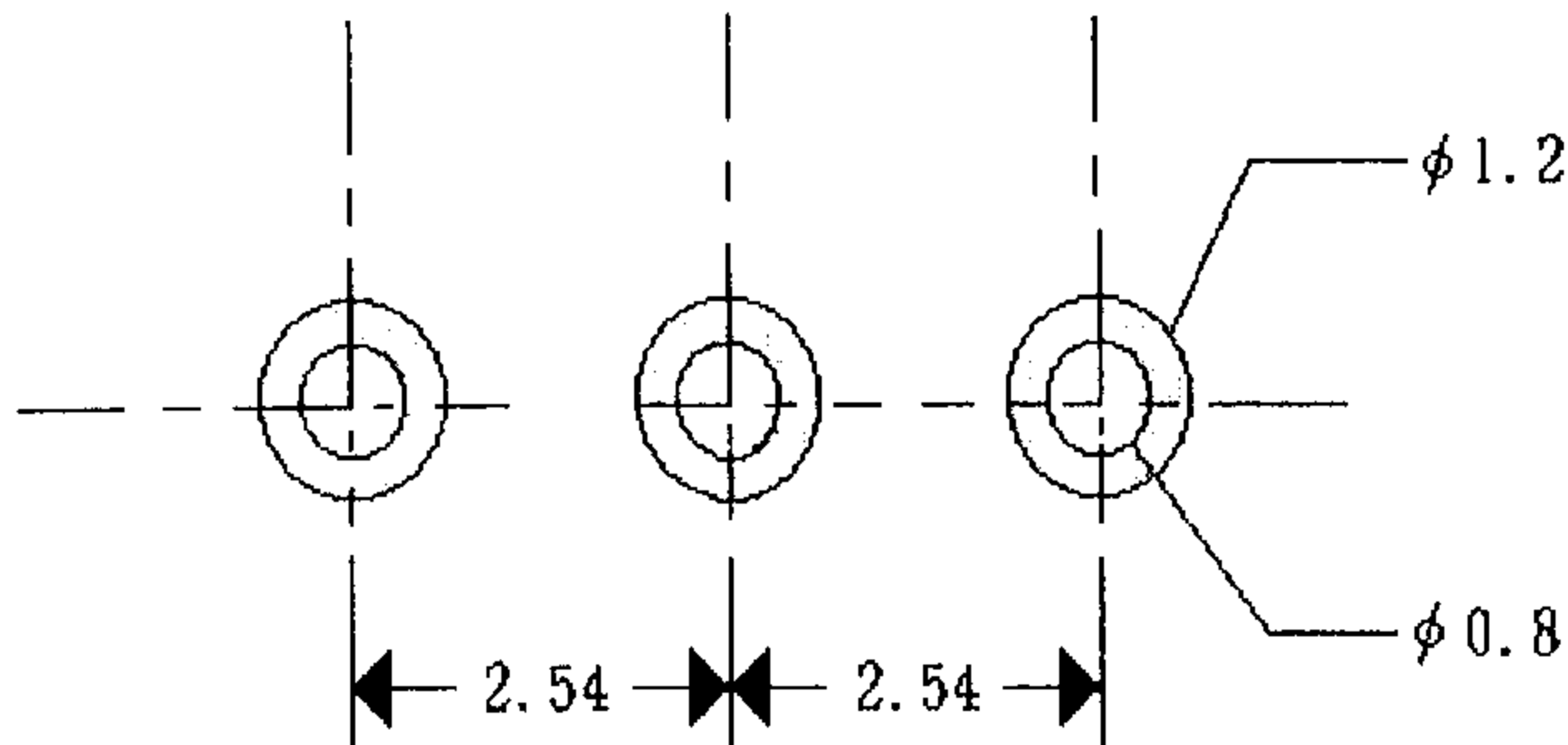
Note

1. Distance between emitter & detector specifies maximum distance that output waveform satisfies the standard under the conditions below against the standard transmitter.
 - A. Measuring placeIndoor without extreme reflection of light.
 - B. Ambient light source ... Detecting surface illumination shall be 200 ± 50 Lux under Ordinary hit fluorescence lamp of no high frequency lightning.
 - C. Standard transmitter... Burst wave indicated in drawing pulse width test of standard Transmitter shall be arranged to 50mVp-p under the measuring circuit.
2. (Electro-optical characteristics) shall be satisfied after 2 hours in the normal temperature.
3. (Electro-optical characteristics) shall be satisfied and no conoid deforms and destructions of appearance (excepting deforms of terminals)

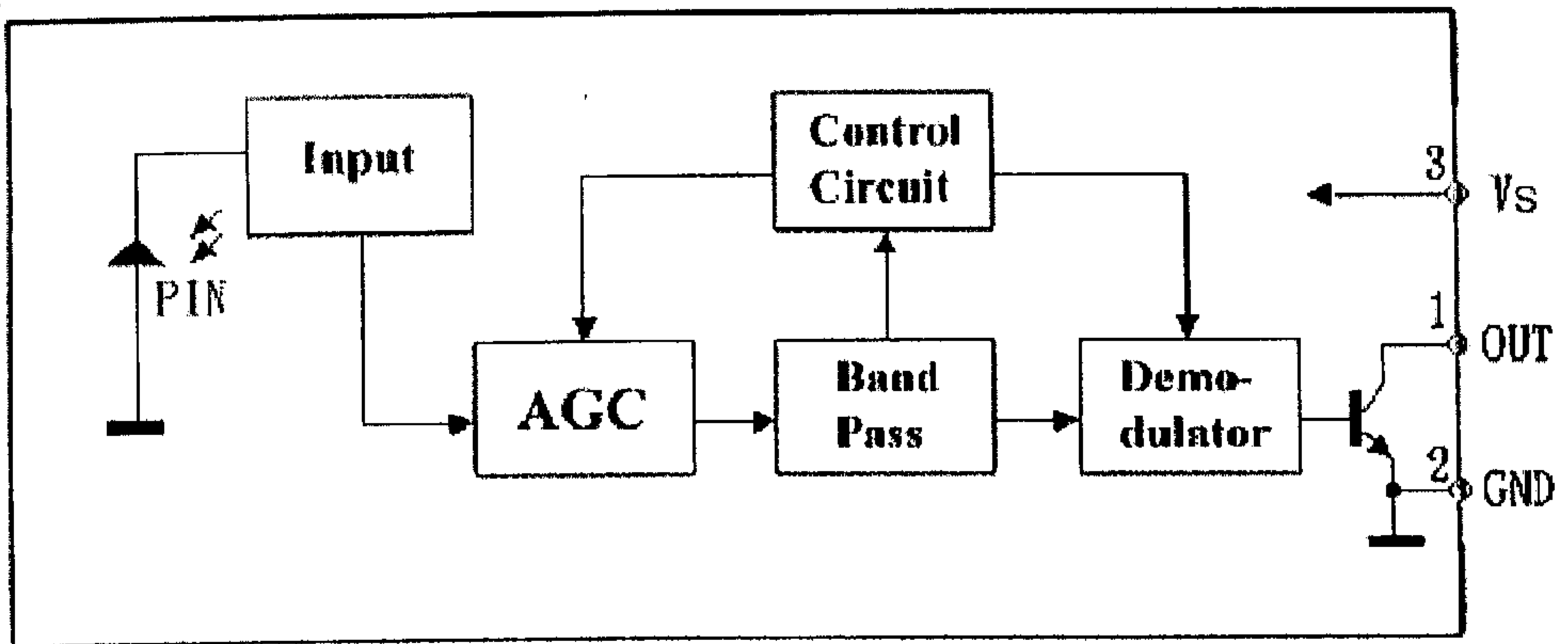
Precaution of Application

Designing 1.Soldering pattern:

The dimensions of the recommended soldering pattern may not meet every user. Recommended soldering pattern is listed below.



Designing 2: Circuit layout



Designing 3: Maximum Ratings.

Any application should refer to the specifications of absolute maximum ratings.

Storage

- ◆ Recommended to Store the products in the following conditions is:
- ◆ Humidity: 60%RH Max.
- ◆ Temperature: 5°C ~ 30°C
- ◆ Shelf life in sealed bag: 6month at < 40°C and < 90%RH.
- ◆ After the bag is opened, devices that will be subjected to solder, or equivalent processing must be:

Mounted within 1 year at factory conditions of $\leq 30^{\circ}\text{C}$ @ 60%RH