Data Sheet

品　　名：**POWER SUPPLY SUPERVISOR WITH PWM CONTROLLER**

奇高料號：**CG8011**

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CG8011
POWER SUPPLY SUPERVISOR WITH PWM CONTROLLER

The CG8011 is designed with a pulse-width-modulation control circuit and a complete power supervisor for use in the switched mode power supply .

It contains various functions, like under voltage protection (UVP), over voltage protection (OVP), power good output (PG) and ON/OFF control (REM).

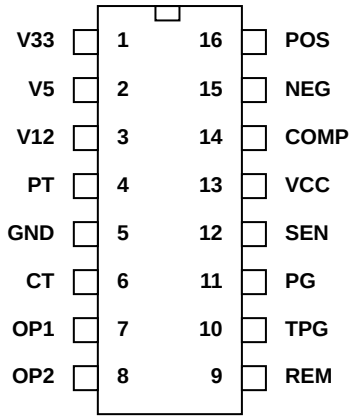
UVP(Under voltage protection) function is for +3.3V, +5V, +12V outputs.

OVP(Over voltage protection) function is for +3.3V, +5V, +12V and PT is for extra protection input.

PG(Power good signal) is a safe operation signal to inform the external parts.

REM(Remote on/off) is used to control the SMPS on/off. The REM control signal has the on/off transferred debounce–time.

PIN CONFIGURATION (Top View)



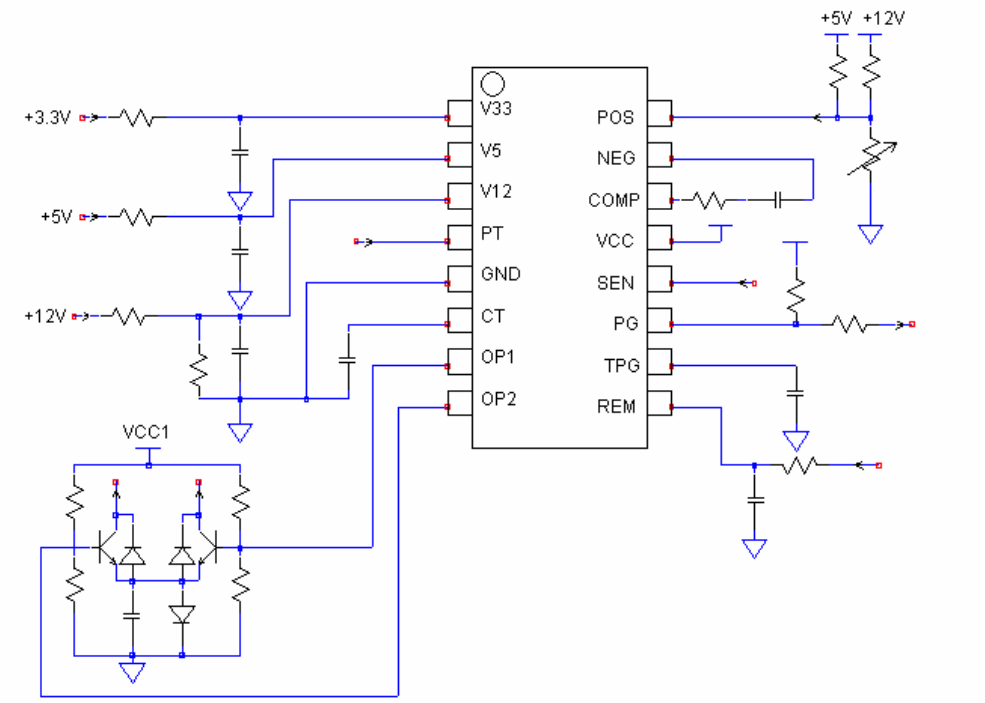
FEATURE

- 3-channel under voltage protection (UVP)
- 3-channel over voltage protection (OVP)
- 1-channel extra protection (PT)
- 1-channel sense input to control the PG (SEN)
- Remote on/off control function (REM)
- Dual output for push-pull operation (OP1/OP2)
- PG delay time controlled by external capacitor (TPG)
- VCC under voltage lockout
- 16-Pin dual in-line package
- Pb-free Package are available

ORDERING INFORMATION

ORDER NUMBER	Package	Shipping	Top Marking
CG8011DX16	DIP-16 (Pb-free)		

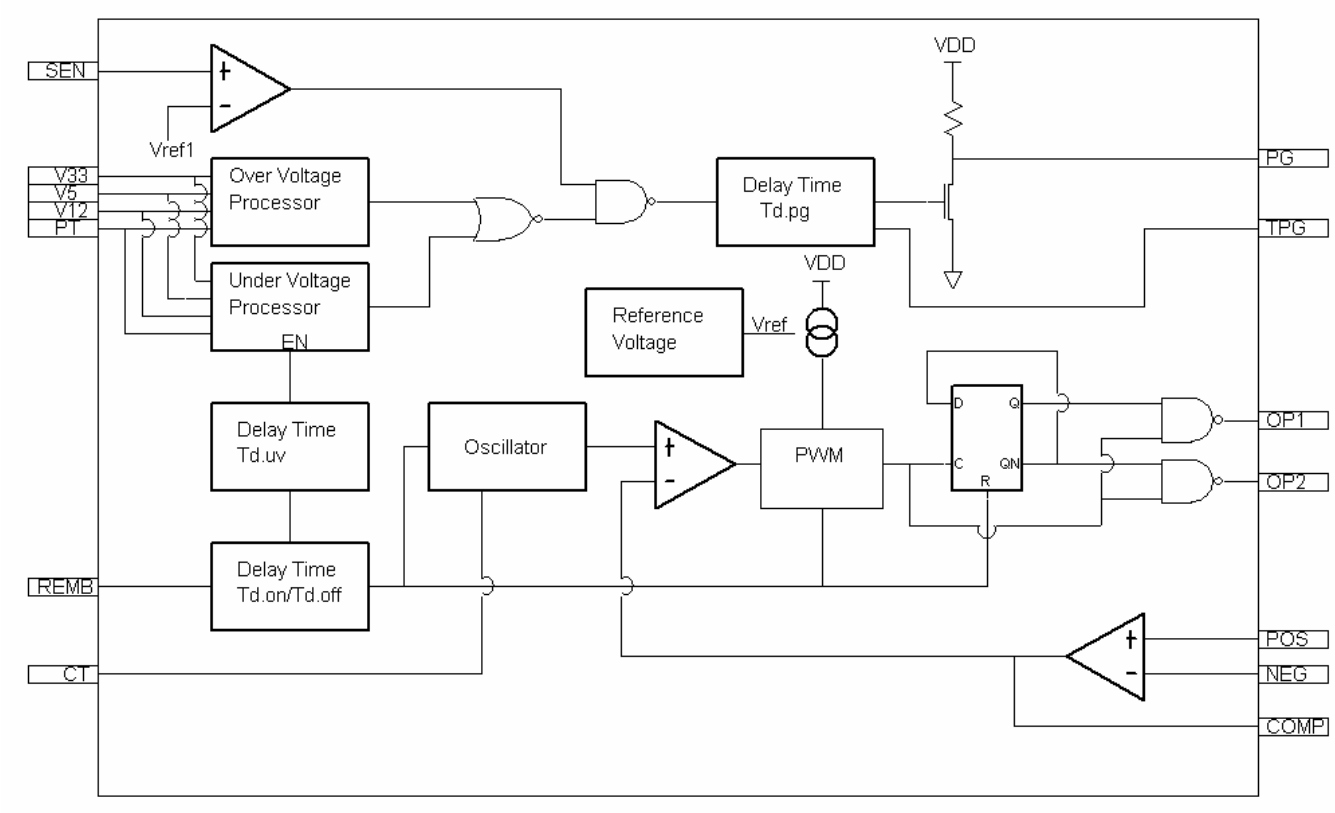
REFERENCE APPLICATION CIRCUIT



PIN DESCRIPTION

Pin	Symbol	Type	Function
1	V33	I	OVP, UVP for +3.3V
2	V5	I	OVP, UVP for +5V
3	V12	I	OVP, UVP for +12V
4	PT	I	Extra protection input
5	GND	-	Ground
6	CT	-	Oscillation frequency setting capacitor
7	OP1	O	PWM output1
8	OP2	O	PWM output2
9	REM	I	Remote ON/OFF control input
10	TPG	-	PG delay time function setting capacitor
11	PG	O	Power good signal
12	SEN	I	Sense signal input
13	VCC	I	Supply voltage
14	COMP	O	Error amplifier output
15	NEG	I	Error amplifier (-) input
16	POS	I	Error amplifier (+) input

FUNCTION BLOCK DIAGRAM



ABSOLUTE MAXIMUN RATINGS

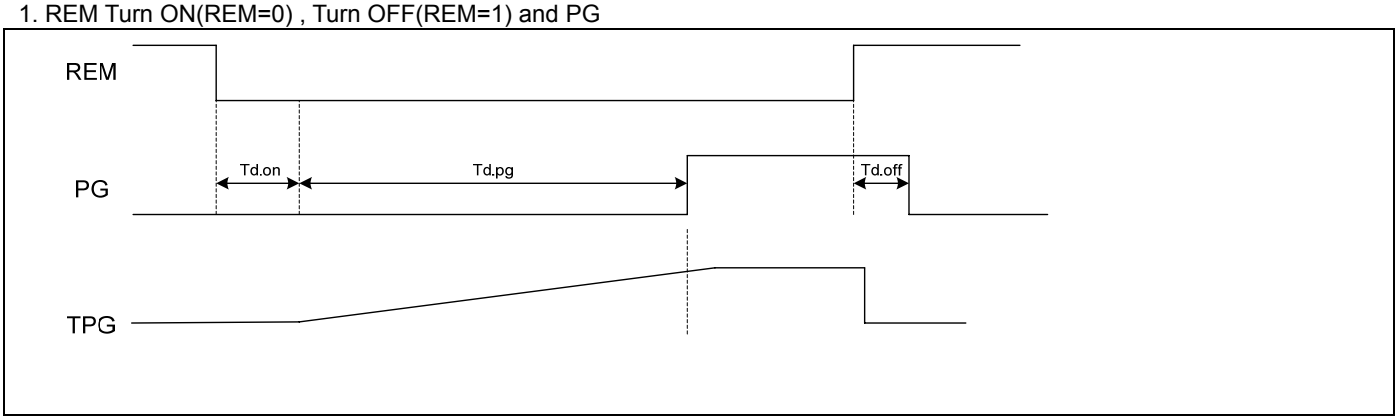
PARAMETER		MIN	MAX	UNITS
Supply Voltage	VCC	-0.3	7	V
Input Voltage	V33,V5,V12,PT,REMB,SEN,POS,NEG	-0.3	7	V
Output Voltage	OP1,OP2,PG,COMP	-0.3	7	V
Operating Temperature Range	T_O	-20	+85	°C
Storage Temperature Range	T_S	-65	150	°C

ELECTRICAL CHARACTERISTICS (For VCC=5V and Tj=25°C)

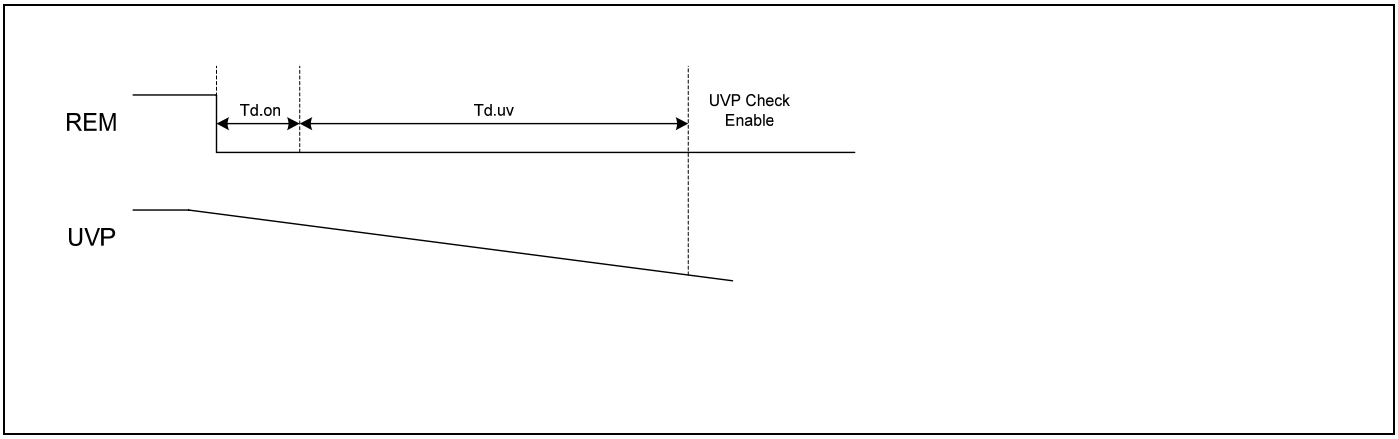
PARAMETER		CONDITIONS	MIN	TYP	MAX	UNITS
Over Voltage Protection (OVP- V33,V5,V12,PT)						
Over voltage threshold	OV33		3.8	4.1	4.4	V
	OV5		5.8	6.2	6.6	V
	OV12		4.4	4.6	4.9	V
	PT		1.23	1.28	1.33	V
Noise debounce time	Tg.ov			550		us
Under Volatge Protection (UVP- V33,V5,V12)						
Under voltage threshold	UV33		1.7	1.9	2.2	V
	UV5		2.7	3.0	3.3	V
	UV12		2.1	2.4	2.7	V
Noise debounce time	Tg.uv			120		us
PG check under voltage delay time	Td.uv		180	280	380	ms
VCC Under Voltage Lockout (UVLO)						
Start-up voltage				4.2		V
REM Input Pin (REM)						
High level input voltage	V_{IH}		1.8			V
Low level input voltage	V_{IL}				0.7	V
REM delay time	Td.on/ Td.off	Remote on/off		40		ms
Power Good (PG/TPG)						
SEN voltage threshold	SEN			0.63		V
Source current of TPG	Itpg.source			27		uA
High level TPG voltage	$V_{IH.tpg}$			3.0		V
PG delay time	Tpg.t	C=2.2uF		280		ms
Output load resistor	Rload		0.5	1	2	KΩ
PG internal pull high resistor	Rpull.up			5		KΩ
Oscillation Frequency						
PWM frequency	Fosc	CT=2200pF	60	65	70	KHz
Source current of CT	Isource.ct			470		uA
Error Amplifier (POS,NEG,COMP)						
Reference voltage	Vref	Vneg	2.45	2.5	2.55	V
Open loop gain	Avo		60	70		dB
Unity gain bandwidth	BW	0dB		1		MHz
Power supply rejection ratio	PSRR		45			dB
Total Device						
Supply current	I_{CC}	REM = 5V		6		mA

TIMING DIAGRAM

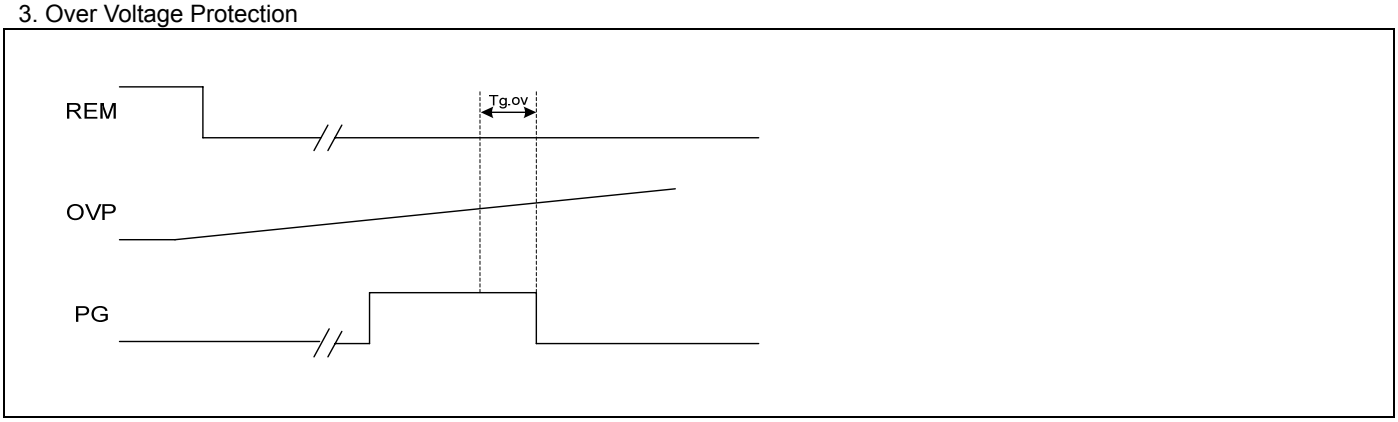
1. REM Turn ON(REM=0) , Turn OFF(REM=1) and PG



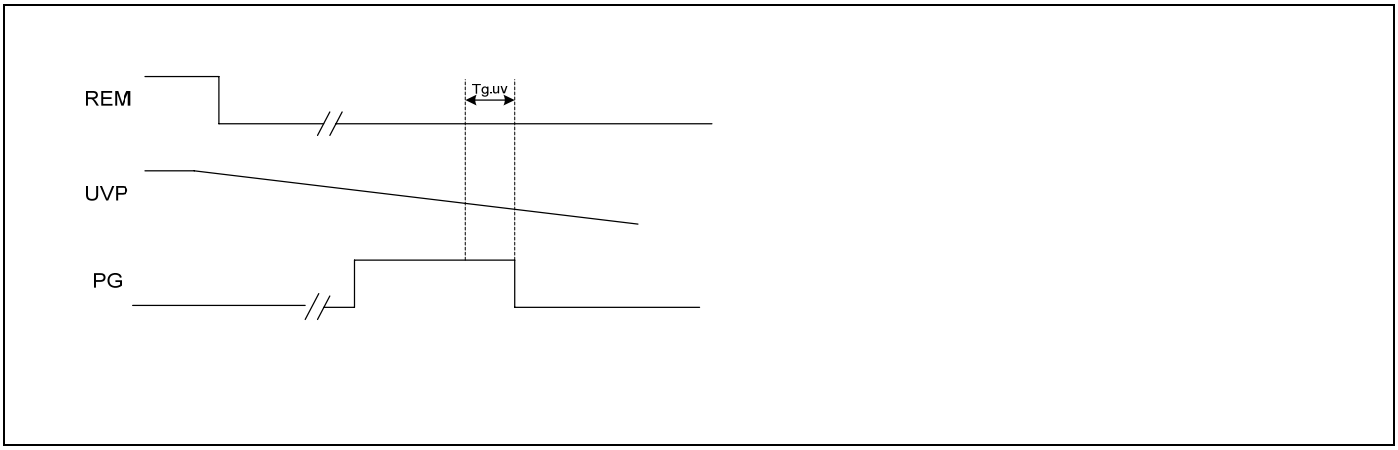
2. REM vs. Under Voltage Protection Delay time



3. Over Voltage Protection



4. Under Voltage Protection



APPLICATION HINTS

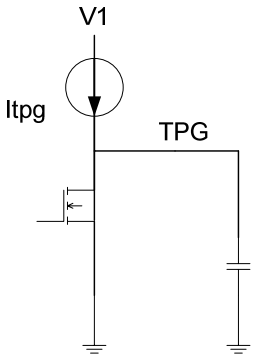
1. Input Impedence

Pin Name	Input Impedence
V33	52KΩ
V5	81KΩ
V12	52KΩ
PT	Pull-high to VCC= 24 KΩ Pull-low to GND= 4.7 KΩ

2. TPG

Itpg = 27uA(?)

Ttpg = K1· (C · V)／I = K1· (C·3.5)／27uA

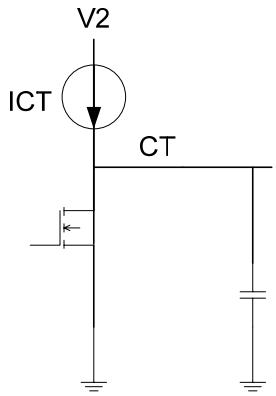


3. PWM Frequency

CT = 2200pF

Tpwm = K2 · (C · V) / I = K2 · (2200pF · 3.5V) / 470uA

Fpwm = 1 / Tpwm



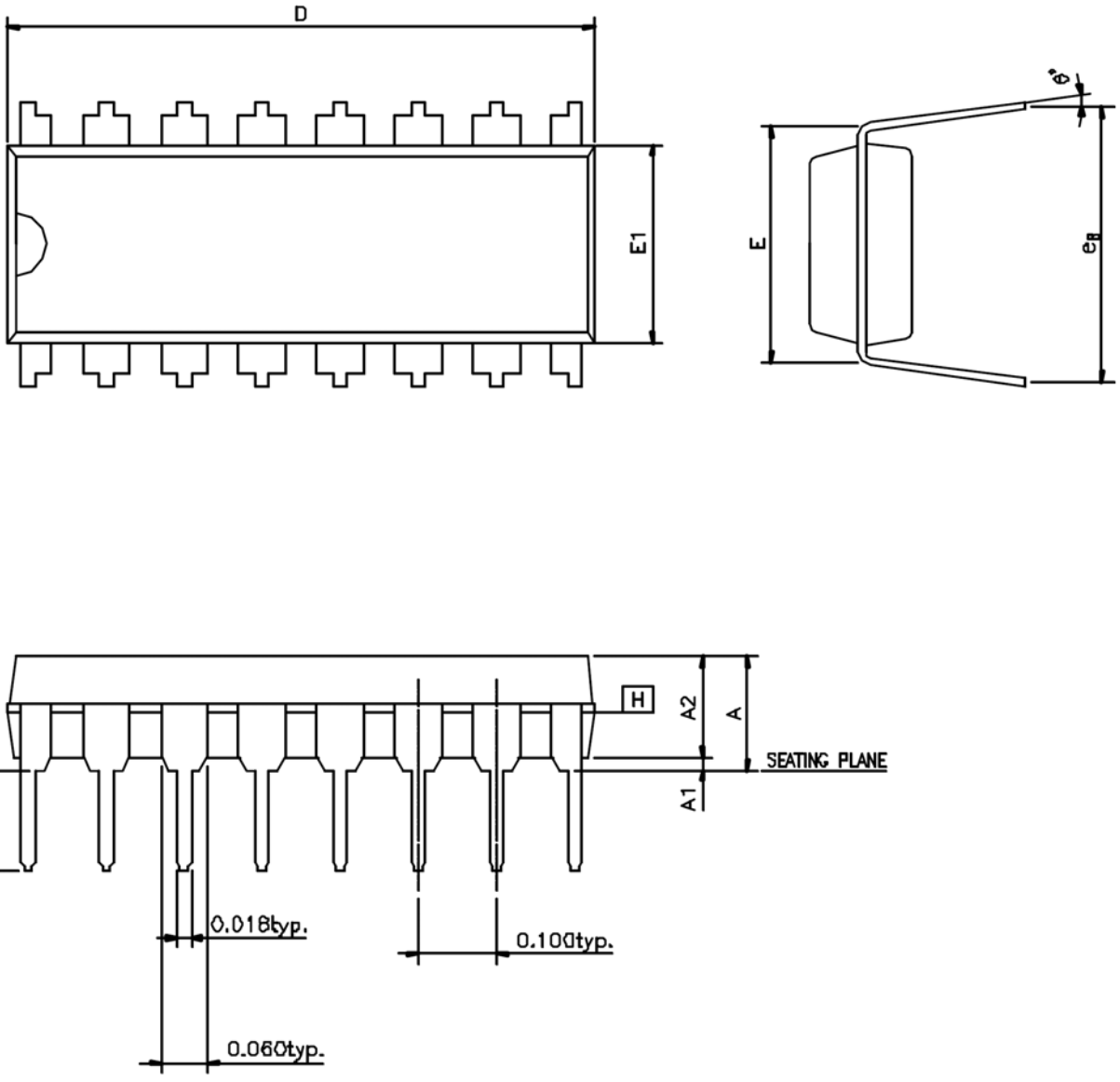
4.PT

PT Voltage Level	Function
PT>1.28V	Over voltage protection
PT<0.62V	Disable under voltage check function

5.REM

In some application circuits, adding a resistor in series with the REM pin could reduce the noise spike and avoid the pin from damage.

PACKAGE DIMENSIONS **PLASTIC DUAL IN LINE PACKAGE**
PDIP-16 **JEDEC OUTLINE : MS - 001**
P SUFFIX **UNIT : INCH**



SYMBOLS	MIN.	NOR.	MAX.
A	–	–	0.210
A1	0.015	–	–
A2	0.125	0.130	0.135
D	0.735	0.755	0.775
E		0.300 BSC.	
E1	0.245	0.250	0.255
L	0.115	0.130	0.150
e_B	0.335	0.355	0.375
θ°	0	7	15

UNIT : INCH