■ Introduction

The CE8818 Series is a high-precision voltage detector developed using CMOS process. The detection voltage is fixed internally with an accuracy of 2 %. A time delayed reset can be accomplished with the addition of an external capacitor. Two output forms, Nch open-drain and CMOS output, are available.

■ Features

- Ultra-low current consumption：1.0 uA
- High-precision detection voltage： 2 %
- Operating voltage range：0.7 V to 7.0 V
- Hysteresis characteristics：5 % typ.
- Detection voltage：0.8V to 5.0 V (0.01 V step)
- Output forms：
  Nch open-drain output (Active Low)
  CMOS output (Active Low)
- Lead-free products

■ Applications

- Power supply monitor for portable equipment such as notebook PCs, digital still cameras, PDAs and cellular phones
- Constant voltage power monitor for cameras, video equipment and communication equipment
- Power monitor and reset for CPUs and microcomputers

■ ORDER INFORMATION

CE8818①②③④⑤

DESIGNATOR	SYMBOL	DESCRIPTION
①	C	CMOS
	N	NMOS open drain
②③④	Integer	Detection Voltage (1.50V~6.00V), "④"elide when it is "0" e.g. 3.0V=②:3, ③:0 2.93V=②:2, ③:9, ④:3
⑤	M	Package：SOT-23-5
	N	Package：SOT-343 （SC-82）

■ Pin Configurations

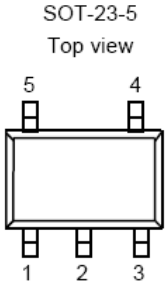
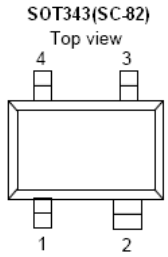


Table 1 CE8818 Series（SOT-23-5）

PIN NO.	PIN NAME	FUNCTION
1	OUT	Reset Signal Output Pin
2	V_{DD}	Power Input
3	GND	Ground
4	NC	No connection
5	C_D	Capacitor Connect Pin with Delay

CE8818Series（SOT343）



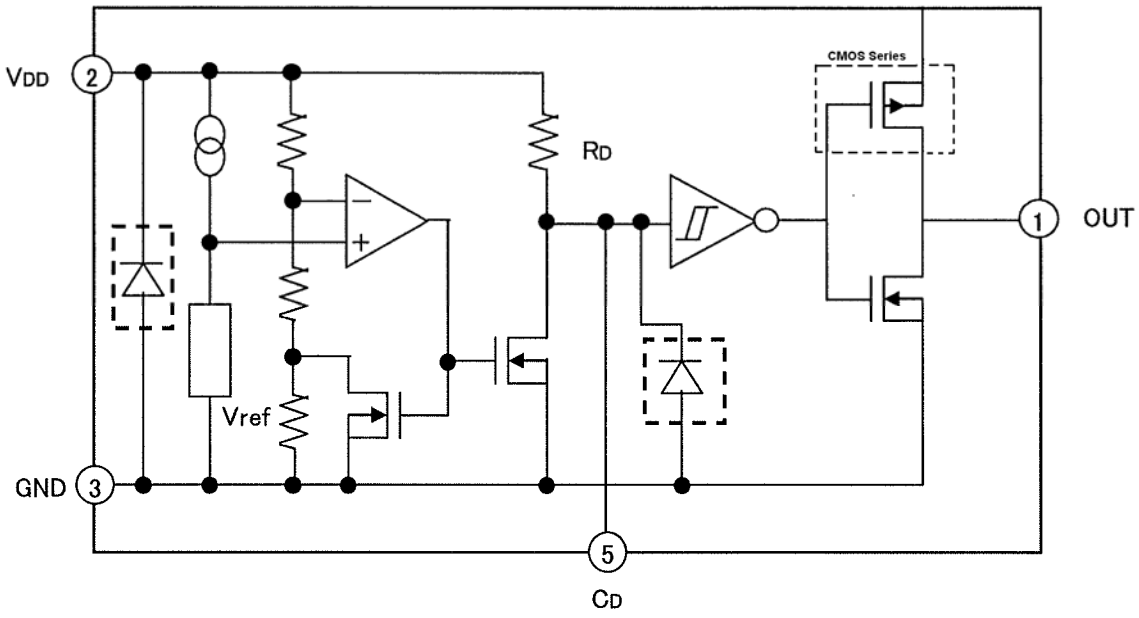
PIN NO.	PIN NAME	FUNCTION
1	V_{DD}	Power Input
2	GND	Ground
3	C_D	Capacitor Connect Pin with Delay
4	OUT	Reset Signal Output Pin

■ Absolute Maximum Ratings

(Ta=25°C unless otherwise specified)

Item		Symbol	Absolute Maximum Ratings	Unit
Power supply voltage		V_{DD}	V_{SS}-0.3 ~ V_{SS}+8	V
Output voltage		V_{OUT}	V_{SS}-0.3 ~ V_{SS}+8	V
Power dissipation	SOT-23-5	PD	250	mW
	SOT343	PD	250	mW
Operating ambient temperature		Topr	-40 ~+85	°C
Storage temperature		Tstg	-40 ~+125	°C

■ Block Diagram



■ Electrical Characteristics

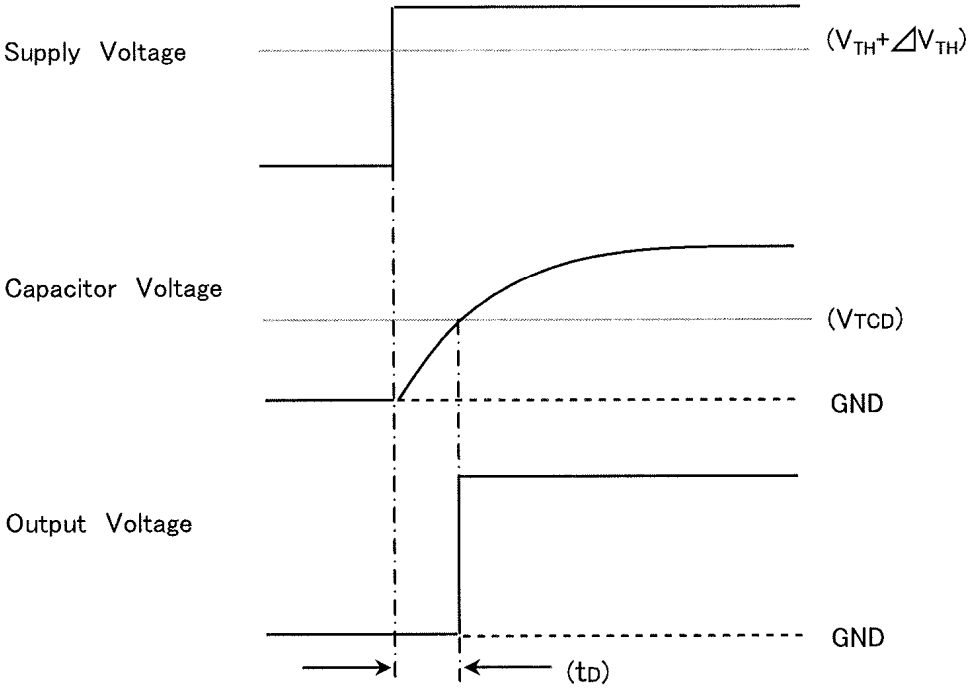
(Ta=25°C unless otherwise specified)

Item	Symbol	Condition		Min.	Typ.	Max.	Unit
Detection voltage***1**	V_{TH}	—		$V_{TH\,(S)}$ ×0.98	$V_{TH\,(S)}$	$V_{TH\,(S)}$ ×1.02	V
Hysteresis width	$\triangle V_{TH}$	—		0.02× $V_{TH\,(S)}$	0.05× $V_{TH\,(S)}$	0.08× $V_{TH\,(S)}$	V
Current consumption	I_{SS}	$V_{DD} = V_{TH\,(S)}$＋0.5V			1.0	2.0	uA
Operating voltage	V_{DD}	—		0.7	—	7	V
Output current	I_{OUT}	NCH：V_{OUT} =0.5 V $V_{DD} = V_{TH\,(S)}$-0.5 V	CE8818_20～26	3.0	13.0	20	mA
			CE8818_26～39	3.0	15.0	20	mA
			CE8818 _39～60	3.0	18.0	20	mA
		CMOS：V_{DD}-V_{OUT} =0.5 V $V_{DD} = V_{TH\,(S)}$ ＋0.5 V	CE8818_20～26	1.5	4.0	10	mA
			CE8818_26～39	1.5	6.0	10	mA
			CE8818_39～60	1.5	8.0	10	mA
Leakage current	I_{LEAK}	Only for Nch open-drain output products, Nch, V_{DD} =7.0 V, V_{OUT} =7.0 V			0.1	1	uA
temperature coefficient		Ta=−40°C ~ +85°C			±100		ppm/°C
CD PIN resistance	R_D	V_{DD}=5V Vcd=0V		6	9	12	MΩ
CD Delay Pin Threshold Voltage	V_{TCD}			0.30*V_{DD}	0.5*V_{DD}	0.60*V_{DD}	V
CD Delay Time	T	T=-ln(1-V_{TCD}/V_{DD})×RC		0.35RC	0.69RC	0.92RC	S
L transfer delay time	t_{PHL}	V_{DD}=V_{TH}+0.4V→V_{TH}-0.4V (note 2)		2	15	100	uS
H transfer delay time	t_{PLH}	V_{DD}=V_{TH}-0.4V→V_{TH}+0.4V (note 2)		2	15	100	uS

***1.** V_{TH}: Actual detection voltage value, $V_{TH\,(S)}$: Specified detection voltage value

*2.The parameter is guaranteed by design.

Timing Chart

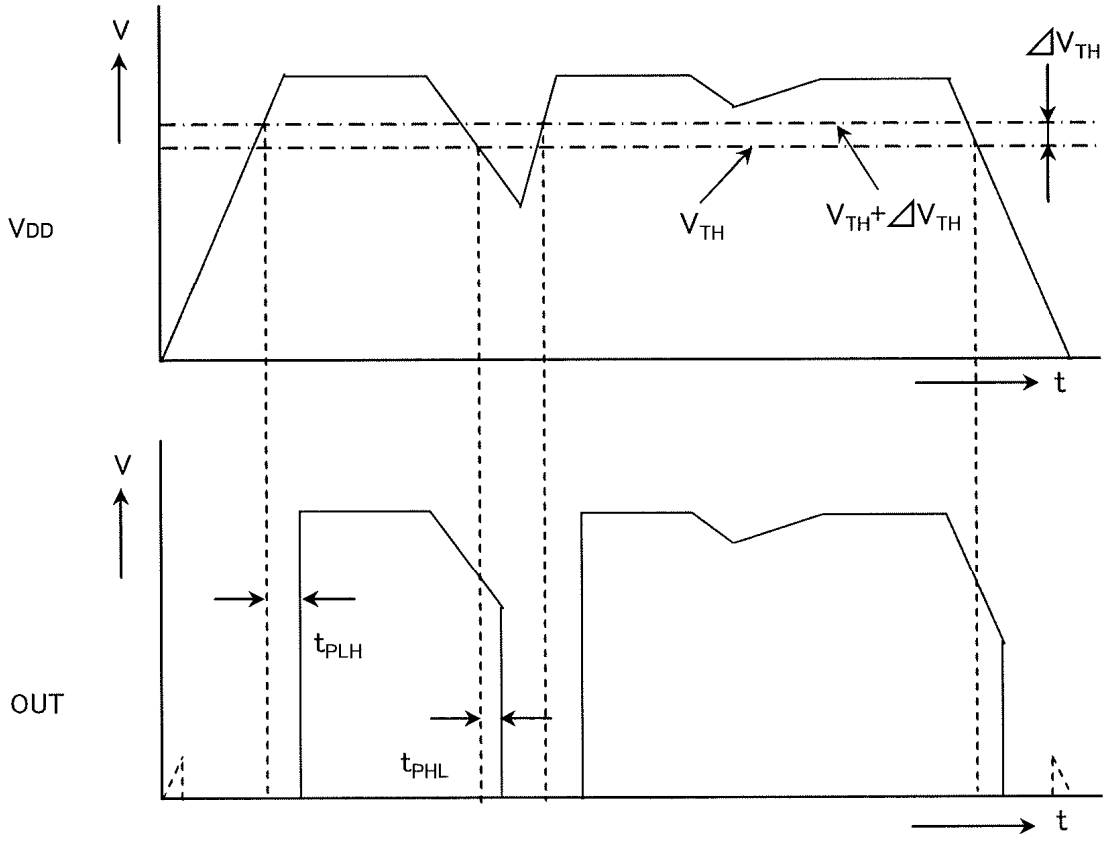


(tD) Delay Time

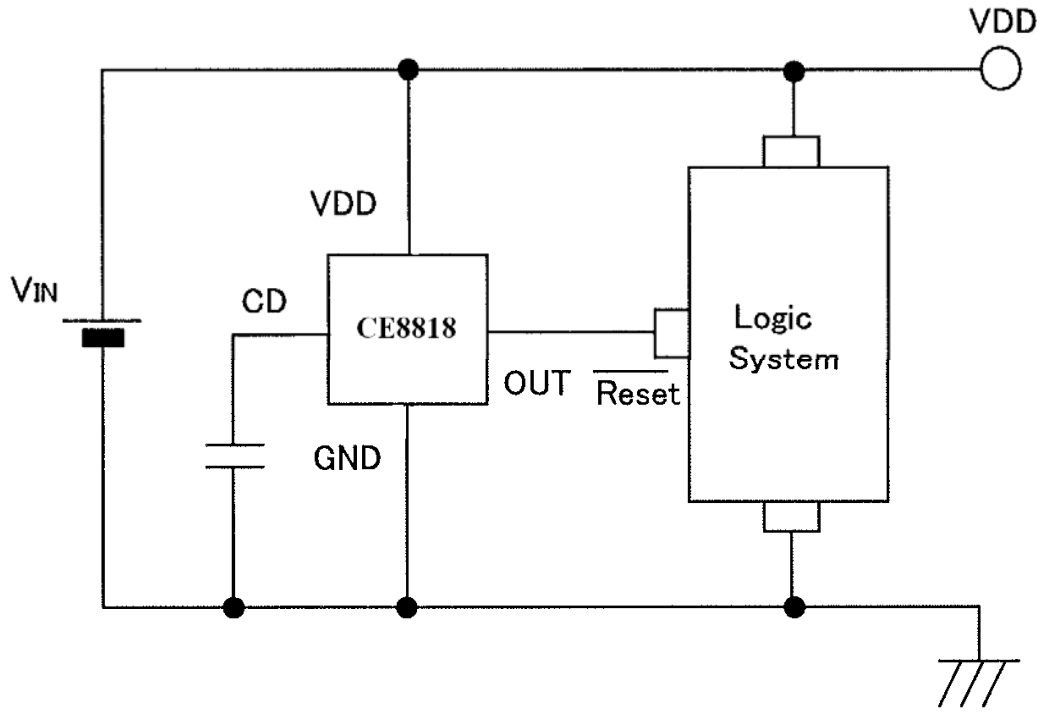
$t_D \fallingdotseq 0.69 \times R_D \times C_D(F)$ (s)

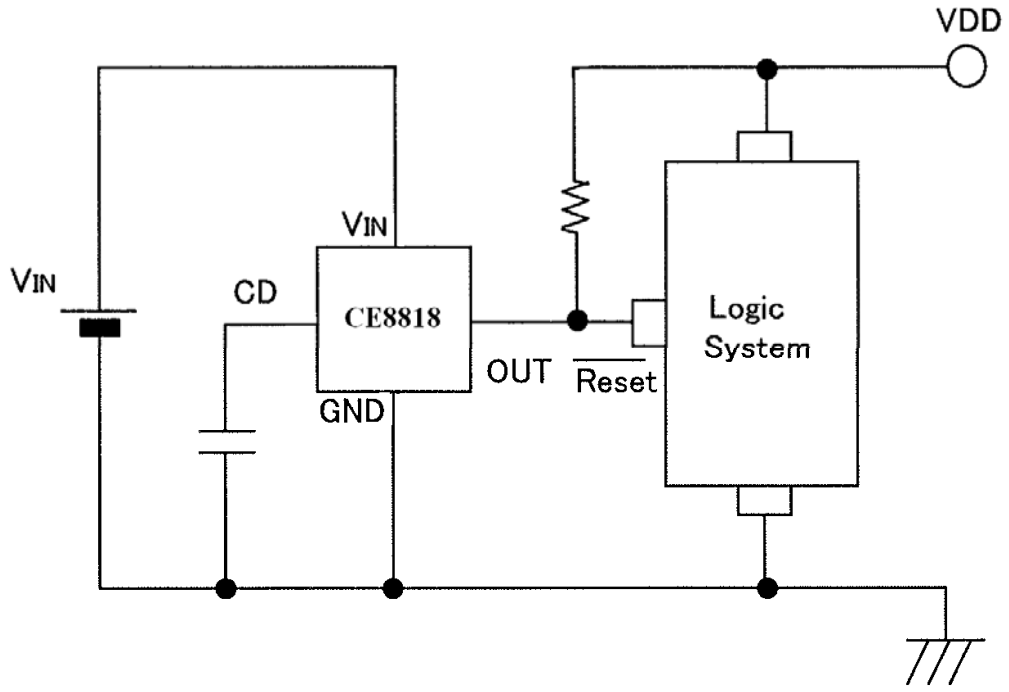
RD : CD Pin Resistance

CD : Capacitor



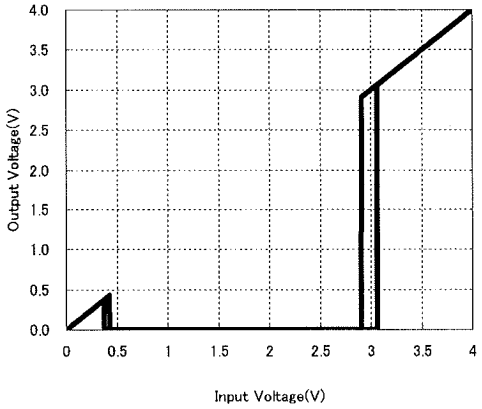
■ Typical Application Circuit



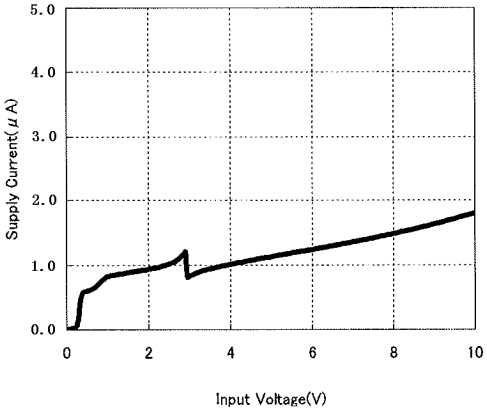


■ Typical Performance Characteristics

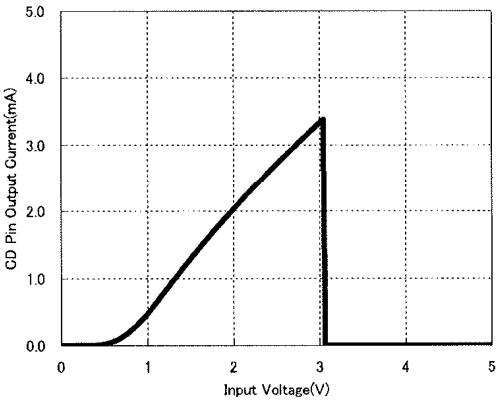
DETECTING VOLTAGE



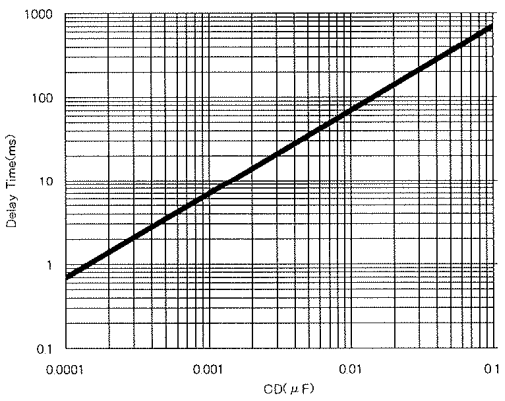
SUPPLY CURRENT



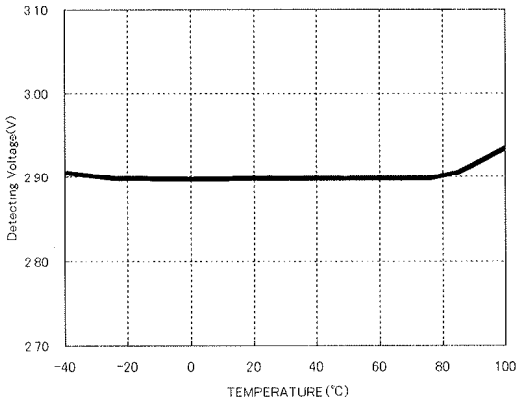
CD PIN OUTPUT CURRENT VDS=0.5V



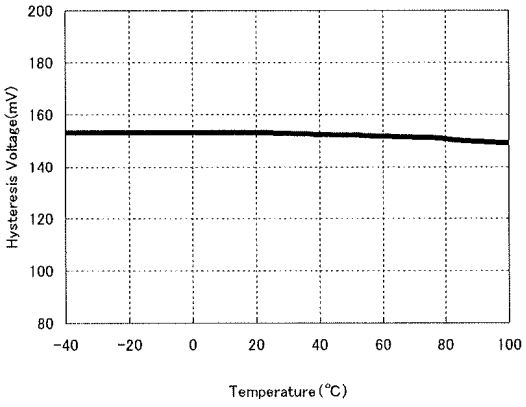
DELAY TIME VS CD



DETECTING VOLTAGE VS TEMPERATURE

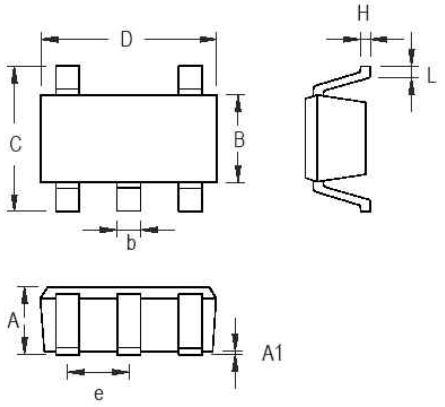


HYSTERESIS VOLTAGE VS TEMPERATURE



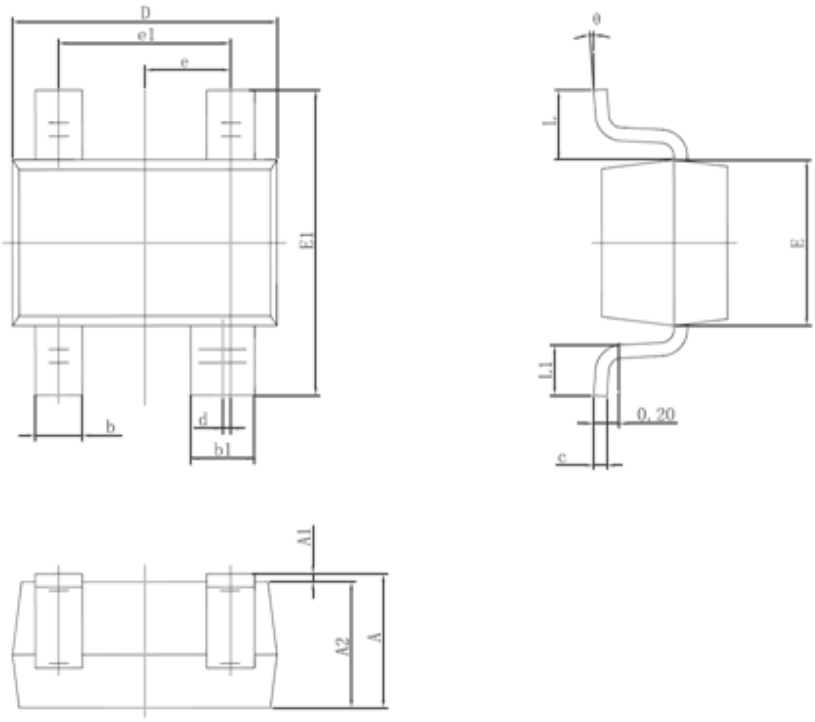
● Package information

● SOT- 23- 5



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.889	1.295	0.035	0.051
A1	0.000	0.152	0.000	0.006
B	1.397	1.803	0.055	0.071
b	0.356	0.559	0.014	0.022
C	2.591	2.997	0.102	0.118
D	2.692	3.099	0.106	0.122
e	0.838	1.041	0.033	0.041
H	0.080	0.254	0.003	0.010
L	0.300	0.610	0.012	0.024

● **SOT343**



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.250	0.400	0.010	0.016
b1	0.350	0.500	0.014	0.020
c	0.080	0.150	0.003	0.006
d	0.050 TYP.		0.002 TYP.	
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.450	0.085	0.096
e	0.650 TYP.		0.026 TYP.	
e1	1.200	1.400	0.047	0.055
L	0.525 REF.		0.021 REF.	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°