■ INTRODUCTRON

The CE1001 is an integrated hall-effect sensor designed specifically to meet the requirements of low-power devices as an On/Off switch in Cellular Filp-Phones, which battery operating voltages of 1.8V-5.5V.

An onboard clock scheme is used to reduce the average operating current of IC CE1001 can be switched on with either the North or South pole of a magnet.

■ FEATURES

- 1.8V -5.5V battery operation
- High sensitivity and high stability of the magnetic switching points
- High resistance to mechanical stress
- Digital output signal
- Switching for both poles of a magnet

■ APPLICATIONS

- Mobile Phones (Flip Type, Slide Type etc.)
- Laptop PCs, Notebook PCs
- Digital Still And Video, Cameras
- Playthings, Portable games
- Electronic Dictionaries
- Home Appliances

■ BLOCK DIAGRAM

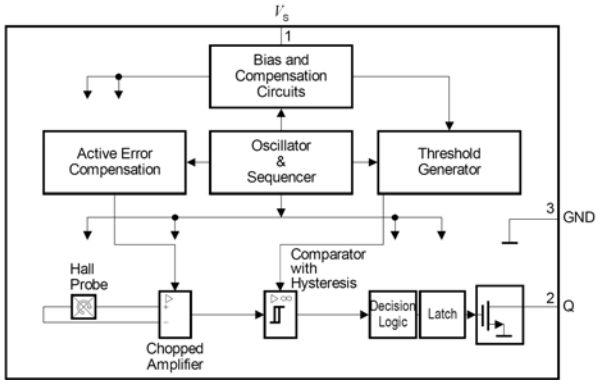
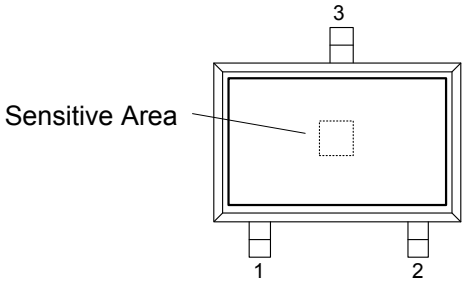


Figure1 Block Diagram

■ PIN CONFIGURATION

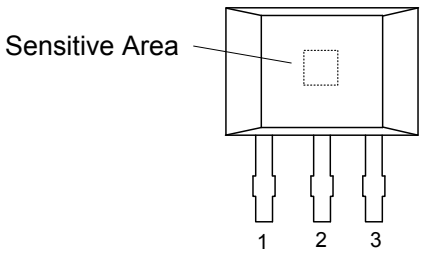
SOT23-3
Top view



CE1001 Series（SOT23-3 PKG）

PIN NO.	PIN NAME	FUNCTION
1	V_S	Supply Voltage
2	Q	Open Drain Output
3	GND	Ground

TO-92S
Top view



CE1001TS Series（TO-92S PKG）

PIN NO.	PIN NAME	FUNCTION
1	V_S	Supply Voltage
2	GND	Ground
3	Q	Open Drain Output

■ ABSOLUTE MAXIMUM RATINGS(1)

(Unless otherwise specified, T_A=25°C)

PARAMETER	SYMBOL	MIN.	MAX.	UNITS
Supply Voltage(2)	V_S	-0.3	5.5	V
Supply Current	I_S	- 1	2.5	mA
Output Voltage(2)	V_Q	- 0.3	5.5	V
Output Current	I_Q	- 1	2	mA
Junction Temperature	T_j	-40	150	℃
Storage Temperature	T_S	-40	150	℃
Magnetic Flux Density	B	---	unlimited	mT
Thermal Resistance SOT23-3	$R_{th\ JA}$	---	35	K/W

(1) Stresses beyond those listed under *absolute maximum ratings* may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under *recommended operating conditions* is not implied. Exposure to absolute-maximum-rated conditions for extended periods my affect device reliability.

(2) All voltages are with respect to network ground terminal.

■ OPERATING RATINGS：

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Supply Voltage	V_S	1.8	2.7	5.5	V	(1)
Output Voltage	V_Q	- 0.3	2.7	5.5	V	
Ambient Temperature	T_A	-40	25	85	℃	

1) A Ceramic Bypass Capacitor of 100nF at V_S to GND is highly recommended

■ ELECTRICAL CHARACTERISTICS:

(T_A=25℃, V_S=2.7V)

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNITS	NOTES
Averaged Supply Current	I_{SAVG}		7		μA	
Averaged Supply Current during Operating Time	I_{SOPAVG}	0.5	2.0	3.5	mA	
Transient Peak Supply Current during Operating Time	I_{SOPT}	-	-	4.5	mA	
Supply Current during Standby Time	I_{SSTB}	1	1.9	8	μA	
Output Saturation Voltage	V_{QSAT}	-	0.13	0.4	V	I_Q=1mA
Output Leakage Current	I_{QLEAK}	-	0.01	1	μA	
Output Rise Time	t_r	-	0.5	1	μs	R_L=2.7KΩ, C_L=10pF
Output Fall Time	t_f	-	0.1	1	μs	R_L=2.7KΩ, C_L=10pF
Operating Time	t_{op}	25	100	160	μs	
Standby Time	t_{stb}	60	140	240	ms	
Duty Cycle	t_{op}/t_{stb}	-	0.071	-	%	
Start-up Time of IC	t_{stu}	-	12	20	μs	

■ MAGNETIC CHARACTERISTICS:

(T_J=25℃, V_S=2.7V)

PARAMETER	MIN.	TYP.	MAX.	UNITS
B_{OPS}	1.4	2.5	3.5	mT
B_{OPN}	-3.5	-2.5	-1.4	mT
B_{RPS}	0.8	1.8	3.0	mT
B_{RPN}	-3.0	-1.8	-0.8	mT
B_{HYS}	0.2	0.8	1.6	mT

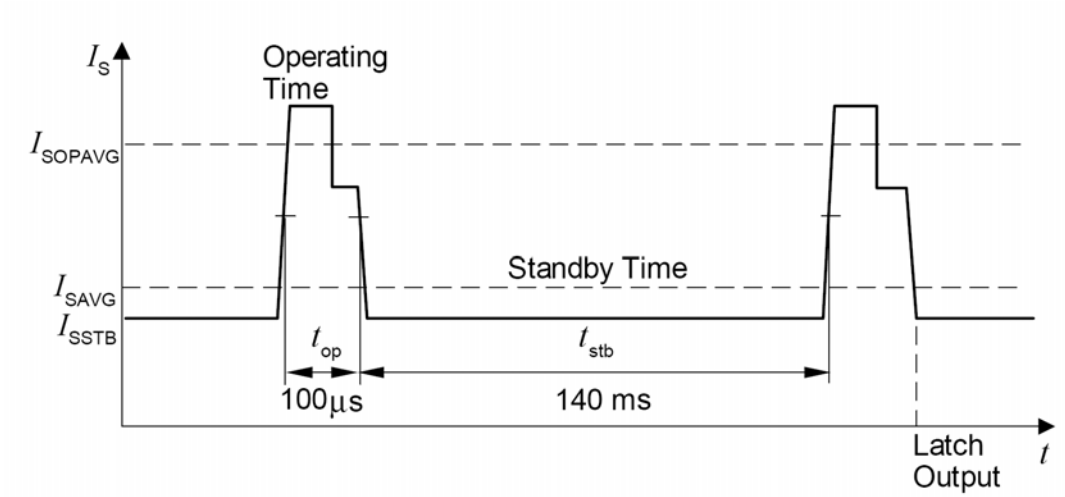
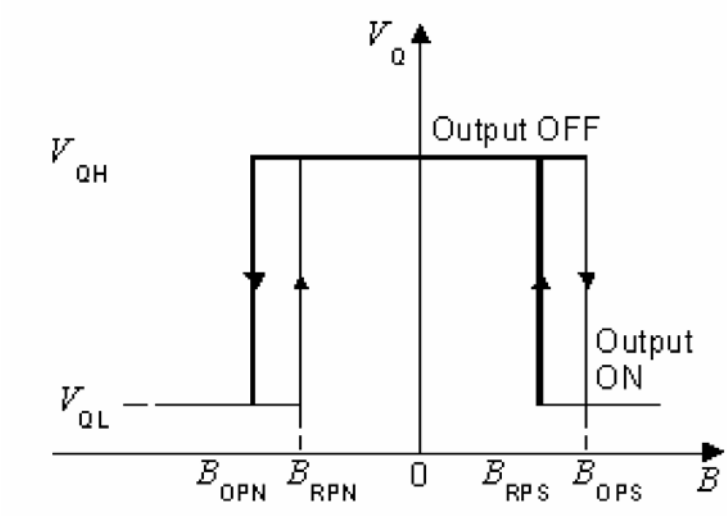


Figure2 Timing Diagram



V_Q as function of the applied B-Field

Figure3 Output-Signal CE1001

■ TYPICAL APPLICATION CIRCUITS

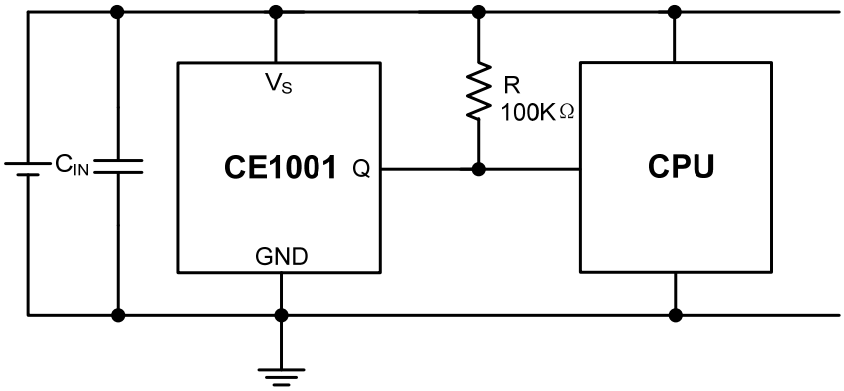
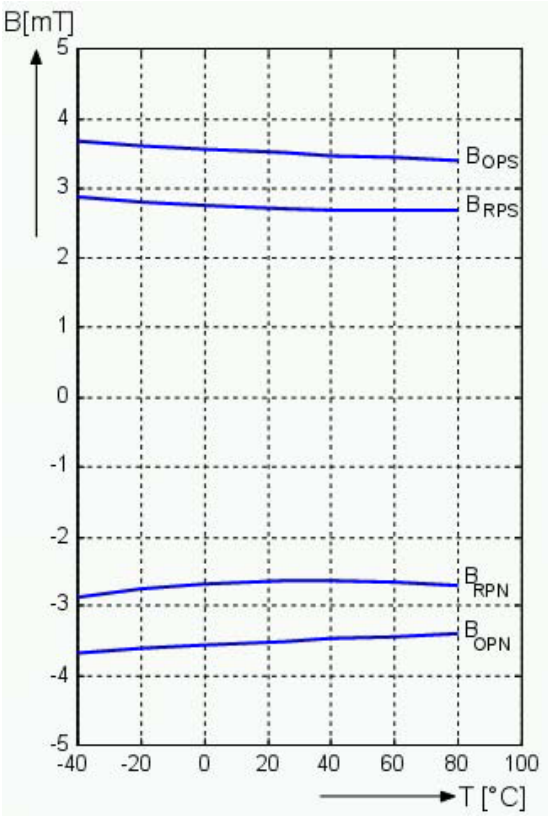


Figure4 Typical Application Circuit

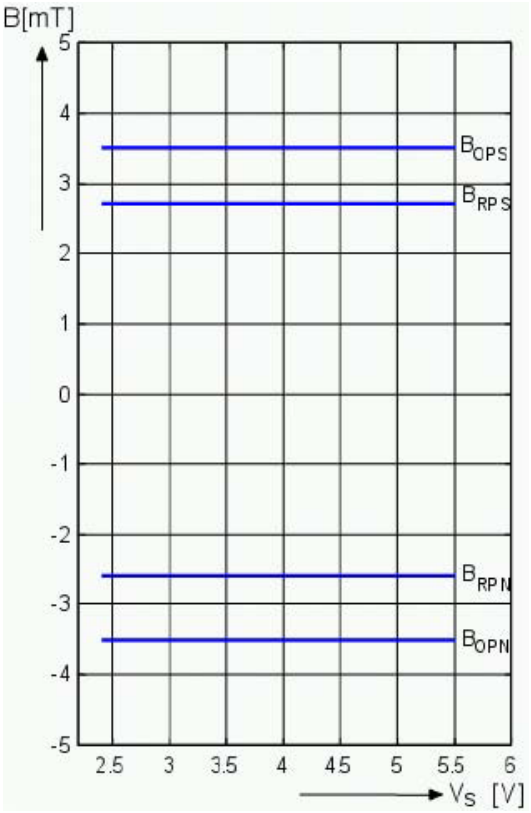
■ TYPICAL PERFORMANCE CHARACTERISTICS:

All curves reflect typical values at the given parameters for T_A in °C and V_S in V.

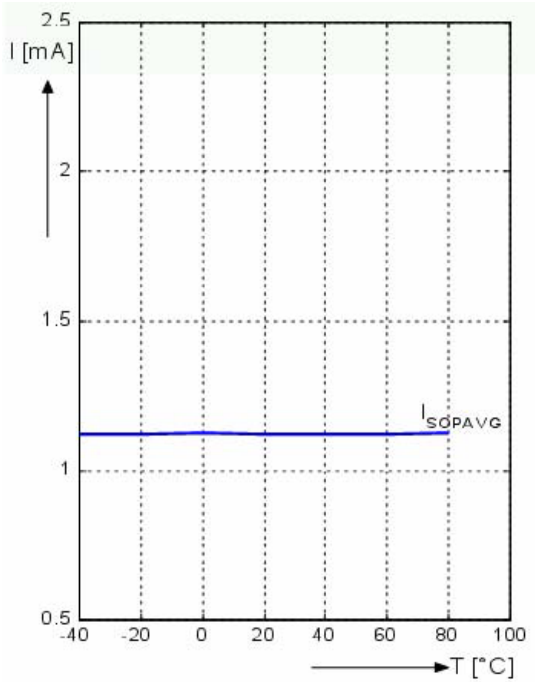
Magnetic Switching Points versus Temperature (V_S=2.7V)



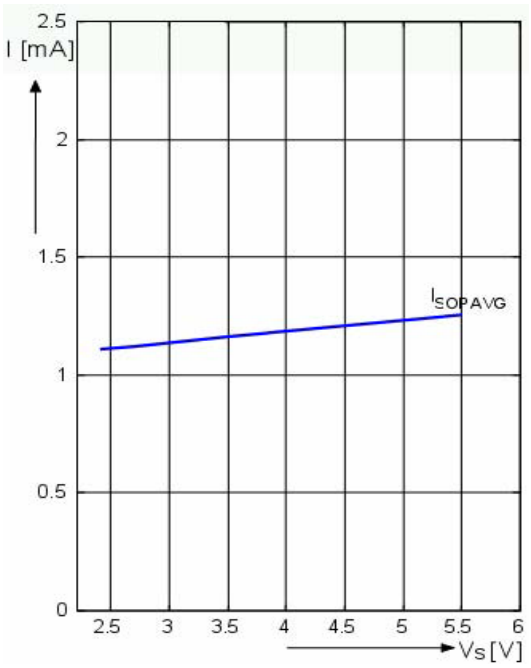
Magnetic Switching Points versus Supply Voltage (T_A=20℃)



Supply current I_{SOPAVG} during Operating Time versus Temperature (V_S=2.7V)



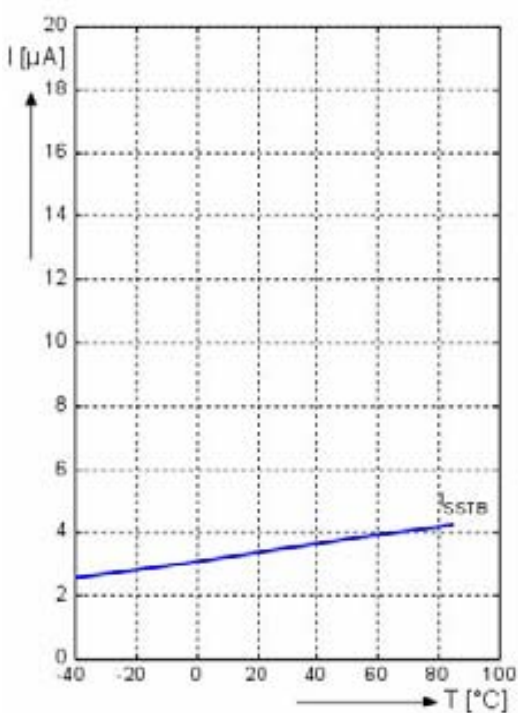
Supply current I_{SOPAVG} during Operating Time versus Supply Voltage (T_A=20℃)



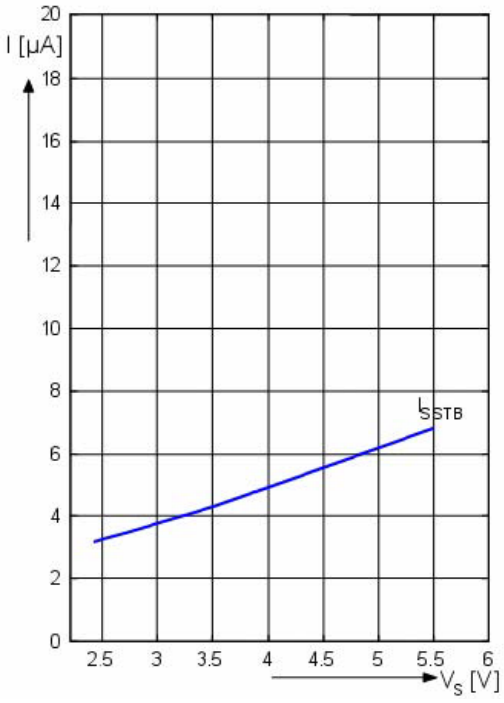
■ TYPICAL PERFORMANCE CHARACTERISTICS(CONTINUED):

All curves reflect typical values at the given parameters for T_A in °C and V_S in V.

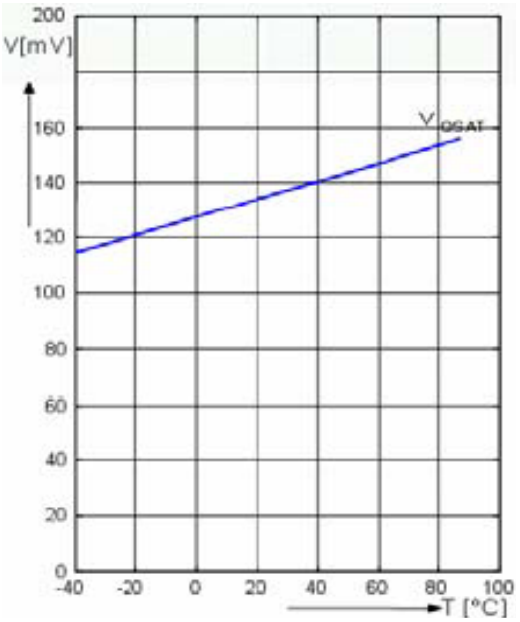
Supply current I_{SSTB} during Standby Time versus Temperature (V_S=2.7V)



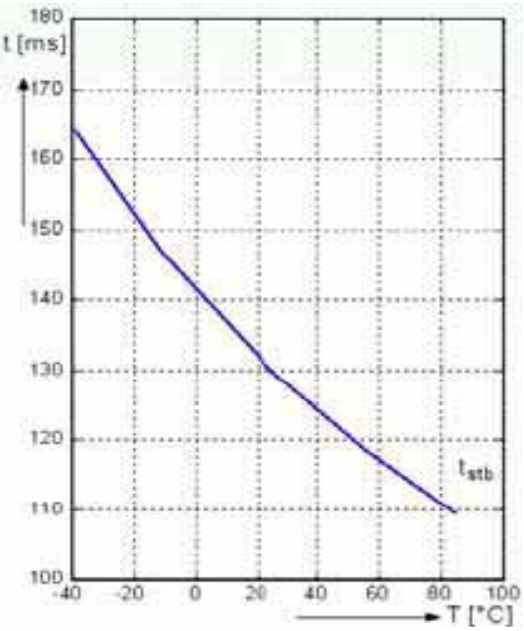
Supply current I_{SSTB} during Standby Time versus Supply Voltage (T_A=20℃)



Output Saturation voltage V_{QSAT} Temperature (I_Q=1mA)

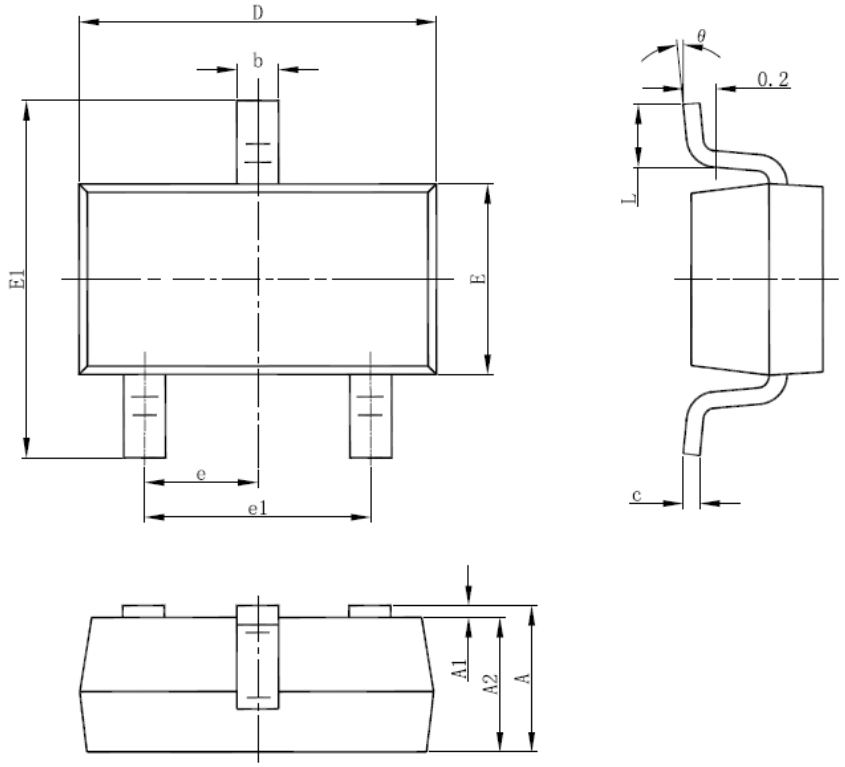


Standby Time t_{stb} versus Temperature versus (V_S=2.7V)



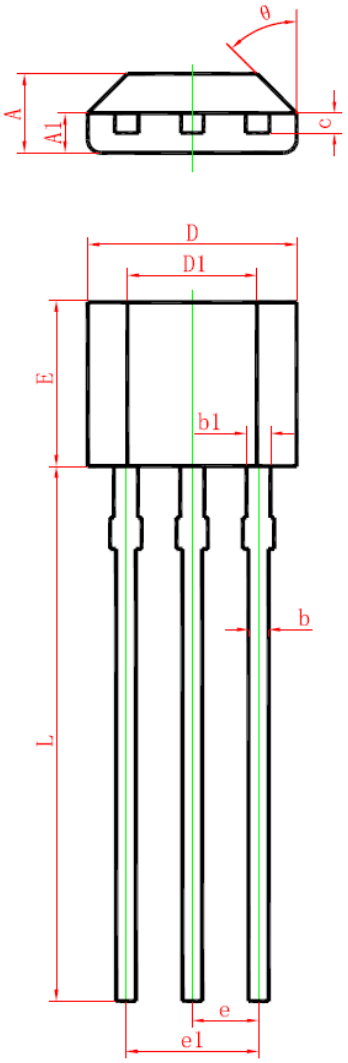
■ PACKAGE INFORMATION

- **SOT23-3**



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950(BSC)		0.037(BSC)	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

- **TO-92S**



Symbol	Dimension In Millimeters		Dimension In Inches	
	Min.	Max.	Min.	Max.
A	1.420	1.620	0.056	0.064
A1	0.660	0.860	0.026	0.034
b	0.350	0.480	0.014	0.019
b1	0.400	0.550	0.016	0.022
c	0.360	0.510	0.014	0.020
D	3.900	4.100	0.154	0.161
D1	2.280	2.680	0.090	0.106
E	3.050	3.250	0.120	0.128
e	1.270 TYP.		0.050 TYP.	
e1	2.440	2.640	0.096	0.104
L	15.100	15.500	0.594	0.610
θ	45° TYP.		45° TYP.	