

## Features

- Low power consumption:10uA (Typ.)
- Low voltage drop:  
0.11V@100mA@VO<sub>UT</sub>=2.8V(Typ.)
- Standby Mode: 0.1uA
- Low temperature coefficient
- Good line Regulation:0.05%/V
- High Ripple Rejection: 75dB@100Hz(Typ.)
- High input voltage (up to 6.5V)
- Output voltage accuracy: tolerance  $\pm 2\%$
- SOT23-5, SOT23-3, SOT23 and DFN1\*1 packages

## Applications

- Battery-powered equipment
- Communication equipment
- Mobile phones
- Portable games
- Cameras, Video cameras
- Reference voltage sources

## General Description

The Y2036S series are highly accurate, low noise, CMOS LDO Voltage Regulators. Offering low output noise, high ripple rejection ratio, low dropout and very fast turn-on times, the Y2036S series is ideal for today's cutting edge mobile phone. Internally the Y2036S includes a reference voltage source, error amplifiers, driver transistors, current limiters and phase compensators.

The Y2036S's output voltage is set by current trimming. Voltages are selectable in 100mV steps within a range of 0.9V to 5.0V.

When the CE input pin is low, the fast discharge

channel can pass, a built-in pull-down resistor pulls the output voltage low. Fast discharge function.

The Y2036S series is also fully compatible with low ESR ceramic capacitors, reducing cost and improving output stability. This high level of output stability is maintained even during frequent load fluctuations, due to the excellent transient response performance and high PSRR achieved across a broad range of frequencies. The CE function allows the output of regulator to be turned off, resulting in greatly reduced power consumption.

## Order Information

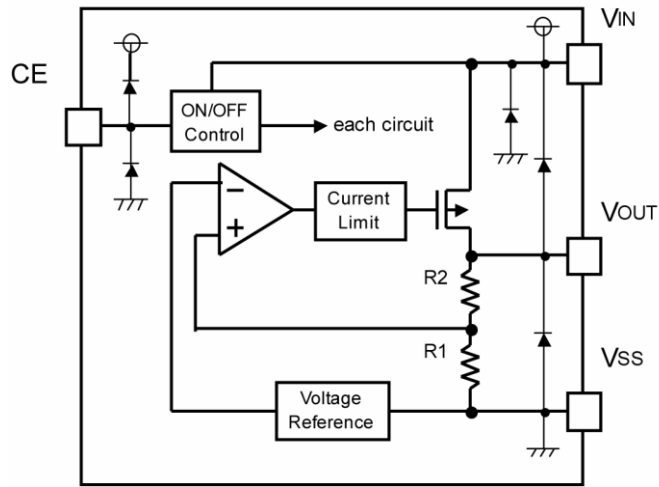
### Y2036S-①②③④

| Designator | Symbol  | Description      |
|------------|---------|------------------|
| ①②         | Integer | Output Voltage   |
| ③          | M5      | Package: SOT23-5 |
|            | M       | Package: SOT23-3 |
|            | N       | Package: SOT23   |
|            | FC      | Package: DFN1*1  |
| ④          | R       | RoHS / Pb Free   |
|            | G       | Halogen Free     |

Note:"①②" stands for output voltages. Other voltages can be specially customized



**Block Diagram**



**Package and Pin assignment**

SOT23-3 and SOT23 (Top View)

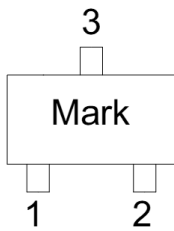


Table1:

| PIN NO. | PIN NAME | FUNCTION           |
|---------|----------|--------------------|
| 1       | GND      | GND pin            |
| 2       | VOUT     | Output voltage pin |
| 3       | VIN      | Input voltage pin  |

SOT23-5 (Top View)

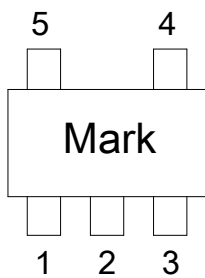


Table2:

| PIN NO | PIN NAME | FUNCTION                          |
|--------|----------|-----------------------------------|
| 1      | VIN      | Input                             |
| 2      | GND      | Ground                            |
| 3      | EN       | Enable(Active high, not floating) |
| 4      | NC       | Not connected                     |
| 5      | VOUT     | Output                            |

DFN1\*1-4L

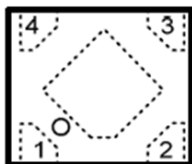


Table3:

| PIN NO | PIN NAME | FUNCTION                          |
|--------|----------|-----------------------------------|
| 1      | VOUT     | Output                            |
| 2      | GND      | Ground                            |
| 3      | EN       | Enable(Active high, not floating) |
| 4      | VIN      | Input                             |



**Marking Rule**

| MARKING    |                              |
|------------|------------------------------|
| VOLTAGE(V) | Package                      |
|            | SOT23-5、SOT23-3、SOT23、DFN1*1 |
| 1.2        | LVBX                         |
| 1.5        | LVEX                         |
| 1.8        | LVKX                         |
| 2.5        | LVFX                         |
| 2.8        | LVXX                         |
| 3.0        | LVZX                         |
| 3.3        | LV2X                         |

**Absolute Maximum Ratings**

Supply Voltage .....-0.3V to 8V      Storage Temperature .....-50°C to 125°C  
 Operating Temperature .....-40°C to 85°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

**Thermal Information**

| Symbol        | Parameter  | Package | Max. | Unit |
|---------------|--|---------|------|------|
| $\theta_{JA}$ | Thermal Resistance (Junction to Ambient) (Assume no ambient airflow, no heat sink) | SOT23-5 | 260  | °C/W |
|               |  | SOT23-3 | 260  |      |
|               |  | SOT23   | 280  |      |
|               |  | DFN1*1  | 250  |      |
| $P_D$         | Power Dissipation  | SOT23-5 | 0.4  | W    |
|               |  | SOT23-3 | 0.4  |      |
|               |  | SOT23   | 0.2  |      |
|               |  | DFN1*1  | 0.4  |      |

Note:  $P_D$  is measured at  $T_a=25^\circ\text{C}$



**Electrical Characteristics**

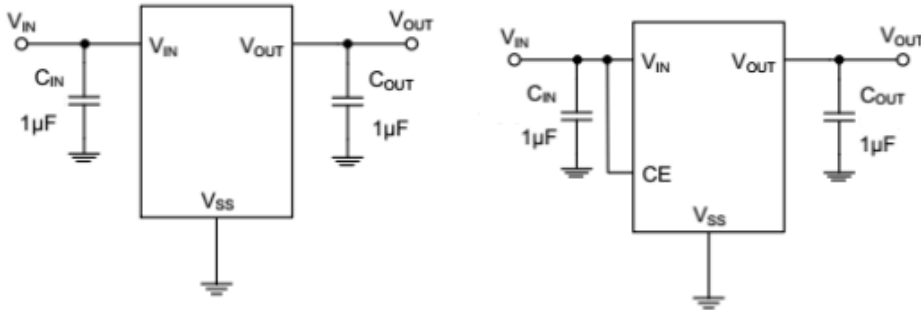
Y2036S series

(Ta=25°C)

| Parameter                               | Symbol   | Conditions   | Min.       | Typ. | Max.       | Unit       |
|---|--|--|------------|------|------------|------------|
| Output Voltage                          | Vout≤2.5V  | Vin=Vout+1V<br>1.0mA≤Iout≤100mA                    | Vout -0.05 |      | Vout +0.05 | V          |
|   | 2.5V≤Vout≤5V                                     | Vin=Vout+1V<br>1.0mA≤Iout≤300mA                    | Vout×0.98  | --   | Vout×1.02  | V          |
| Output Current*1                        | Iout   | Vin-Vout=1V  | --         | 300  | --         | mA         |
| Line Regulation                         | $\Delta V_{out} / (\Delta V_{in} \cdot V_{out})$ | 4.3V≤Vin≤8V<br>Iout=10mA                           | --         | 0.05 | 0.2        | %/V        |
| Load Regulation                         | $\Delta V_{out}$                                 | Vin= 4.3V<br>1.0mA≤Iout≤100mA                      | --         | 15   | 40         | mV         |
| Dropout Voltage                         | V <sub>DROP</sub>                                | Iout=100mA   | --         | 0.11 | --         | V          |
| Output voltage Temperature Coefficiency | $\Delta V_{out} / (T_a \cdot V_{out})$           | Iout=30mA<br>0°C≤Ta≤70°C                           | --         | ±100 | --         | Ppm/<br>°C |
| Supply Current                          | I <sub>SS</sub>                                  | --   | --         | 10   | 15         | uA         |
| Input Voltage                           | V <sub>in</sub>                                  | --   | --         | --   | 6.5        | V          |
| EN logic high voltage                   | V <sub>ENH</sub>                                 | V <sub>IN</sub> =5.0V                              | 1.5        | --   | --         | V          |
| EN logic low voltage                    | V <sub>ENL</sub>                                 | V <sub>IN</sub> =5.0V                              | --         | --   | 0.4        | V          |
| PSRR                                    | PSRR   | F=100Hz,<br>Vin= (V <sub>OUT</sub> +1)<br>dc+1Vpp  | --         | 75   | --         | dB         |
|   |  | F=1000Hz,<br>Vin= (V <sub>OUT</sub> +1)<br>dc+1Vpp | --         | 65   | --         | dB         |



## Typical Application Circuit



## Operational Explanation

### <Low ESR Capacitors>

With the Y2036S series, a stable output voltage is achievable even if used with low ESR capacitors as a phase compensation circuit is built-in. In order to ensure the effectiveness of the phase compensation, we suggest that an output capacitor (CL) is connected as close as possible to the output pin (VOUT) and the VSS pin. Please use an output capacitor with a capacitance value of at least 10uF. Also, please connect an input capacitor (CIN) of 10uF between the VIN pin and the VSS pin in order to ensure a stable power input. Stable phase compensation may not be ensured if the capacitor runs out capacitance when depending on bias and temperature. In case the capacitor depends on the bias and temperature, please make sure the capacitor can ensure the actual capacitance.

### <CE Pin>

The IC's internal circuitry can be shutdown by the signal from the CE pin with the Y2036S series. In shutdown mode, output at the VOUT pin will be pulled down to the VSS. Although the CE pin is equal to an inverter input with CMOS hysteresis, with either the pull-up or pull-down options, the CE pin input current will increase when the IC is in operation. If you want add resistor before the CE pin, the resistor must be under 10K. We suggest that you use this IC with either a VIN voltage or a VSS voltage input at the CE pin. If this IC is used with the correct specifications for the CE pin, the operational logic is fixed and the IC will operate normally. However, supply current may increase as a result of through current in the IC's internal circuitry.

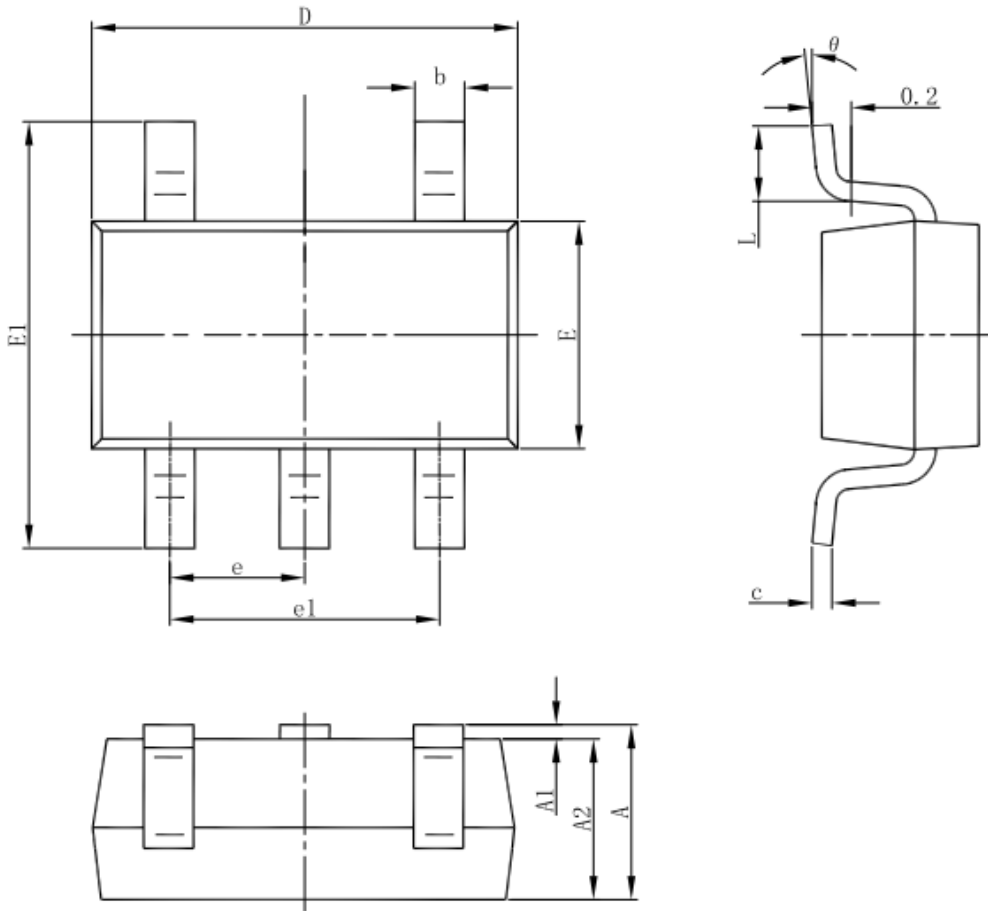
## Notes on Use

1. Please use this IC within the stated absolute maximum ratings. The IC is liable to malfunction should the ratings be exceeded.
2. Where wiring impedance is high, operations may become unstable due to noise and/or phase lag depending on output current. Please keep the resistance low between VIN and VSS wiring in particular.
3. Please wire the input capacitor (CIN) and the output capacitor (CL) as close to the IC as possible.



**Packaging Information**

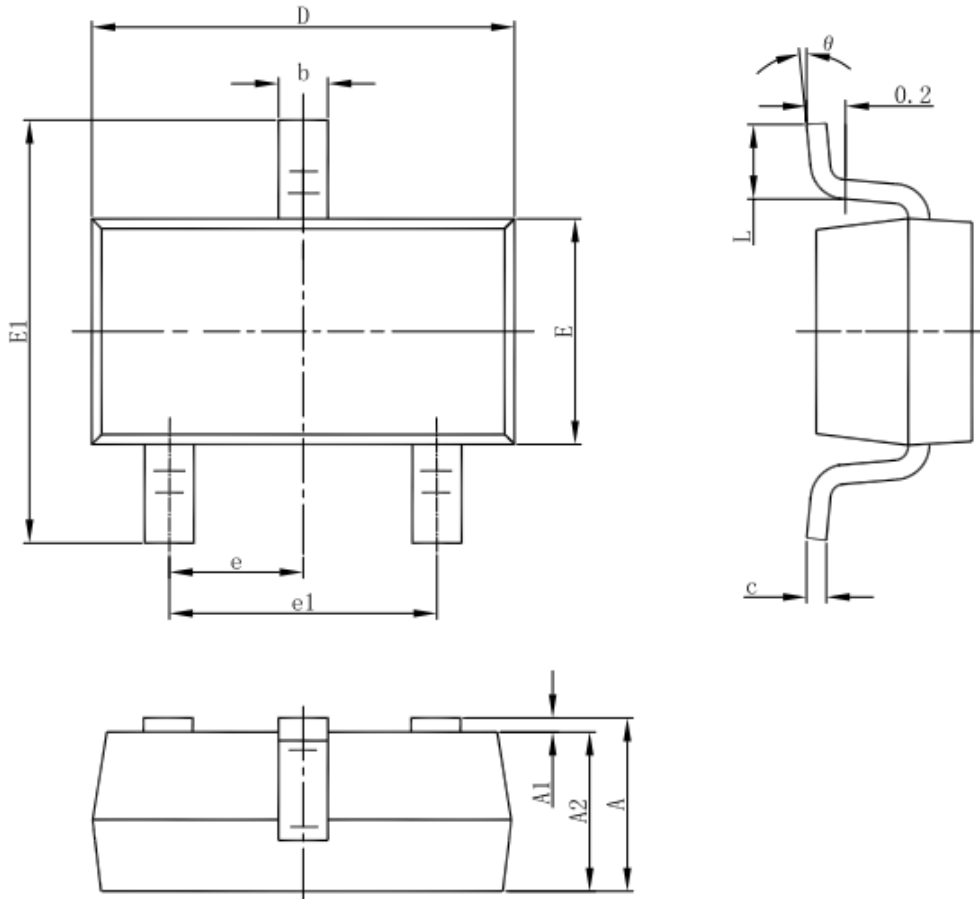
**SOT23-5 Outline Dimensions**



| Symbol | Dimensions In Millimeters |       | Dimensions 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°    |



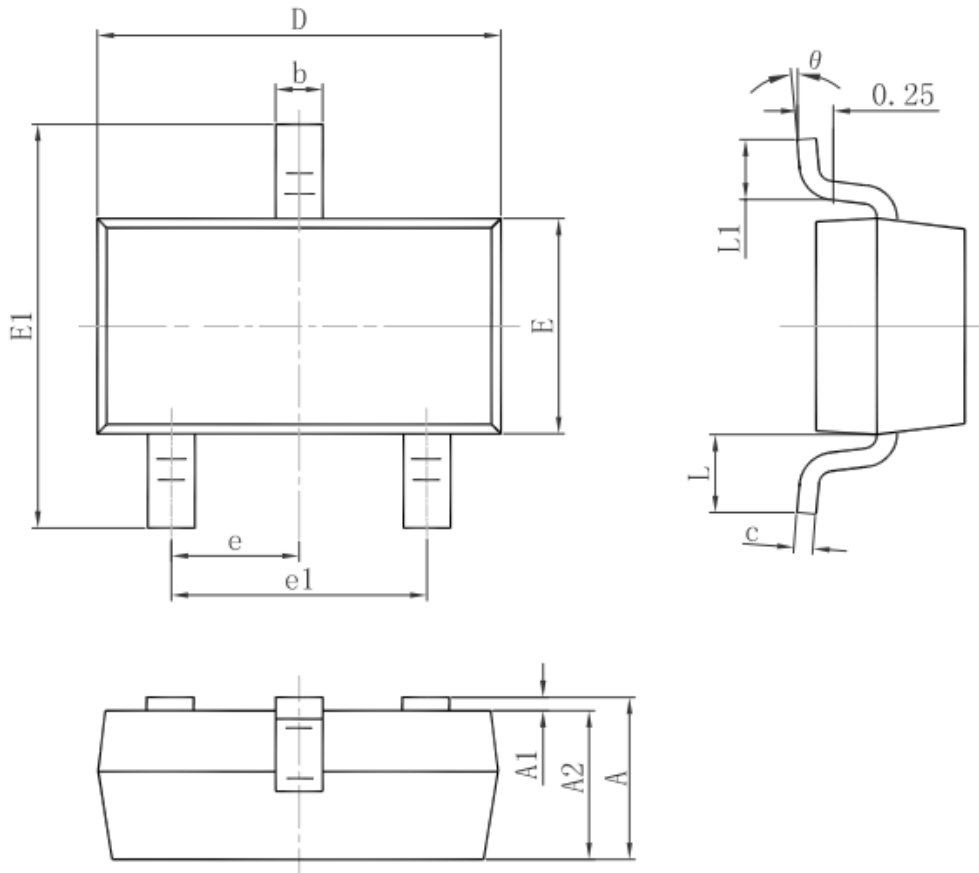
**3-pin SOT23-3 Outline Dimensions**



| Symbol | Dimensions In Millimeters |       | Dimensions 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°    |



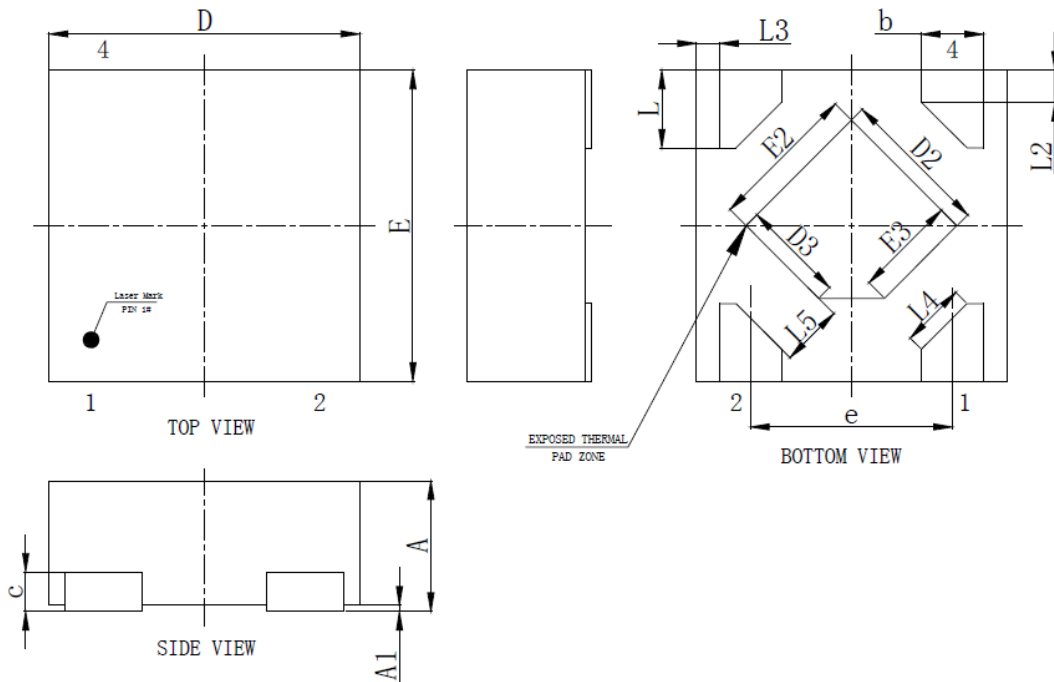
**3-pin SOT23 Outline Dimensions**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min.                      | Max.  | Min.                 | Max.  |
| A      | 0.900                     | 1.150 | 0.035                | 0.045 |
| A1     | 0.000                     | 0.100 | 0.000                | 0.004 |
| A2     | 0.900                     | 1.050 | 0.035                | 0.041 |
| b      | 0.300                     | 0.500 | 0.012                | 0.020 |
| c      | 0.080                     | 0.150 | 0.003                | 0.006 |
| D      | 2.800                     | 3.000 | 0.110                | 0.118 |
| E      | 1.200                     | 1.400 | 0.047                | 0.055 |
| E1     | 2.250                     | 2.550 | 0.089                | 0.100 |
| e      | 0.950 TYP.                |       | 0.037 TYP.           |       |
| e1     | 1.800                     | 2.000 | 0.071                | 0.079 |
| L      | 0.550 REF.                |       | 0.022 REF.           |       |
| L1     | 0.300                     | 0.500 | 0.012                | 0.020 |
| theta  | 0°                        | 8°    | 0°                   | 8°    |



**DFN1\*1-4 Outline Dimensions**



| SYMBOL | MILLIMETER |      |      |
|--------|------------|------|------|
|        | MIN        | MID  | MAX  |
| A      | 0.45       | 0.50 | 0.55 |
| A1     | 0.00       | 0.02 | 0.05 |
| b      | 0.15       | 0.20 | 0.25 |
| c      | 0.127REF   |      |      |
| D      | 0.95       | 1.00 | 1.05 |
| D2     | 0.38       | 0.48 | 0.58 |
| D3     | 0.23       | 0.33 | 0.43 |
| e      | 0.65BSC    |      |      |
| E      | 0.95       | 1.00 | 1.05 |
| E2     | 0.38       | 0.48 | 0.58 |
| E3     | 0.23       | 0.33 | 0.43 |
| L      | 0.20       | 0.25 | 0.30 |
| L2     | 0.103REF   |      |      |
| L3     | 0.075REF   |      |      |
| L4     | 0.208REF   |      |      |
| L5     | 0.200REF   |      |      |