

PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

This document is Chapter 2 of the package information document consisting of 8 chapters in total.

2. PACKAGE OUTLINES AND DIMENSIONS

2.1 External Package Dimensions

2.1.1 Package Dimensional Display Symbol

The package dimensional symbols used in this information manual are set according to the Standards of Electronic Industries Association of Japan (EIAJ).

Dimensional Symbol	Item	Contents
A	Mounting height	Height between the seating plane and the top of the package body
A ₁	Stand-off height	Height between the seating plane and the bottom of the package body
A ₂	Package height	Package thickness
B	Lead shoulder width	Maximum lead width above the seating plane
B ₁		
b	Lead width	Lead width below the seating plane
c	Lead thickness	Lead thickness
D	Package length	Package body length
E	Package width	Package body width
e	Lead pitch	Distance between lead centers
e ₁ D ₁ E ₁	Spacing between lead rows	Distance between lead rows
H _D	Overall length	Maximum package length (in the longitudinal direction) including leads
H _E	Overall width	Maximum package width including leads
L	Length of flat part of lead	Through-hole mounting type: Length between the seating plane and the lead tip Surface mounting type: Length of the lead flat part in contact with the seating plane
L _P	Soldered portion length	"L _P " is the horizontal projection of the distance from the upper edge of tip of the lead to the intersection of the inner surface of the lead with the gage plane defined by basic dimension "0.25"
θ	Angle of lead flat portions	Through-hole mounting type: Angle between the lead and the plane perpendicular to the seating plane Surface mounting type: Angle between the lead flat part and the seating plane
x	Tolerance of lead center position	This indicates that the maximum allowable position of the lead center is x when the pin width b is the maximum material condition (MMC) (the concept of the maximum material condition is applied).
y	Coplanarity	Surface mounting type: This indicates the uniformity of the lead bottom against the seating plane. y is the maximum value.
Z Z _D Z _E	Package overhang	Distance between the center of the outermost lead and the package end

2.1.2 Allowable Lead Position

1) Through-hole mounting type (See Figure 2.1.1)

“ $\oplus \phi x \text{M}$ ” is to be displayed.

This display indicates that, when the lead width b is the maximum value, the maximum allowable position of the lead center is x . In this case, the concept of the maximum material condition (MMC) is applied.

When “ $\oplus \phi 0.25 \text{M}$ ” is displayed for a DIP, for example, x is 0.25 mm assuming that the lead width b is 0.5 ± 0.1 mm, and all the leads exist within a circle with the radius of $\{\max. b + x\}/2 = \{(0.5 + 0.1) + 0.25\}/2$ mm centered at the true center position (geometric position) of the leads.

This means that, when the through-hole diameter of a PC board is 0.85 mm, all the leads of this package can be inserted.

2) Surface mounting type (See Figure 2.1.2)

“ $\oplus x \text{M}$ ” is to be displayed.

This display indicates that, when the lead width b is the maximum value, the maximum allowable position of the lead center in the parallel direction with the PC board to be mounted on is x .

When “ $\oplus 0.13 \text{M}$ ” is displayed for a QFP, for example, x is 0.13 mm assuming that lead width b is 0.3 ± 0.1 mm, and all the lead flat parts exist within the limits of $\{\max. b + x\}/2 = \{(0.3 + 0.1) + 0.13\}/2$ mm from the true center position (geometric position) of the leads.

This means that, when the mount pad width of a PC board is 0.53 mm, all the leads of this package can be mounted on the mount pad.

3) Definition on seating plane

Surface mounting type package:

The seating plane refers to a plane on which a lead contacts the surface of the board.

Through-hole mounting type package:

The seating plane refers to a plane which is determined when a lead pin is completely inserted through a hole of $\phi 0.8 \pm 0.05$ mm.

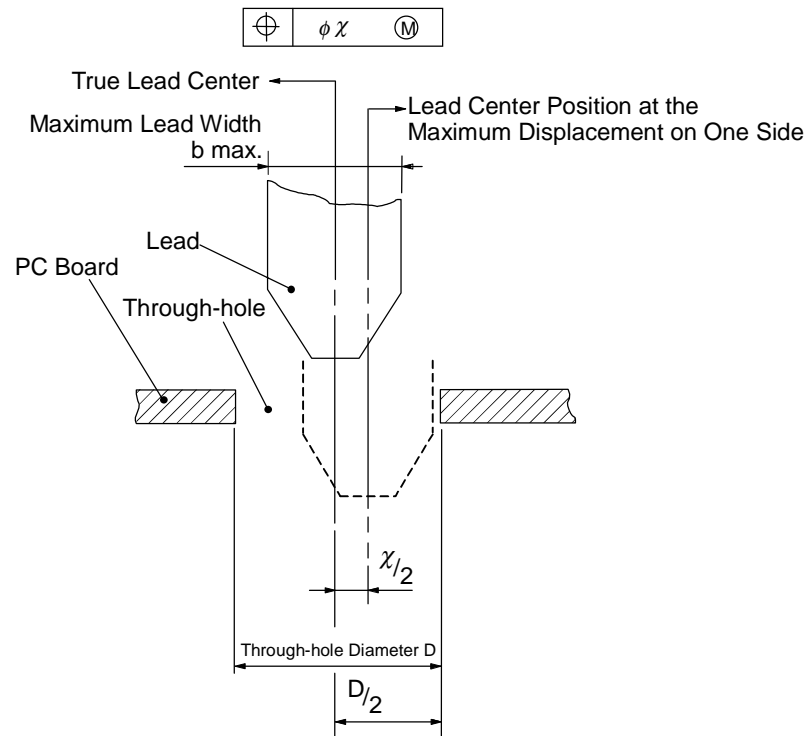


Figure 2.1.1 Allowable Lead Position of Through-hole Mounting Type Package

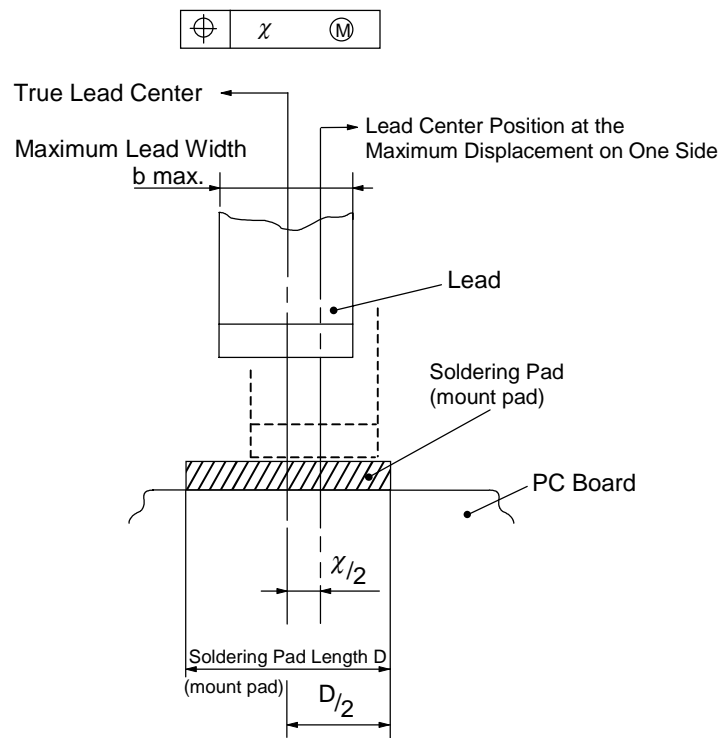


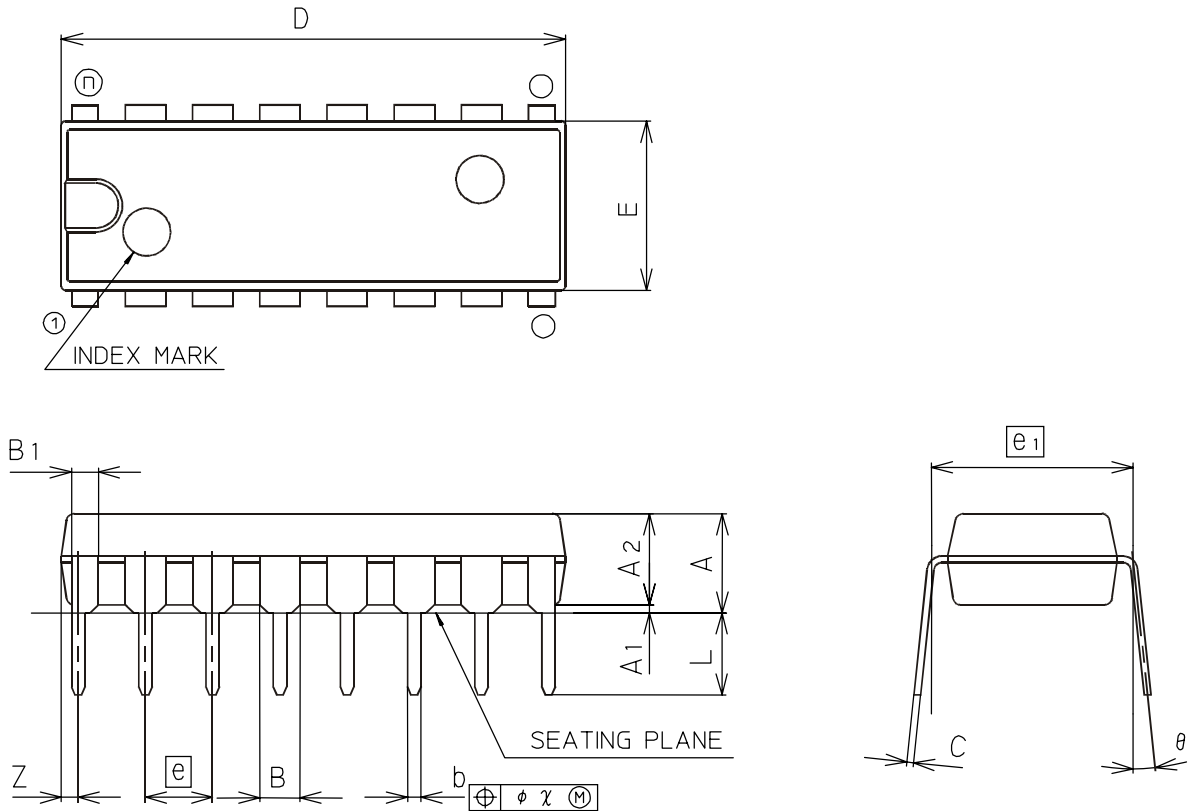
Figure 2.1.2 Allowable Lead Position of Surface Mounting Type Package

PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

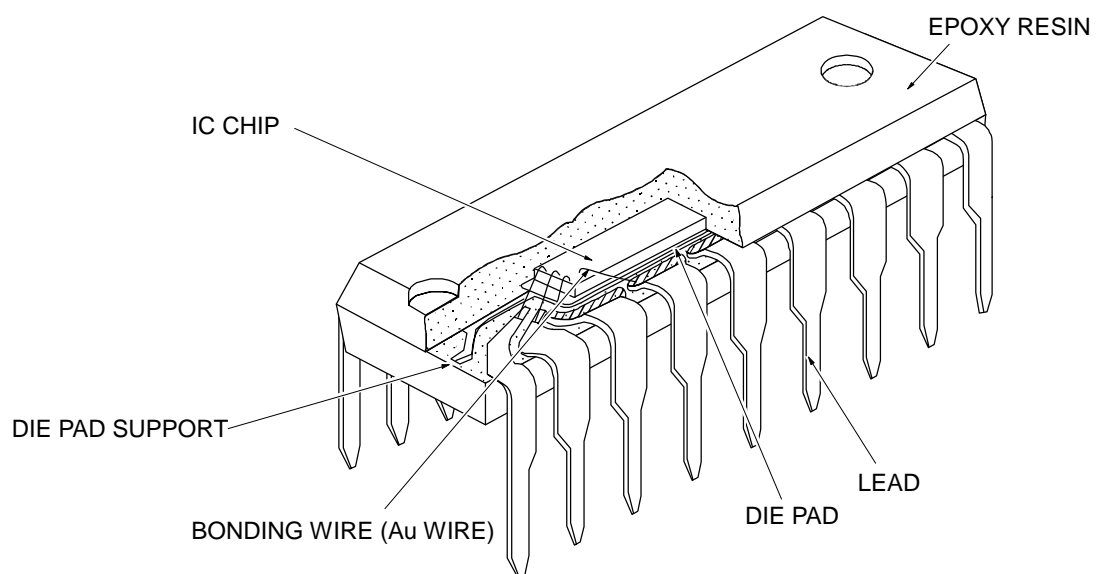
2.2 Through-hole Mounting Type

PLASTIC DIP

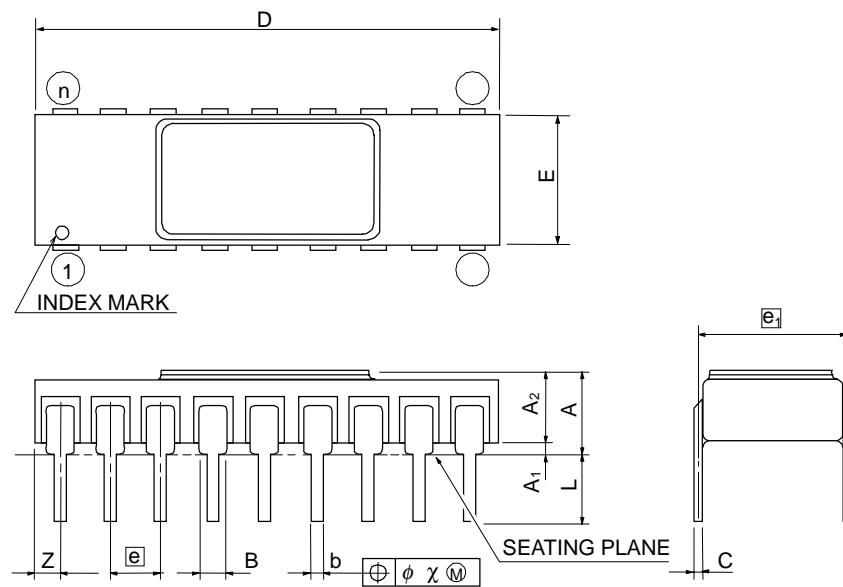


Note: The D , E , and Z dimensions do not include resin burrs and the remains from die pad support.

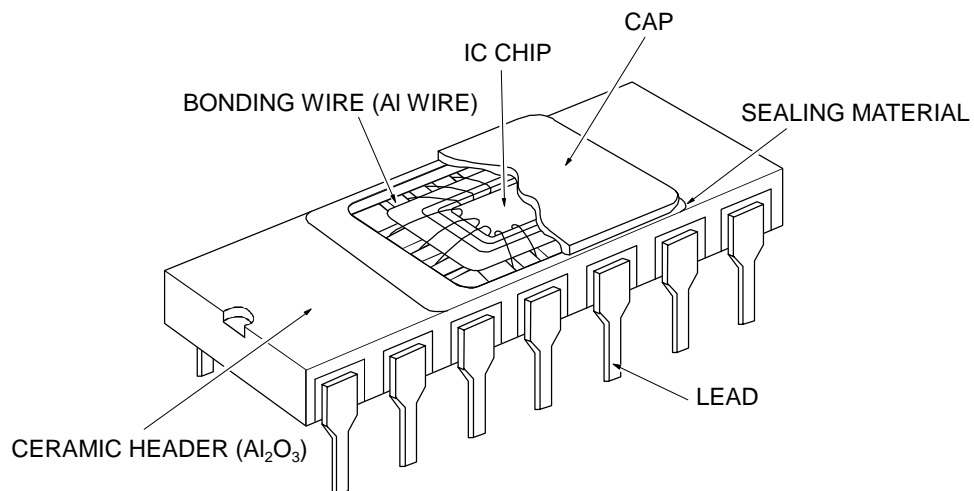
Package Structural Diagram



CERAMIC DIP



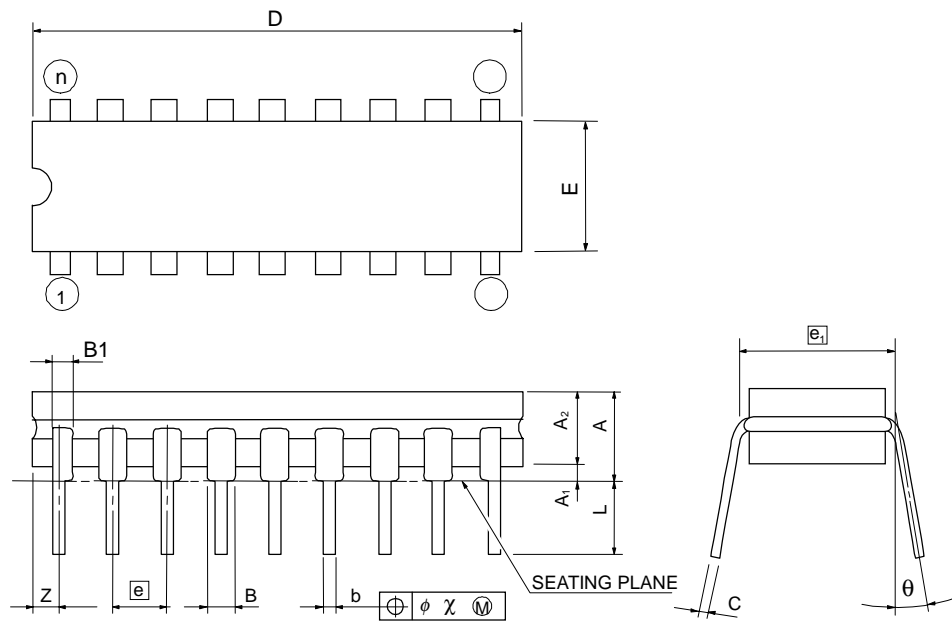
Package Structural Diagram



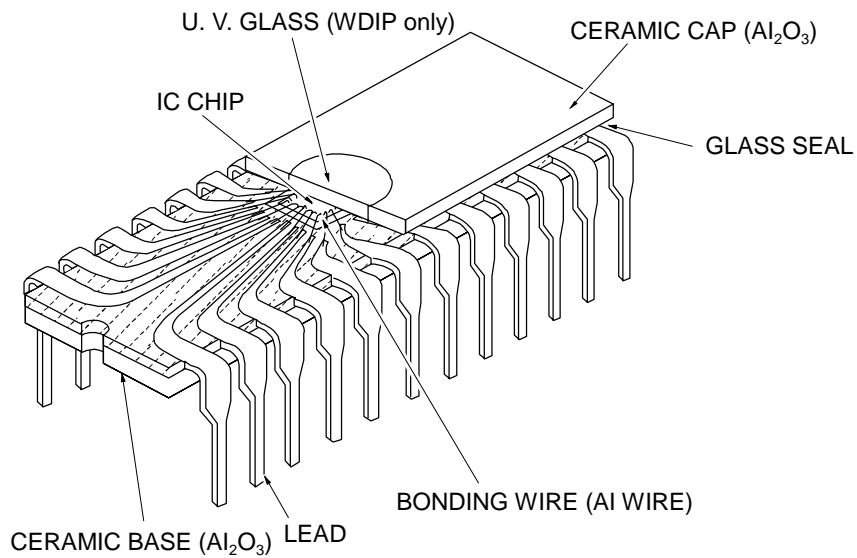
PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

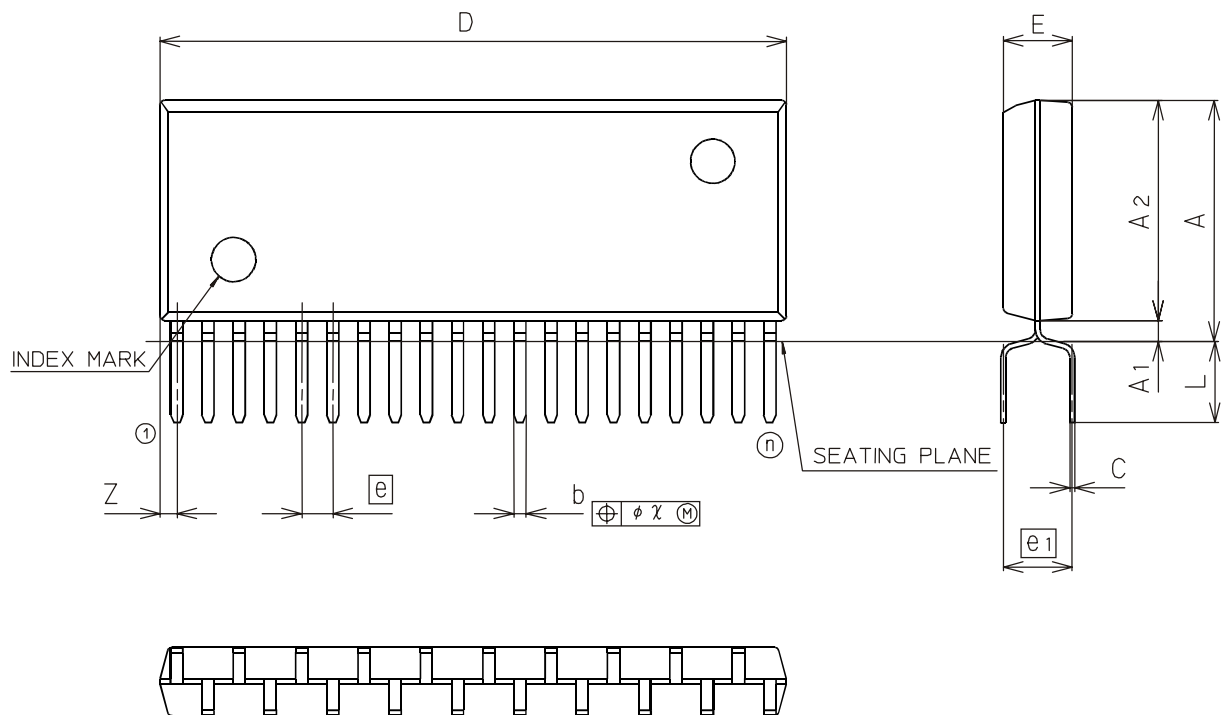
CER DIP



Package Structural Diagram



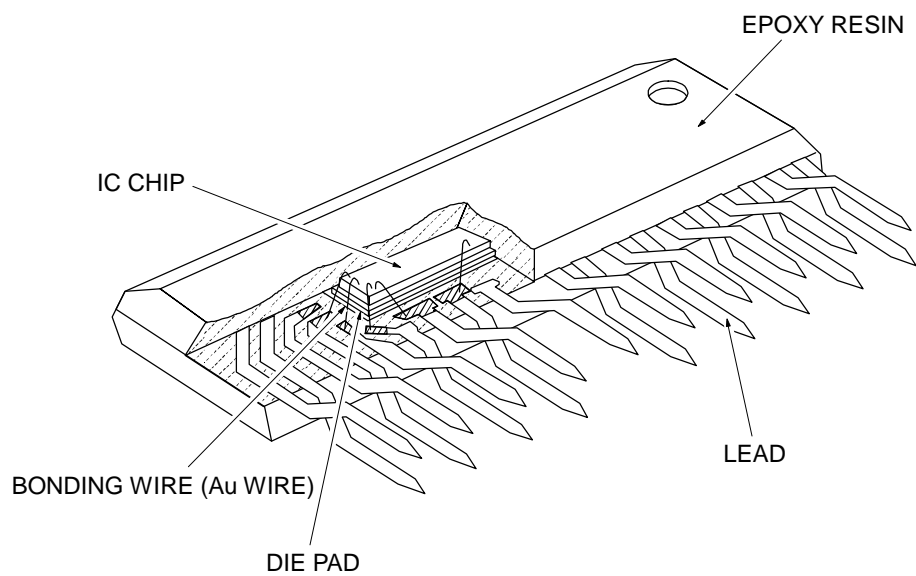
PLASTIC ZIP



Note 1: The A_2 , D , and Z dimensions do not include resin burrs and the remains from die pad support.

Note 2: The A dimension includes burrs.

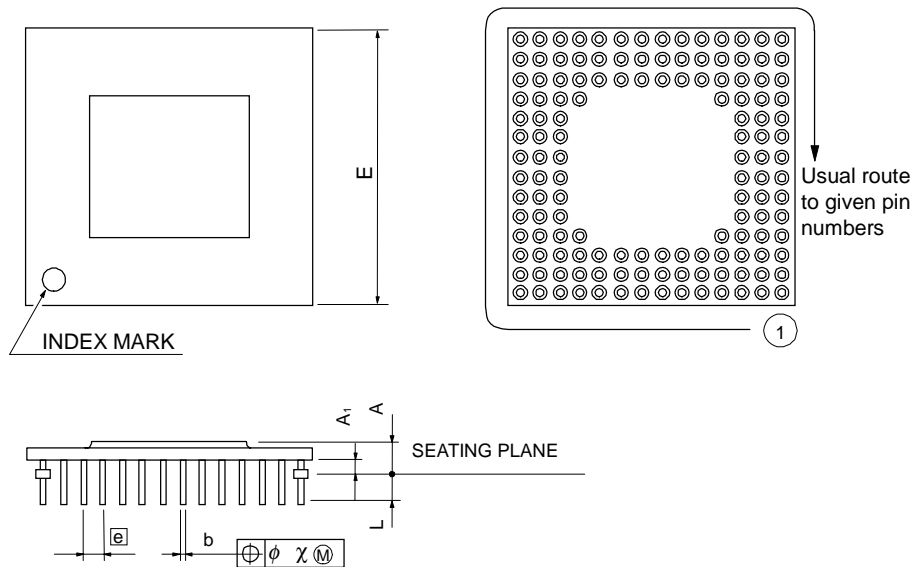
Package Structural Diagram



PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

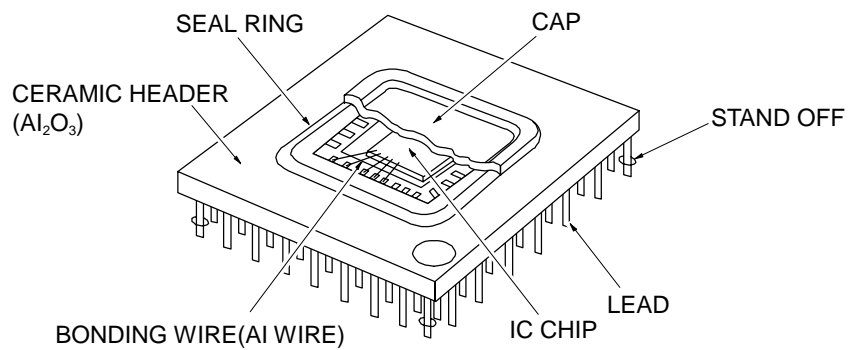
CERAMIC PGA



Note 1: The b dimension applies to the L section of the leads.

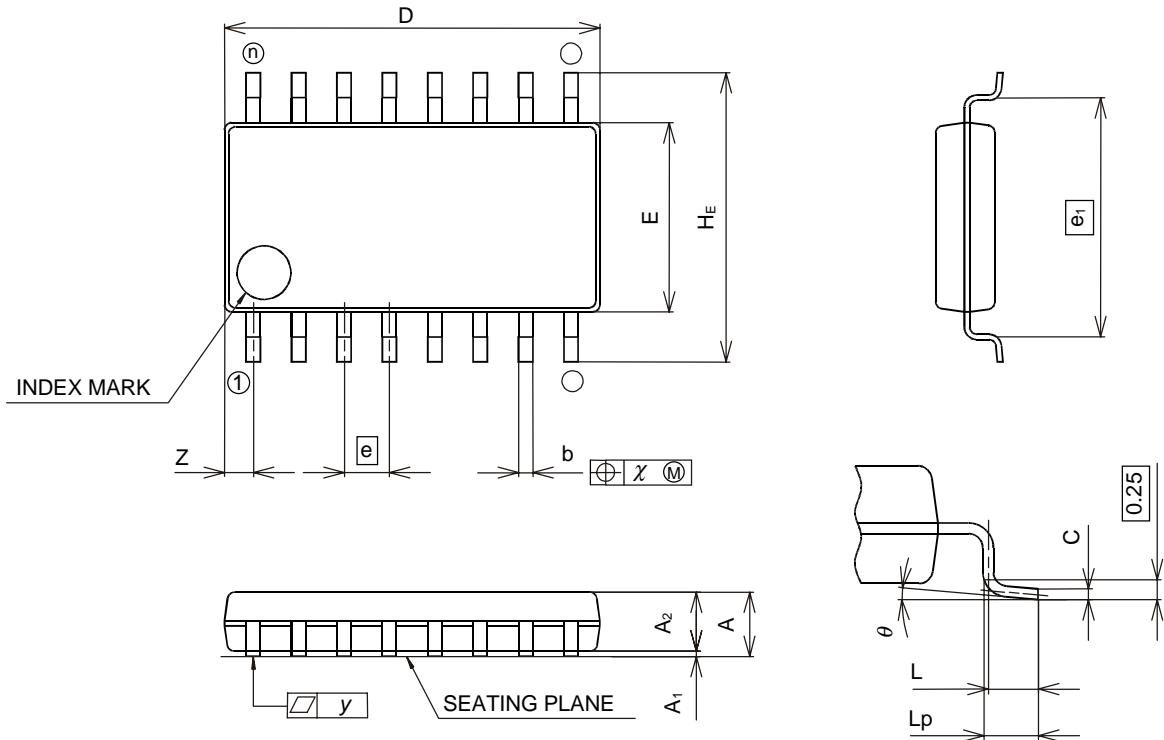
Note 2: The number of leads includes leads for preventing incorrect insertion.

Package Structural Diagram (CERAMIC PGA)



2.3 Surface Mounting Type

PLASTIC SOP

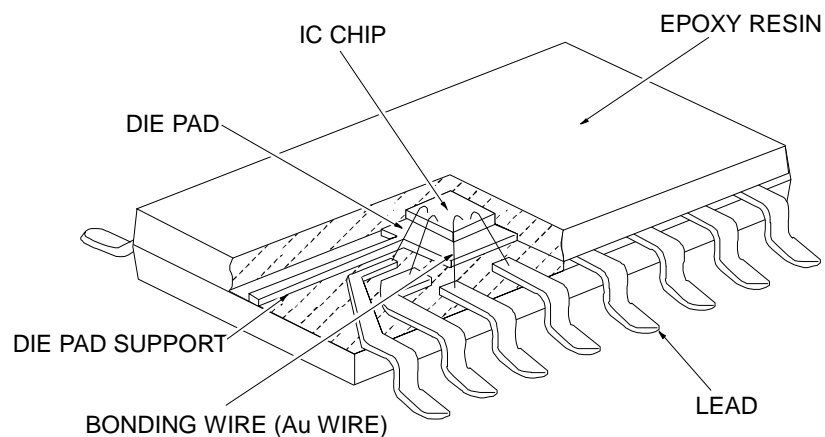


Note: The D , E , and Z dimensions do not include resin burrs and the remains from die pad support.

Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

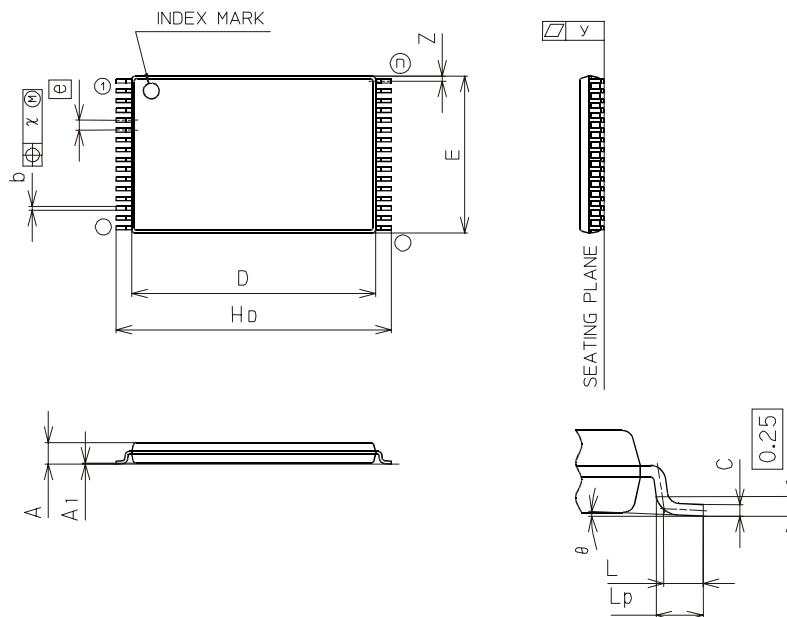
Package Structural Diagram



PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

PLASTIC TSOP (1)

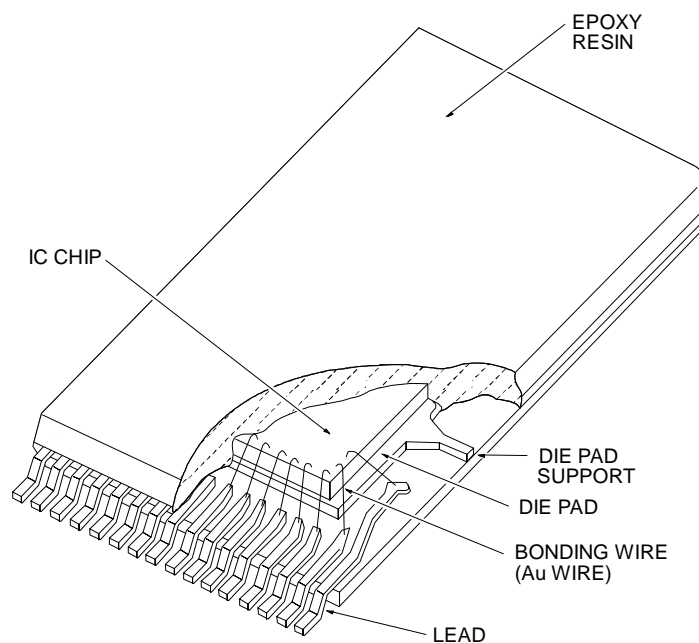


Note: The D, E and Z dimensions do not include resin burrs and the remains from die pad support.

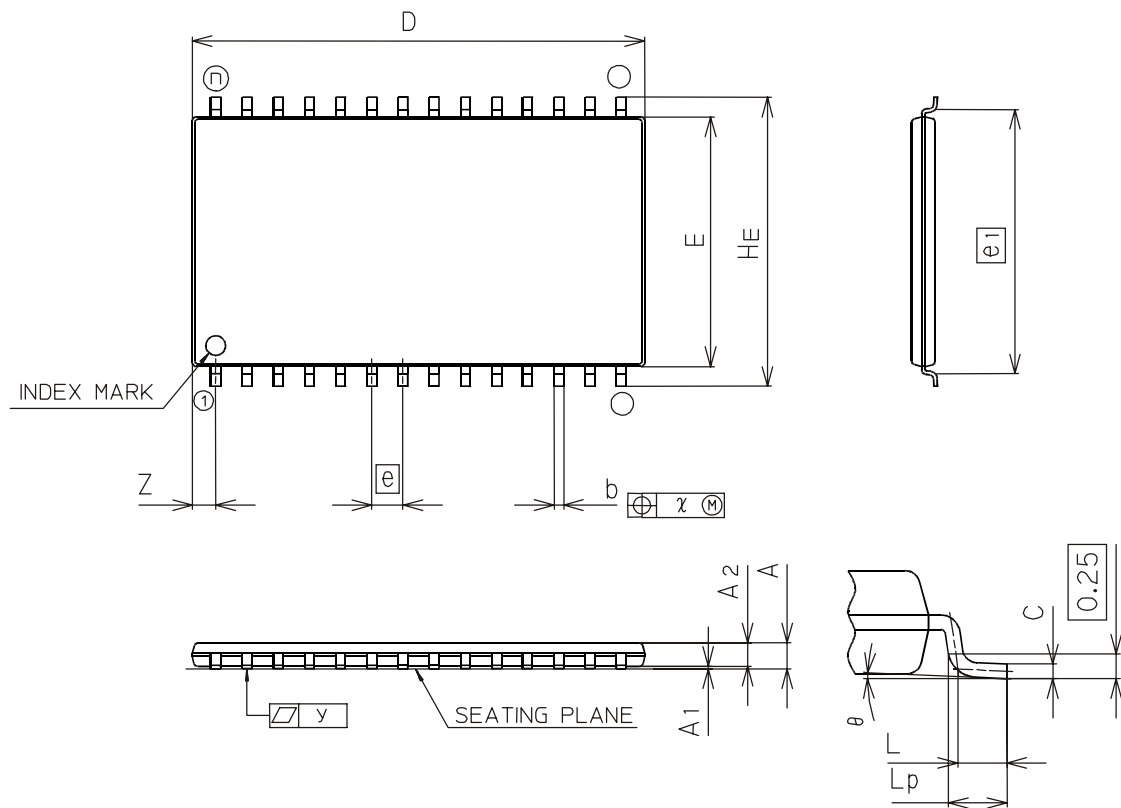
Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

Package Structural Diagram



PLASTIC TSOP (2)

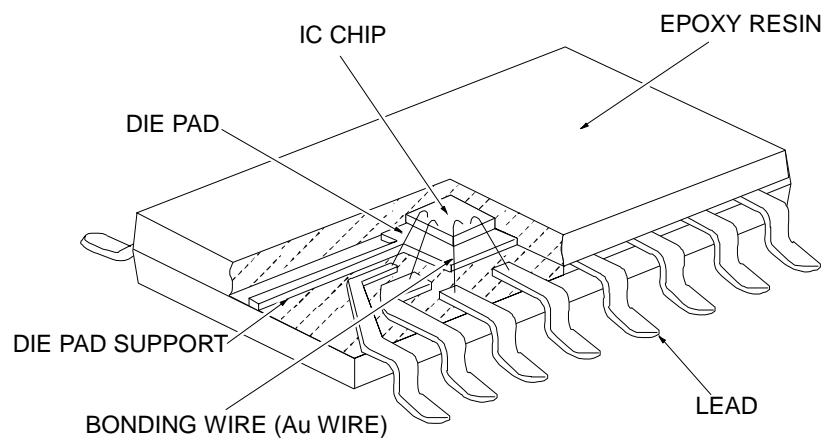


Note: The D , E and Z dimensions do not include resin burrs and the remains from die pad support.

Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

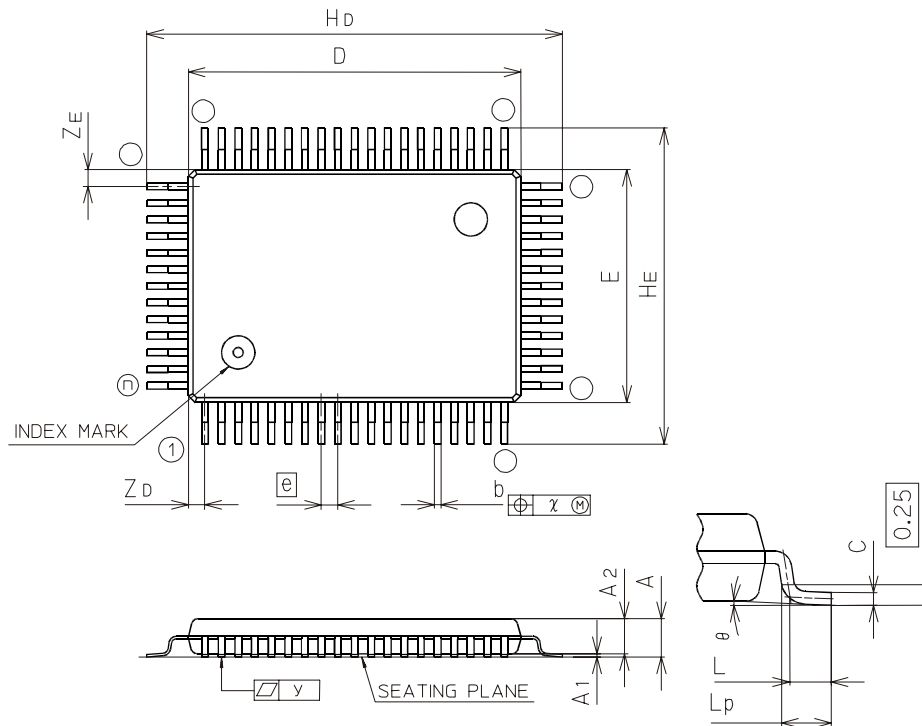
Package Structural Diagram



PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

PLASTIC QFP, TQFP, and LQFP

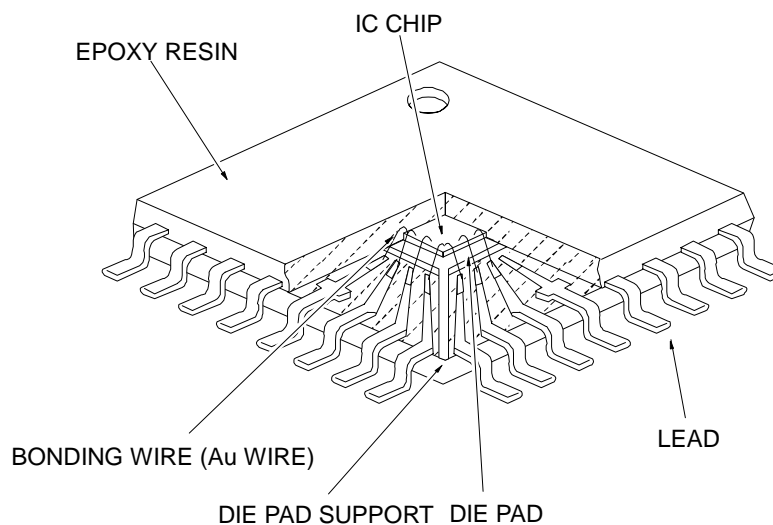


Note: The D , E , Z_D and Z_E dimensions do not include resin burrs and the remains from die pad support.

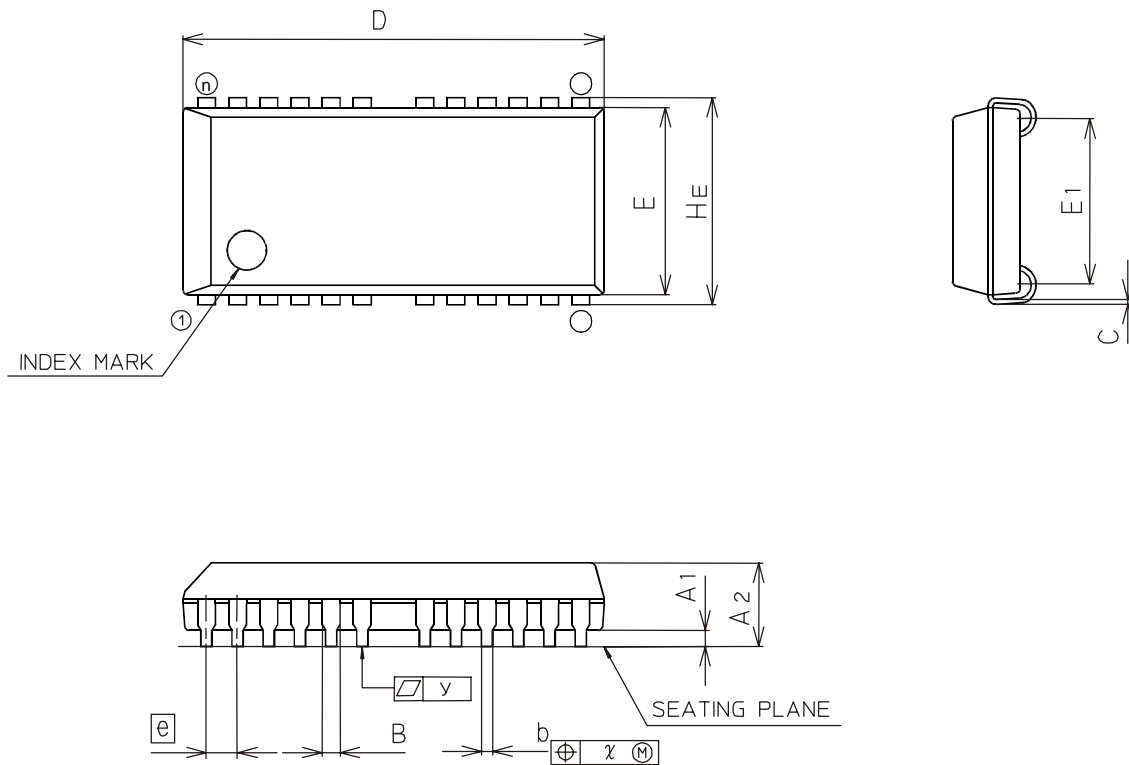
Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

Package Structural Diagram



PLASTIC SOJ

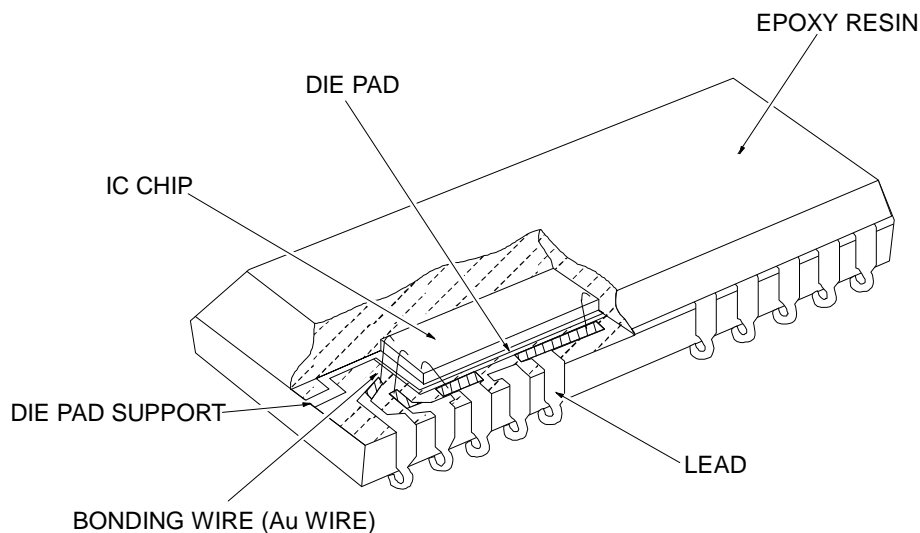


Note: The D , and E dimensions do not include resin burrs and the remains from die pad support.

Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

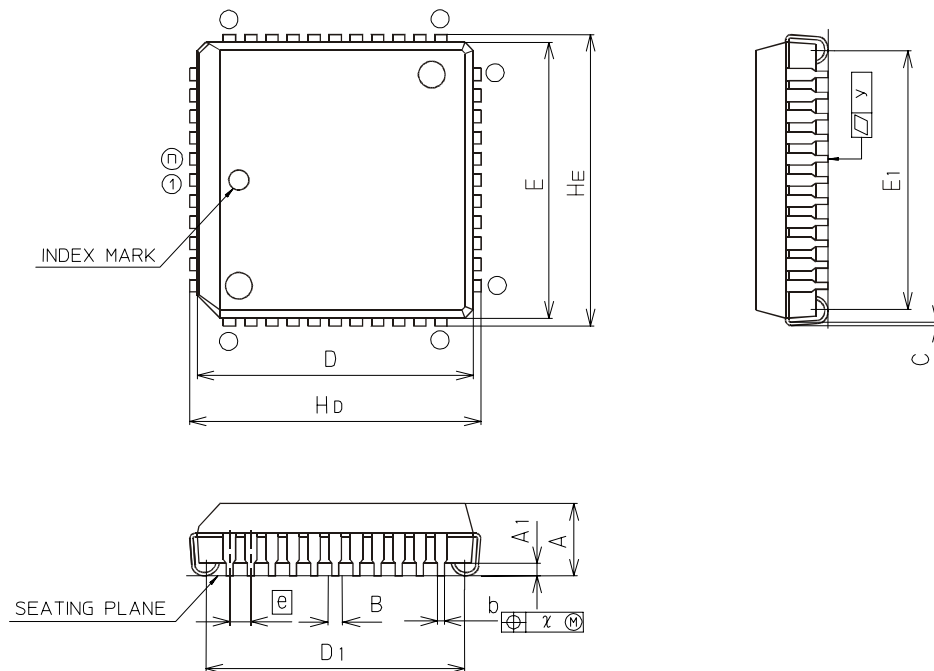
Package Structural Diagram



PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

PLASTIC QFJ (PLCC)

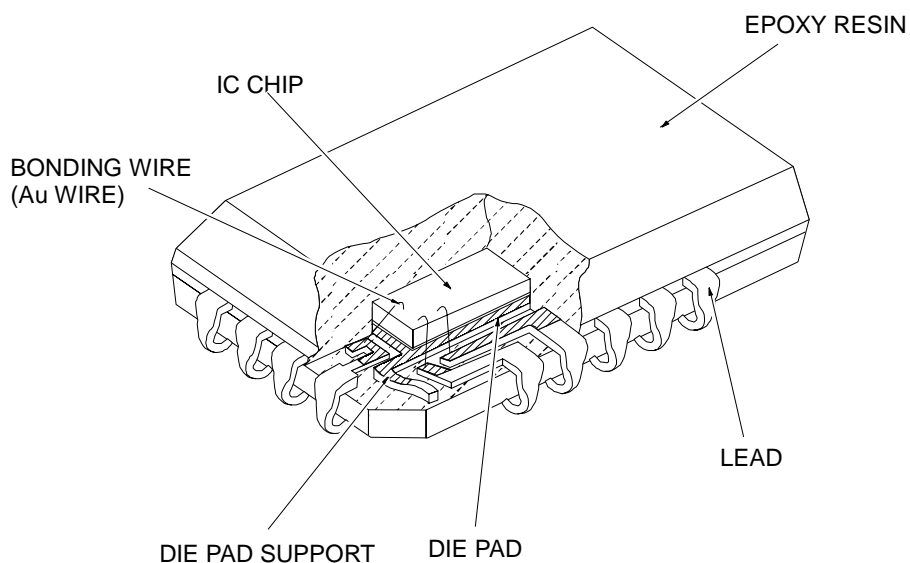


Note: The D , and E dimensions do not include resin burrs and the remains from die pad support.

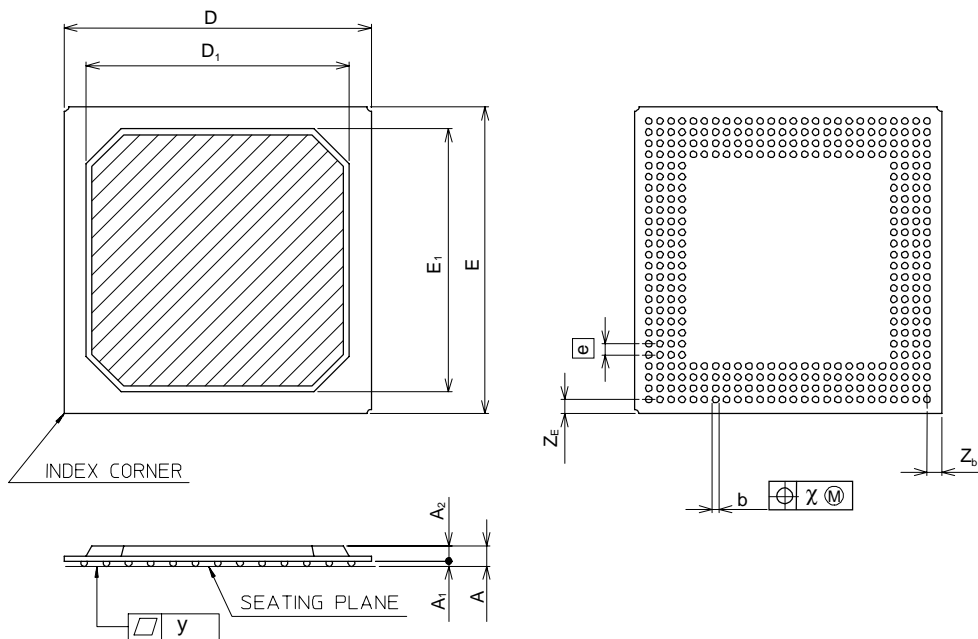
Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

Package Structural



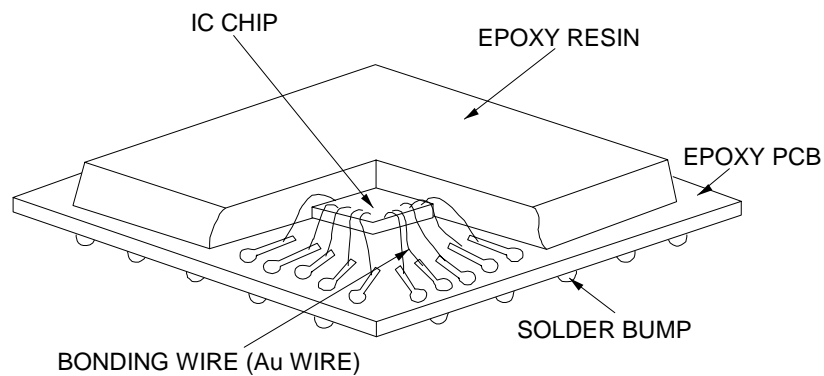
PLASTIC BGA



Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

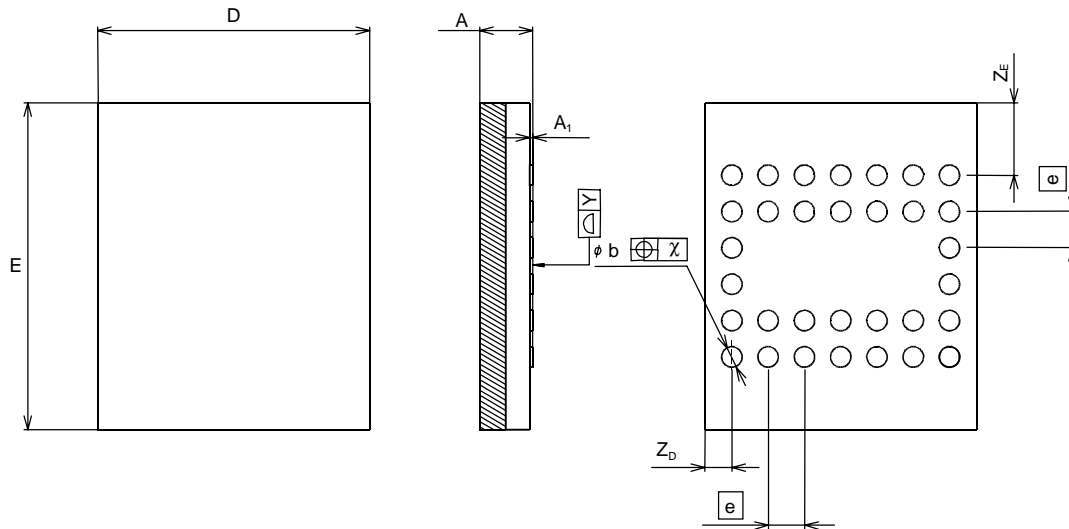
Package Structural Diagram



PACKAGE INFORMATION

2. PACKAGE OUTLINES AND DIMENSIONS

PLASTIC LGA



Notes for the Mounting the Surface Mounting Type Package:

The SOP, QFP, TSOP, TQFP, LQFP, SOJ, QFJ (PLCC), and BGA packages which are very susceptible to heat in reflow mounting and to humidity absorbed in storage. Therefore, before you do reflow mounting, contact Oki's responsible sales person on the product name, package name, pin number, package code and desired mounting conditions (reflow method, temperature and times).

Package Structural Diagram

