

EIAJ ED-7311-13A



Standard of Japan Electronics and Information Technology Industries Association

EIAJ ED-7311-13A

**Standard of integrated circuits package
(P-SON)**

Established in January, 1999

Revised in June, 2002

Prepared by

Technical Standardization Committee on Semiconductor Device Package

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Standard of integrated circuits package (P-SON)

1. Scope of Application

This standard regulated outline drawings for semiconductor package. This standard define the terms and Dimensions of Plastic Small Outline No-Lead Package (herein after called P-SON) which is classified into N-terminals of second category having the package form B. This standard is a revision version of **EIAJ ED-7311-13**, established in January 1999.

Note: This standard is from **EIAJ EDR-7318A** (Design guideline of integrated circuits for P-SON).

The other relation standards are shown below.

EIAJ EDR-7324A (Design guideline of integrated circuits for P-QFN), established in May 1999,
revised in April 2002

EIAJ ED-7311-22 (Standard of integrated circuits package for P-QFN), established in April 2002

2. Definition of the Technical Terms

The definition of the technical terms used in this standard is in conformity with **EIAJ ED-7300**, as for the new terms, it is due to the definition in this technical report.

3. History

Recently, as electronic devices become smaller, conventional leaded type packages such as SOP and QFP become unsuitable, and demand for no-lead type packages makes suppliers develop and commercialize such type of packages. The design guideline is in intended to standardize the outer dimensions or "terminal-N" packages and ensure compatibility between products.

For the integration of definitions about dimensions or packages which have leads on both sides and around 4 sides, the packages were overviewed when the design guideline was made.

EIAJ EDR-7318 (Design guideline of integrated circuits for P-VSON) was established in December, 1998, which have leads on both sides, and **EIAJ EDR-7324** (Design guideline of integrated circuits for P-VQFN) was established in April 1999, which have leads around four sides.

EIAJ EDR-7318 and **EIAJ EDR-7324** are considered a comment in every country in case of IEC standardization with a standard revision needed in spreading a variation rapidly by the development trend of each company, and added Seated height newly. Also, it considered an outline drawing by the saw cut which is a consistence with **MO-229** (Thermal Heat-sink V/WDFPN) and **MO-220** (Thermal Heat-sink V/WQFN) of JEDEC standard and a technology development trend in recent years, too. And it was created in the addition. As for both standards, it begins a deliberation from September 2001, **EIAJ EDR-7318A** and **EIAJ EDR-7324A** are established in April 2002.

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This standard shows the standard design values on the concept of the design centers as far as possible for standardization.

4. Definition of P-SON

It is classified into N terminals of second category having the form of A. It's leads are flat and positioned at the bottom in two arrays along the both sides of the package to make it possible to mount on the printed circuit board. This Design guideline defines the plastic package whose mounting height is no higher than 1.20mm(Metal exposing area is not defined in this report).

5. Numbering of Pins

In conformity with the definition of **EIAJ ED-7300**.

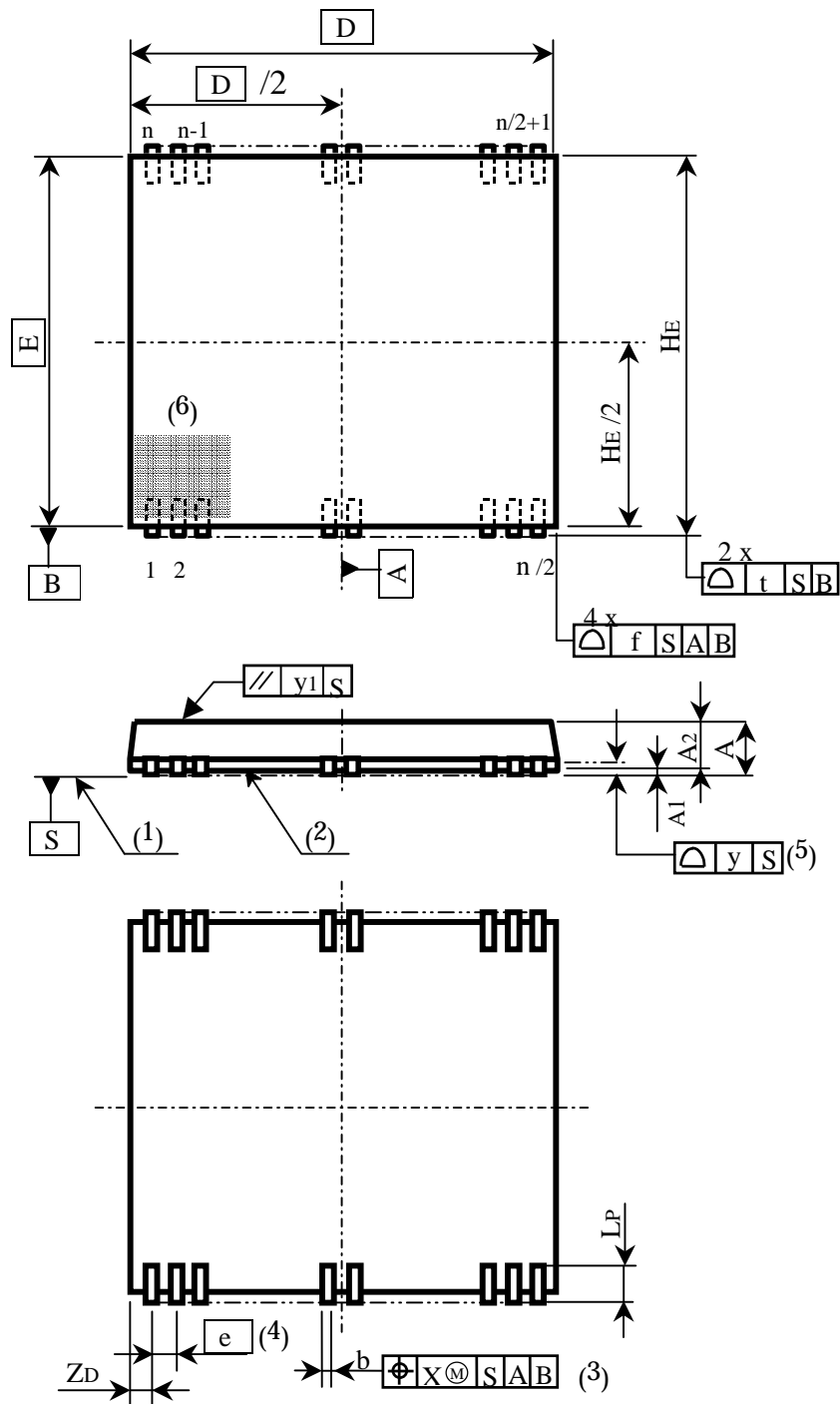
6. Nominal Dimensions

The package body size (package length: D, package width: E) is regarded as Nominal dimensions.

7. Reference Characters and Drawing

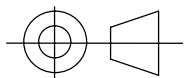
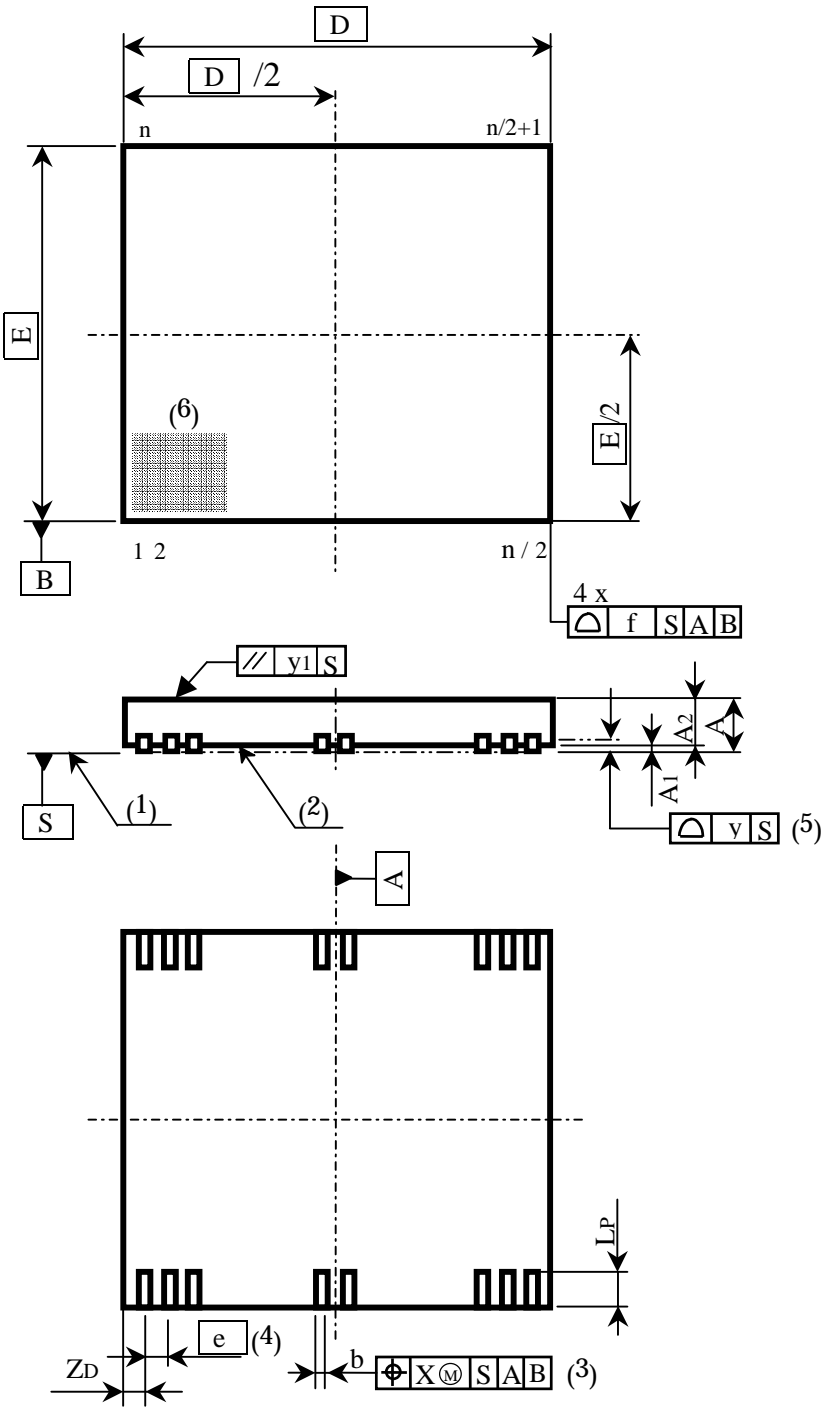
7.1 Outline Drawing

Figure 1 ($L_1=0.10$)



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PACKAGE NAME P-SON		JEITA REGISTRATION NO. IC-7318A-001	

Figure 2 ($L_1=0$)



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PACKAGE OUTLINE DRAWINGS

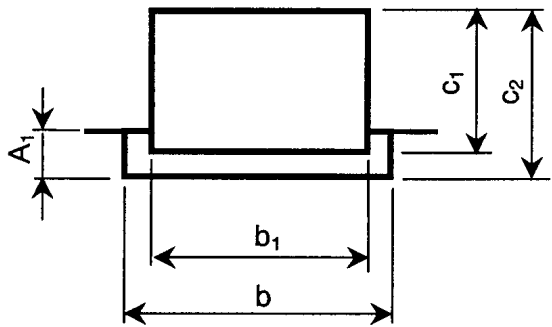
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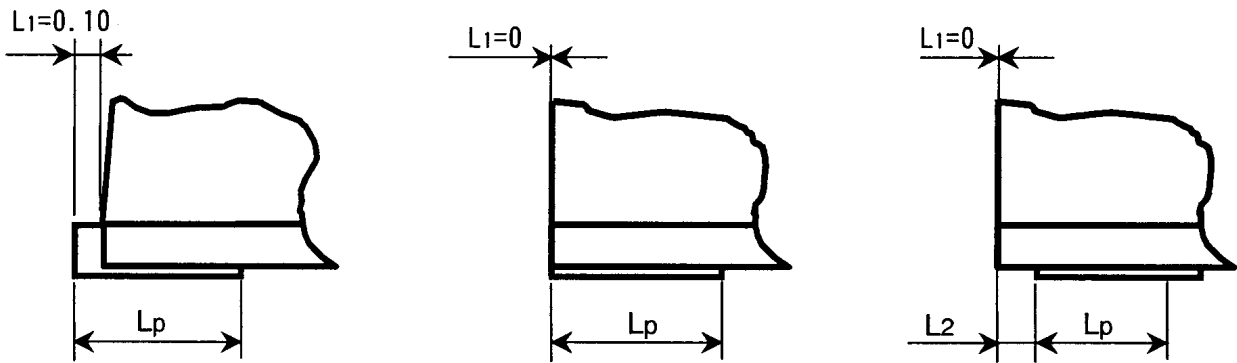
PACKAGE NAME
P-SON

JEITA REGISTRATION NO.
IC-7318A-001

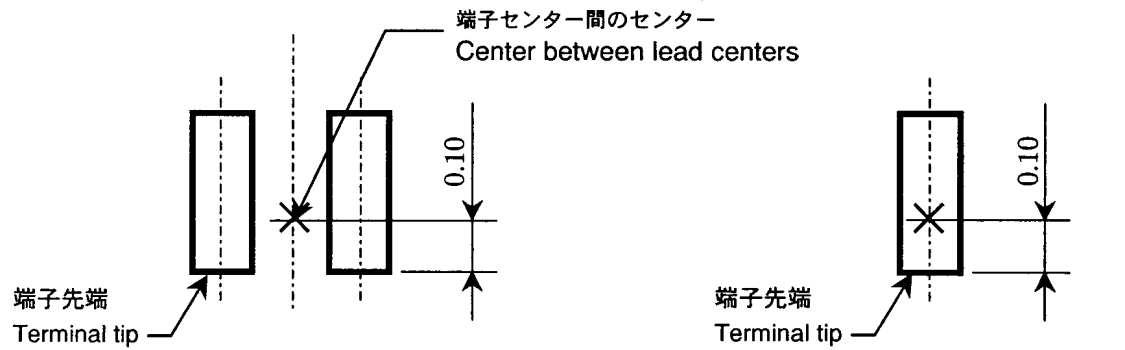
図 3, Figure 3



端子断面図, Terminal section (7)



はんだ取付け部分, Terminal to be soldered



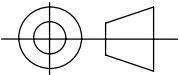
(a) リード片側偶数の場合

(b) リード片側奇数の場合

(a) For even number of terminals on a package side. (b) For odd number of terminals on a package side.

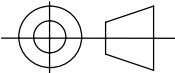
データム A の定義

The detailed figure of definition A

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Notes

- (1) The seating plane, with which a package is in contact.
- (2) The base plane, which is in parallel with the seating plane and links the lowest point, except the stand-off.
- (3) The maximum material requirements apply to the positional tolerance of the terminals.
(Refer to **ISO 2692/JIS B 0023.**)
- (4) Specifies the true geometric position of the terminal axis.
- (5) Specifies the vertical shift of the flat part of each terminal from the mounting surface.
- (6) Shows the allowable position of the Index mark area, which is based on the IEC standard and basically 1/16 with package body size, however in case of small package body size, it is less than 1/4 with package body size, It must be included in the shaded area entirely.
- (7) The dimensions of the terminal section apply to the terminal region ranges of 0.10mm and 0.25mm from the end of a terminal.

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8. Registration table

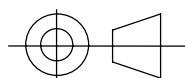
Package name:P-SON

Registration number:IC-7318A-001

serial number table

Note: The Numbers in the table indicate, (serial number) of 1st - 4th cord, It gives the 5th cord in registration order.

CODE	1st		2nd		3rd		4th
symbol	A	E		D		e	
	T	2.00	A	2.00	A	1.00	A
	V	2.50		2.50		0.80	B
	W	3.00	B	3.00	B	0.65	C
	U	3.50		3.50		0.50	D
	X	4.00	C	4.00	C	0.40	E
		4.50		4.50			
		5.00	D	5.00	D		
		5.50		5.50			
		6.00	E	6.00	E		
		6.50		6.50			
		7.00	F	7.00	F		
		7.50		7.50			
		8.00	G	8.00	G		
		8.50		8.50			
		9.00	H	9.00	H		
		9.50		9.50			
		10.00	J	10.00	J		
		11.00	K	11.00	K		
		12.00	L	12.00	L		
		13.00	M	13.00	M		
				14.00	N		
				15.00	P		
				16.00	Q		
				17.00	R		
				18.00	S		
				19.00	T		
				20.00	U		
				21.00	V		
				22.00	W		
				23.00	X		
				24.00	Y		
				25.00	Z		
				26.00	ZA		



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PACKAGE NAME
P-SON

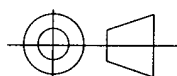
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注 表中の数値は, 「(端子数 n) - 001 - (整理番号 (5桁))」を示す。

Note: The Numbers in the table indicate, (Terminal number n) - 001 - (serial number (5cord))

呼び寸法 E X D Nominal dimensions	端子直線間隔 $\frac{e}{e}$ Terminal pitch $\frac{e}{e}$				
	1.00	0.80	0.65	0.50	0.40
2.50×2.50					10-001-VAAEA
2.50×3.00					12-001-WABEA
2.50×3.50				12-001-VABDA	16-001-VABEA
3.60×3.00			8-001-WBBCA		
5.00×2.00					6-001-WDAEA
7.00×12.00		28-001-VFLBA		46-001-VFLDA	
8.00×12.00				46-001-VGLDA	
8.00×14.00				54-001-VGNDA	
10.00×10.75				40-001-WJJDA 40-001-WJJDB	
10.00×12.00				46-001-VJLDA	
10.00×15.00		36-001-VJPBA		58-001-VJPDA	
10.00×18.00			54-001-VJSCA		



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
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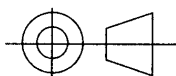
PACKAGE NAME
P-SON

JEITA REGISTRATION NO.
IC-7318A-001

呼び寸法 (Nominal dimension): $E \times D$, (VSON)

Unit mm

整理番号 Serial Number		10-001-VAAEA			12-001-VABDA			16-001-VABEA		
外形タイプ External Type		P-VSON010-02.50×02.50 -0.40			P-VSON012-02.50×03.50 -0.50			P-VSON016-02.50×03.50 -0.40		
照合文字 Reference Symbol		min	nom	max	min	nom	max	min	nom	max
Group1		—	2.50	—	—	3.50	—	—	3.50	—
		—	2.50	—	—	2.50	—	—	2.50	—
	f	—	—	0.15	—	—	0.15	—	—	0.15
	A	—	—	0.90	—	—	0.90	—	—	0.90
	A ₁	0.00	—	0.06	0.00	—	0.06	0.00	—	0.06
	A ₂	—	0.80	—	—	0.80	—	—	0.80	—
	b	0.11	—	0.23	0.21	—	0.33	0.11	—	0.23
	b ₁	0.105	0.13	0.155	0.205	0.23	0.255	0.105	0.13	0.155
		—	0.40	—	—	0.50	—	—	0.40	—
	L _p	0.40	0.50	0.60	0.40	0.50	0.60	0.40	0.50	0.60
	x	—	—	0.05	—	—	0.05	—	—	0.05
	y	—	—	0.05	—	—	0.05	—	—	0.05
	y ₁	—	—	—	—	—	—	—	—	—
	t	—	—	0.15	—	—	0.15	—	—	0.15
	n	—	10	—	—	12	—	—	16	—
Group2	Z _D	—	0.45	—	—	0.50	—	—	0.35	—
	c ₁	0.19	—	0.21	0.19	—	0.21	0.19	—	0.21
	c ₂	0.195	—	0.23	0.195	—	0.23	0.195	—	0.23
	H _E	—	2.70	—	—	2.70	—	—	2.70	—
	L ₁	—	0.10	—	—	0.10	—	—	0.10	—
	L ₂	—	0.00	—	—	0.00	—	—	0.00	—



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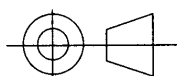
PACKAGE NAME
P-SON

JEITA REGISTRATION NO.
IC-7318A-001

呼び寸法(Nominal dimension): $E \times D$, (VSON)

Unit mm

整理番号 Serial Number		28-001-VFLBA			46-001-VFLDA			46-001-VGLDA		
外形タイプ External Type		P-VSON028-07.00×12.00 -0.80			P-VSON046-07.00×12.00 -0.50			P-VSON046-08.00×12.00 -0.50		
照合文字 Reference Symbol		min	nom	max	min	nom	max	min	nom	max
Group1		—	12.00	—	—	12.00	—	—	12.00	—
		—	7.00	—	—	7.00	—	—	8.00	—
	f	—	—	0.10	—	—	0.10	—	—	0.20
	A	—	—	0.90	—	—	0.90	—	—	1.00
	A ₁	0.00	0.02	0.05	0.00	0.02	0.05	0.00	0.02	0.05
	A ₂	0.65	0.75	0.85	0.65	0.75	0.85	0.50	0.75	0.95
	b	0.35	—	0.50	0.25	—	0.40	0.27	—	0.37
	b ₁	0.35	0.40	0.45	0.25	0.30	0.35	0.27	0.30	0.33
		—	0.80	—	—	0.50	—	—	0.50	—
	L _p	0.50	0.75	0.90	0.35	0.50	0.75	0.35	0.50	0.75
	x	—	—	0.05	—	—	0.05	—	—	0.05
	y	—	—	0.05	—	—	0.05	—	—	0.05
	y ₁	—	—	—	—	—	—	—	—	—
	t	—	—	0.10	—	—	0.10	—	—	0.20
	n	—	28	—	—	46	—	—	46	—
Group2	Z _D	—	0.80	—	—	0.50	—	—	0.50	—
	c ₁	0.09	—	0.21	0.09	—	0.21	0.09	—	0.21
	c ₂	0.09	—	0.25	0.09	—	0.25	0.09	—	0.25
	H _E	—	7.10	—	—	7.10	—	—	8.20	—
	L ₁	—	0.05	—	—	0.05	—	—	0.10	—
	L ₂	—	0.00	—	—	0.00	—	—	0.00	—



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PACKAGE NAME
P-SON

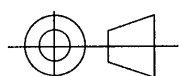
JEITA REGISTRATION NO.
IC-7318A-001

EIAJ ED-7311-13A

呼び寸法 (Nominal dimension): $E \times D$, (VSON)

Unit mm

整理番号 Serial Number		54-001-VGNDA			46-001-VJLDA			36-001-VJPBA		
外形タイプ External Type		P-VSON054-08.00×14.00 -0.50			P-VSON046-10.00×12.00 -0.50			P-VSON036-10.00×15.00 -0.80		
照合文字 Reference Symbol		min	nom	max	min	nom	max	min	nom	max
Group1	D	—	14.00	—	—	12.00	—	—	15.00	—
	E	—	8.00	—	—	10.00	—	—	10.00	—
	f	—	—	0.10	—	—	0.10	—	—	0.10
	A	—	—	0.90	—	—	0.90	—	—	0.90
	A ₁	0.00	0.02	0.05	0.00	0.02	0.05	0.00	0.02	0.05
	A ₂	0.65	0.75	0.85	0.65	0.75	0.85	0.65	0.75	0.85
	b	0.25	—	0.40	0.25	—	0.40	0.35	—	0.50
	b ₁	0.25	0.30	0.35	0.25	0.30	0.35	0.35	0.40	0.45
	e	—	0.50	—	—	0.50	—	—	0.80	—
	L _p	0.35	0.50	0.75	0.35	0.50	0.75	0.50	0.75	0.90
	x	—	—	0.05	—	—	0.05	—	—	0.05
	y	—	—	0.05	—	—	0.05	—	—	0.05
	y ₁	—	—	—	—	—	—	—	—	—
	t	—	—	0.10	—	—	0.10	—	—	0.10
	n	—	54	—	—	46	—	—	36	—
Group2	Z _D	—	0.50	—	—	0.50	—	—	0.70	—
	c ₁	0.09	—	0.21	0.09	—	0.21	0.09	—	0.21
	c ₂	0.09	—	0.25	0.09	—	0.25	0.09	—	0.25
	H _E	—	8.10	—	—	10.10	—	—	10.10	—
	L ₁	—	0.05	—	—	0.05	—	—	0.05	—
	L ₂	—	0.00	—	—	0.00	—	—	0.00	—



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

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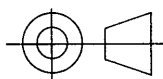
PACKAGE NAME
P-SON

JEITA REGISTRATION NO.
IC-7318A-001

呼び寸法 (Nominal dimension): $E \times D$, (VSON)

Unit mm

整理番号 Serial Number		58-001-VJPDA			54-001-VJSCA		
外形タイプ External Type		P-VSON058-10.00×15.00 -0.50			P-VSON054-10.00×18.00 -0.65		
照合文字 Reference Symbol		min	nom	max	min	nom	max
Group1		—	15.00	—	—	18.00	—
		—	10.00	—	—	10.00	—
	f	—	—	0.10	—	—	0.20
	A	—	—	0.90	—	—	1.00
	A ₁	0.00	0.02	0.05	0.00	0.02	0.05
	A ₂	0.65	0.75	0.85	0.50	0.75	0.95
	b	0.25	—	0.40	0.32	—	0.42
	b ₁	0.25	0.30	0.35	0.32	0.35	0.38
		—	0.50	—	—	0.65	—
	Lp	0.35	0.50	0.75	0.40	0.65	0.80
	x	—	—	0.05	—	—	0.05
	y	—	—	0.05	—	—	0.05
	y ₁	—	—	—	—	—	—
	t	—	—	0.10	—	—	0.20
	n	—	58	—	—	54	—
Group2	Z _D	—	0.50	—	—	0.55	—
	c ₁	0.09	—	0.21	0.09	—	0.21
	c ₂	0.09	—	0.25	0.09	—	0.25
	H _E	—	10.10	—	—	10.20	—
	L ₁	—	0.05	—	—	0.10	—
	L ₂	—	0.00	—	—	0.00	—



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
PACKAGE NAME
P-SON

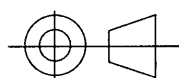
JEITA REGISTRATION NO.
IC-7318A-001

EIAJ ED-7311-13A

呼び寸法(Nominal dimension): $E \times D$, (WSON)

Unit mm

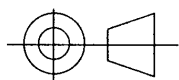
整理番号 Serial Number		12-001-WABEA			8-001-WBBCA			6-001-WDAEA		
外形タイプ External Type		P-WSN012-02.50×03.00 -0.40			P-WSN008-03.60×03.00 -0.65			P-WSN006-05.00×02.00 -0.40		
照合文字 Reference Symbol		min	nom	max	min	nom	max	min	nom	max
Group1		—	3.00	—	—	3.00	—	—	2.00	—
		—	2.50	—	—	3.60	—	—	5.00	—
	f	—	—	0.20	—	—	—	—	—	—
	A	—	—	0.80	—	—	0.80	—	—	0.80
	A ₁	0.00	—	—	0.00	—	—	0.00	—	—
	A ₂	—	0.75	—	—	—	—	—	0.75	—
	b	0.10	—	0.22	0.10	—	0.30	0.20	0.25	0.30
	b ₁	0.13	0.16	0.19	0.135	0.16	0.185	—	—	—
		—	0.40	—	—	0.65	—	—	0.40	—
	L _p	0.50	0.60	0.70	—	0.30	—	0.355	0.455	0.555
	x	—	—	0.08	—	—	0.08	—	—	0.05
	y	—	—	0.10	—	—	0.10	—	—	0.05
	y ₁	—	—	0.02	—	—	—	—	—	—
	t	—	—	0.20	—	—	—	—	—	—
	n	—	12	—	—	8	—	—	6	—
Group2	Z _D	—	0.50	—	—	—	0.675	—	—	—
	c ₁	0.09	—	0.21	0.10	—	0.12	—	—	—
	c ₂	0.09	—	0.25	0.10	—	0.25	—	—	—
	H _E	—	2.50	—	—	4.00	—	—	5.00	—
	L ₁	—	0.00	—	0.10	0.20	0.30	—	0.00	—
	L ₂	—	0.00	—	—	0.00	—	—	0.00	—

JEITA STANDARD
PACKAGE OUTLINE DRAWINGSDATE
2002-06-01SHEET
11/12PACKAGE NAME
P-SONJEITA REGISTRATION NO.
IC-7318A-001

呼び寸法 (Nominal dimension): $E \times D$, (WSN)

Unit mm

整理番号 Serial Number		40-001-WJJDA			40-001-WJJDB		
外形タイプ External Type		P-WSN040-10.00×10.75-0.50			P-WSN040-00.00×10.75-0.50		
照合文字 Reference Symbol		min	nom	max	min	nom	max
Group1	D	—	10.75	—	—	10.75	—
	E	—	10.00	—	—	10.00	—
	f	—	—	0.20	—	—	0.20
	A	—	—	0.80	—	—	0.75
	A ₁	0.00	0.02	0.05	0.00	—	—
	A ₂	0.65	0.70	0.75	0.67	0.70	0.73
	b	0.27	—	0.37	0.27	—	0.37
	b ₁	0.27	0.30	0.33	0.27	0.30	0.33
	e	—	0.50	—	—	0.50	—
	L _p	0.40	0.50	0.70	0.35	0.50	0.75
	x	—	—	0.05	—	—	0.05
	y	—	—	0.05	—	—	0.05
	y ₁	—	—	—	—	—	0.05
	t	—	—	0.10	—	—	0.20
	n	—	40	—	—	40	—
Group2	Z ₀	—	0.625	—	—	0.625	—
	c ₁	0.09	—	0.21	0.09	—	0.21
	c ₂	0.09	—	0.25	0.09	—	0.25
	H _E	—	10.10	—	—	10.10	—
	L ₁	—	0.05	—	—	0.05	—
	L ₂	—	0.00	—	—	0.00	—



JEITA STANDARD
PACKAGE OUTLINE DRAWINGS

DATE
2002-06-01

SHEET
12/12

PACKAGE NAME
P-SON

JEITA REGISTRATION NO.
IC-7318A-001

EIAJ ED-7311-13A

9. Review committee members

This technical report has been reviewed mainly by IC Package Sub-Committee and Project Group of Semiconductor Package Standardization Committee.

A detailed discussion of the standard started WG, and executed a special committee in addition.

The members are as shown below.

<Technical Standardization Committee on Semiconductor Device Package>

Chairman	SONY CORP.	Kazuo Nishiyama
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<IC Package Subcommittee>

Chief	MITSUBISHI ELECTRIC CORP.	Kazuya Fukuhara
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Co-chief	TOSHIBA CORP.	Yasuhiro Koshio
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	HITACHI LTD.	Yoshinori Miyaki
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	FUJITSU LTD.	Hiroshi Inoue
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	MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.	Tomohiro Tamaki
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Members	AMKOR THECHNOROLOGY JAPAN. INC.	Kazuaki Sorimachi
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	ELPIDA MEMORY, INC.	Fumitake Okutsu
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	ENPLAS CORP.	Hisao Ohshima
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	OKI ELECTRIC INDUSTRY CO., LTD.	Yoshihiko Ino
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	KYOCERA CORP.	Akihiro Funahashi
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	SANYO ELECTRIC CORP.	Hideyuki Iwamura
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	SANYO ELECTRIC CORP.	Kiyoshi Mita
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	SUMITOMO 3M CORP.	Akiko Tsubota
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	SEIKO EPSON CORP.	Yoshiaki Emoto
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	SONY CORP.	Hiroshi Abe
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	NEC CORP.	Kaoru Sonobe
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	NEC CORP.	Kenichi Kurihara
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	IBM JAPAN CORP.	Tsuneo Kobayashi
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	TEXAS INSTRUMENTS JAPAN LTD.	Takayuki Ohuchida
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	HITACHI CABLE LTD.	Tadashi Kawanobe
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	FUJITSU LTD.	Shigeyuki Maruyama
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	FUJI ELECTRIC CO., LTD.	Osamu Hirohashi
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	MELCO INC.	Tsuneo Watanabe
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	YAMAICHI ELECTRONICS CO., LTD.	Noriyuki Matsuoka
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	UNITECHNO INC.	Hitoshi Matsunaga
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Special Members	SHIN-ETSU POLYMER CO., LTD.	Ken Tamura
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	TOYOJUSHI CO., LTD.	Hitoshi Kazama
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<Working Group>

Leader	MATSUSHITA ELECTRIC INDUSTRIAL CO., LTD.	Toshiyuki Fukuda
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Members	SONY CORP.	Kenzo Tanaka
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	FUJITSU LTD.	Kaoru Tachibana
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	ROHM CO., LTD.	Osamu Miyata
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Special members	NEC CORP.	Tsuyoshi Miyano
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	MATSUSHITA ELECTRONIC CORP.	Kenichi Ito
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