

MITSUBISHI ELECTRIC CORPORATION

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Subject Package Outline Changes of Pb-Free Type DIP-IPM in Comparison with that of Conventional Ones

Contents

The changes of Pb-free type DIP-IPM package outline in comparison with that of conventional packages are shown as below.

Table 1 Changes of Pb-free type DIP-IPM

Category	DIP-IPM Ver.2		DIP-IPM Ver.3	
	Mini Type	Large Type	Mini Type	Large Type
Change items	PS203xx-xxx	PS202xx-xxx	PS2156x-xxx	PS2186x-xxx
	PS2134x-xxx	PS2124x-xxx		
	PS2135x-xxx	PS2125x-xxx		
	PS2154x-xxx	PS214xx-xxx		
	PS2155x-xxx			
Lead plating solder Ingredient	The ingredients have been changed both in mini and larger type DIP-IPM. See page 2.			
Type name	Pb free type name has a suffix "-P" to the conventional type name. See page 2.			
Package outline	Outer lead shape has been changed. See page 3 to 6			

Please refer to the following pages for the details.

1. Lead Plating Solder Ingredients

Table 2 shows a comparison of the solder ingredients for outer lead plating between conventional and Pb free type DIP-IPM.

Table 2 DIP-IPM lead plating solder ingredients

Package	Conventional type	Pb free type
Large DIP-IPM	Sn : 60%、Pb : 40%	Sn : 99.3%、Cu : 0.7%、Ni:50ppm
Mini DIP-IPM	Sn : 95~80%、Pb : 5.0~20.0%	Sn : 98.5~97.0%、Cu : 1.5~3.0%

Note: The leads of large DIP-IPM are designed to be suitable for solder dipping process.

2. Type Name Change

Type names are changed in corresponding to the lead shape modification. Table 3 shows an example of the type name change before and after modification. The new type is simply named by adding a suffix “-P” to the conventional type name.

Table 3. Example of type name change

Before modification	After modification
PS21352-N	PS21352-NP
PS21244-E	PS21244-EP
PS21562	PS21562-P
PS21563-S	PS21563-SP
PS21869-A	PS21869-AP

3. Terminal Shape Modification of Pb Free Solder Plating DIP-IPM

For mounting process with Pb free solder, because it is difficult to ensure enough solderability on the conventional lead shape which is suitable for conventional Sn-Pb crystal solder, therefore, the terminal shape has been modified to ensure enough solderability through the means of reducing lead thermal capacitance. Table 4 shows an index of terminal shape modification.

Table 4. Index of modified terminal shape of package A and B

Package A	Large DIP-IPM Ver.2	Fig.1-1, Fig.1-2 (Page 3 of 6)
	Mini DIP-IPM Ver.2, Ver.3	Fig.2-1, Fig.2-2 (Page 4 of 6)
	Mini DIP-IPM Ver.3 with open emitter	Fig.4 (Page 6 of 6)
Package B	Large DIP-IPM Ver.3	Fig.3-1, Fig.3-2 (Page 5 of 6)

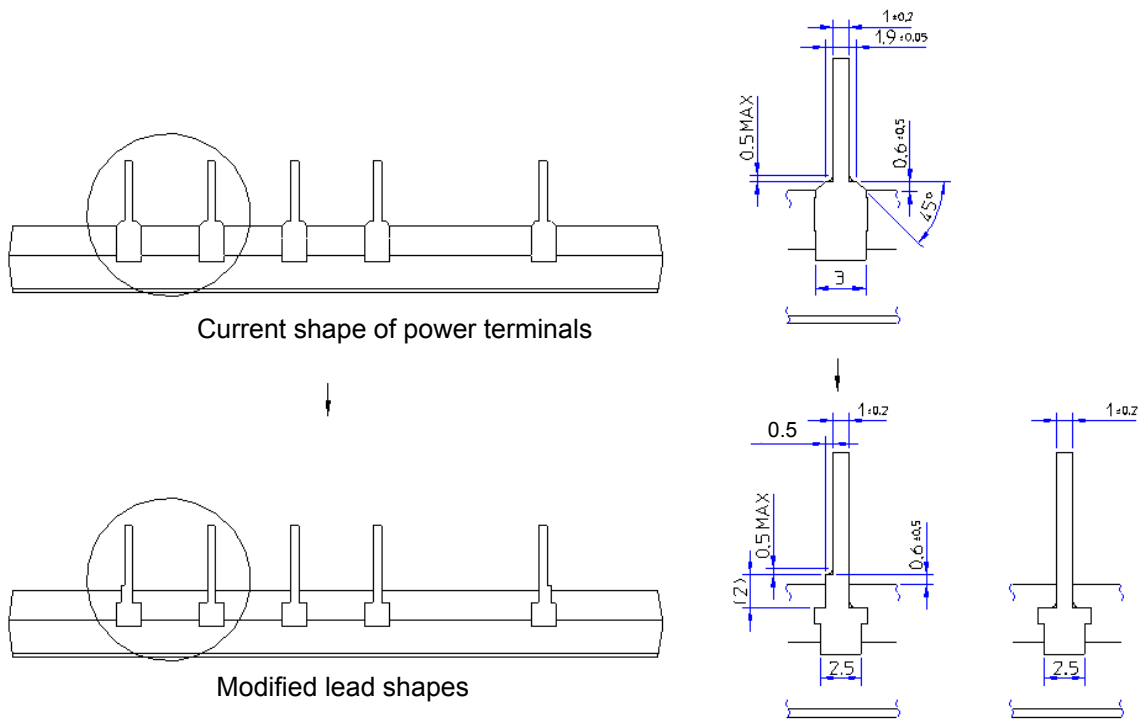


Fig.1-1 Terminal shape modification of Package A type large DIP-IPM (power side)

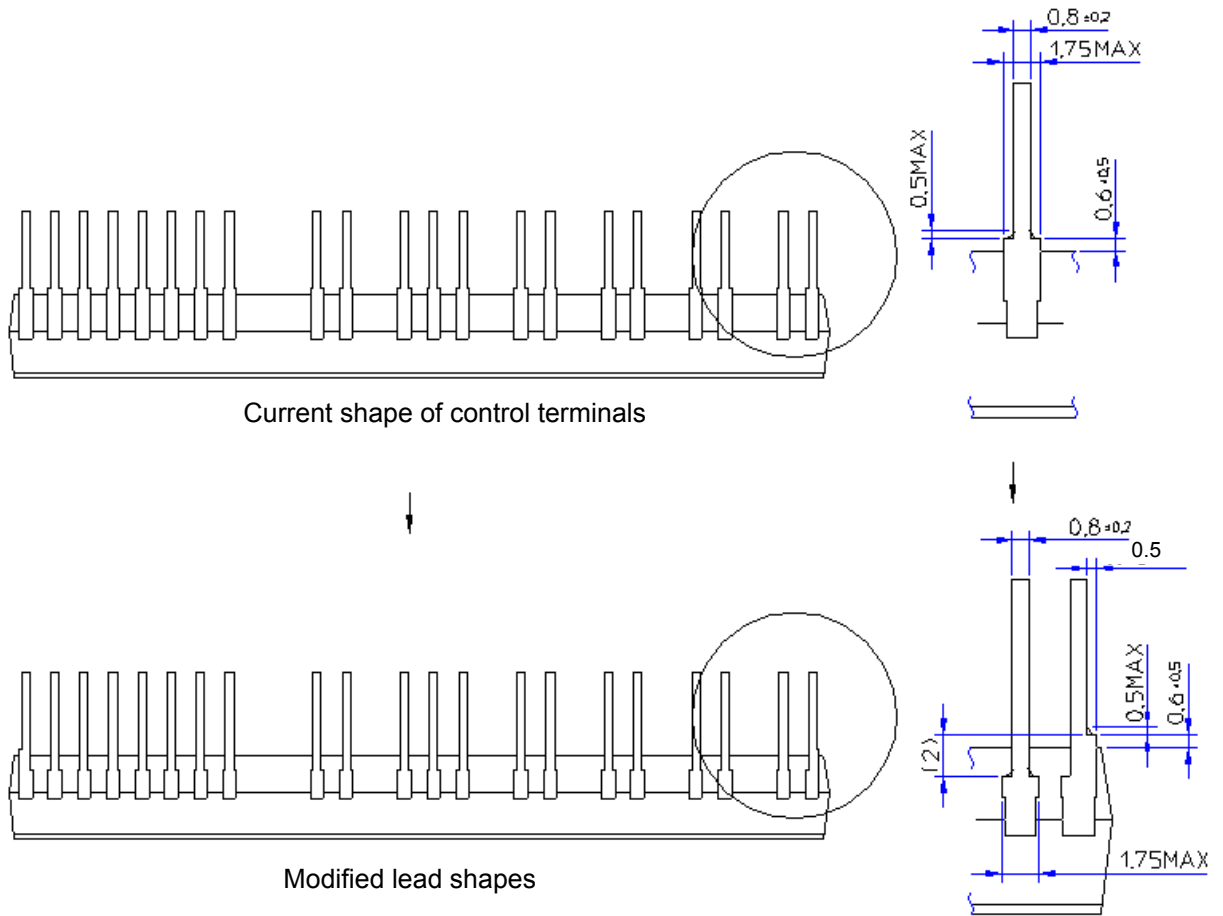


Fig.1-2 Terminal shape modification of Package A type large DIP-IPM (control side)

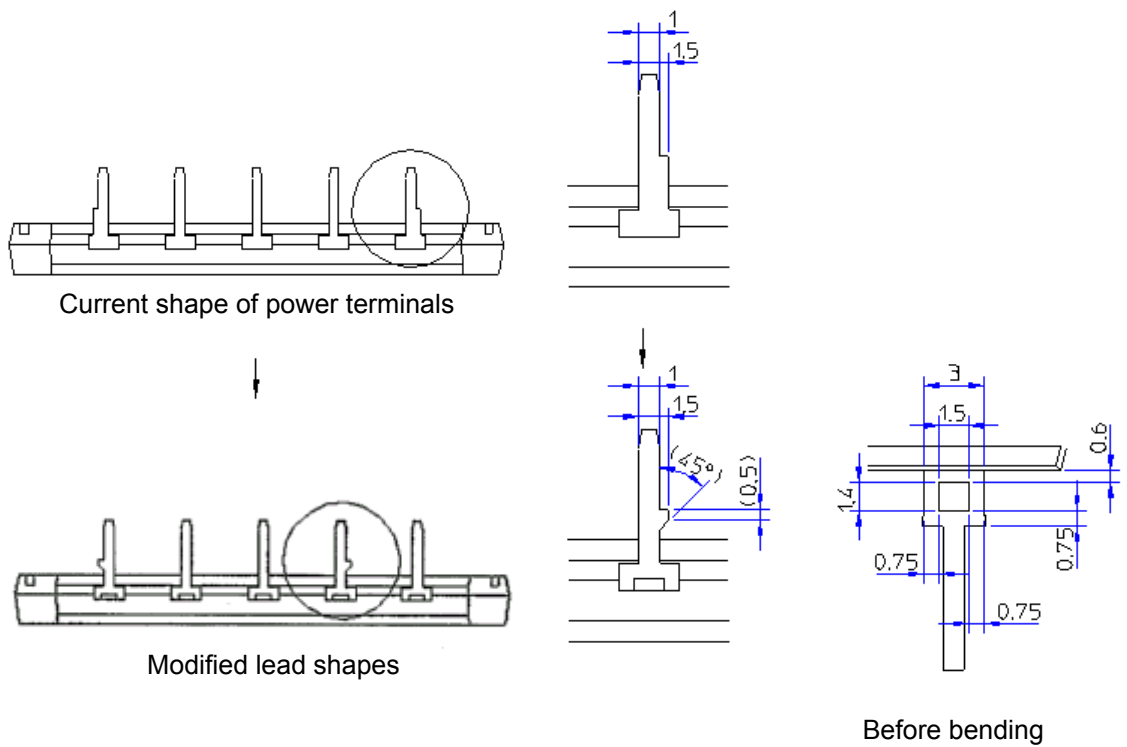


Fig.2-1 Terminal shape modification of Package A type mini DIP-IPM (power side)

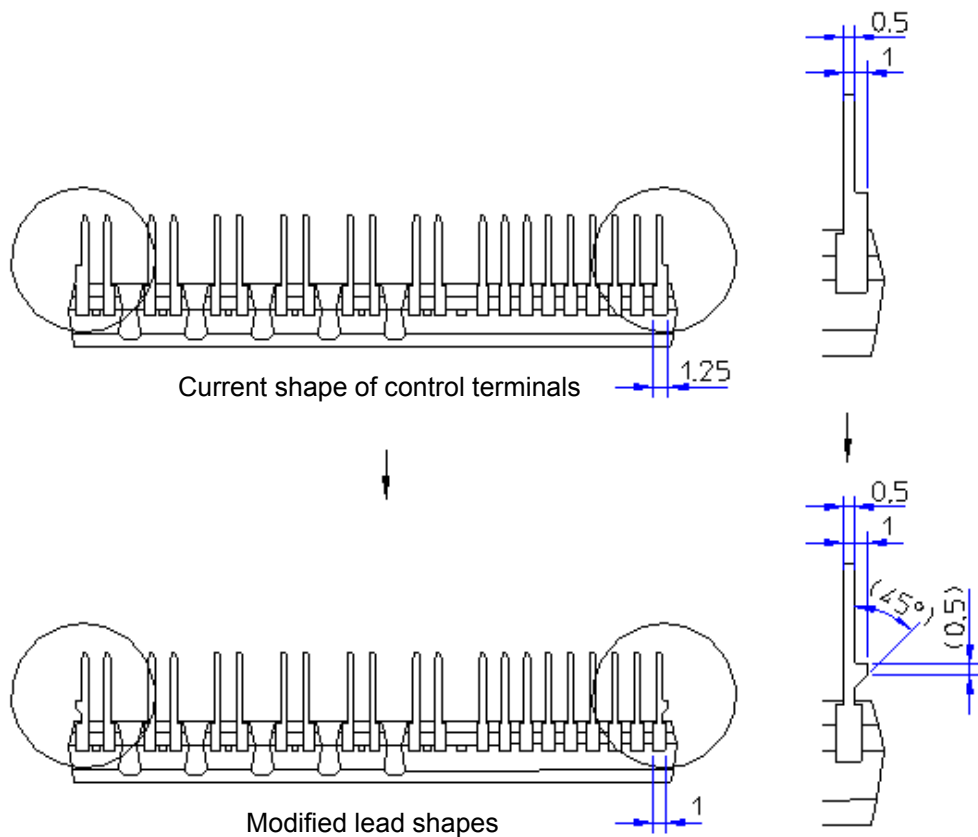


Fig.2-2 Terminal shape modification of Package A type mini DIP-IPM (control side)

DIP-IPM	DPH- 3725e -	APPLICATION NOTE
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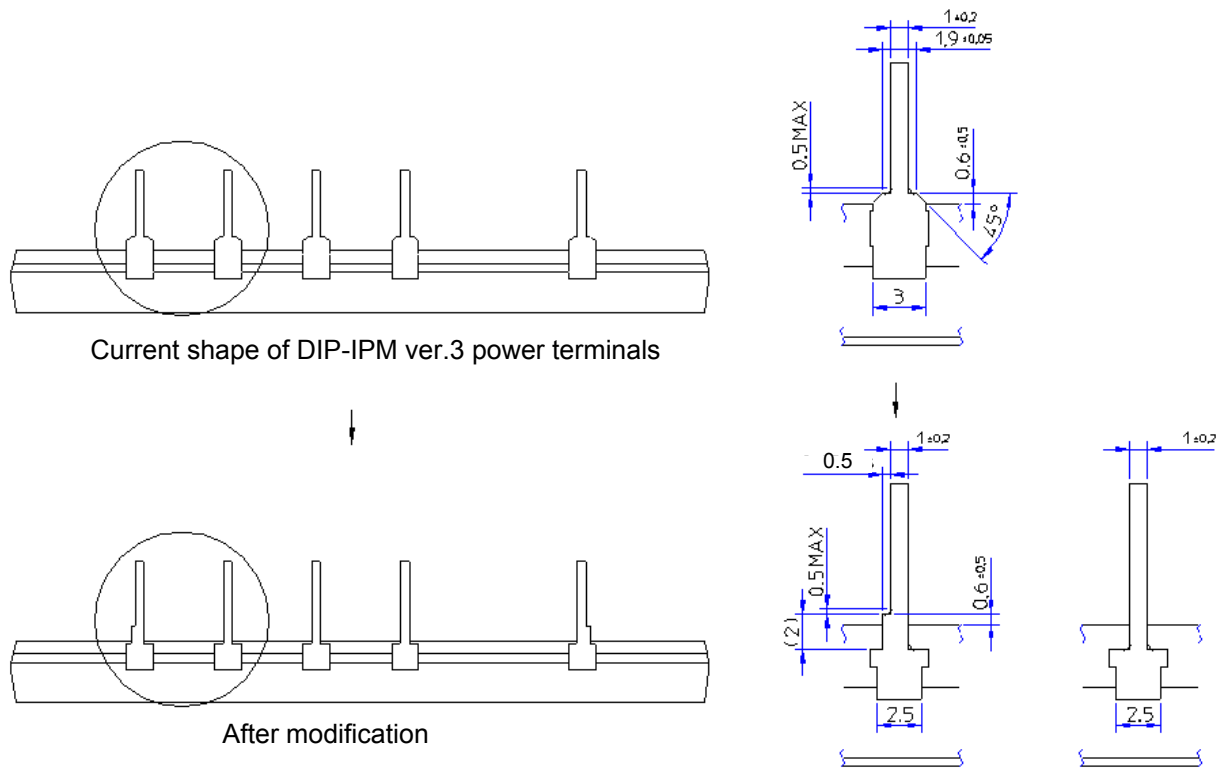


Fig.3-1 Terminal shape modification of Package B type DIP-IPM (power side)

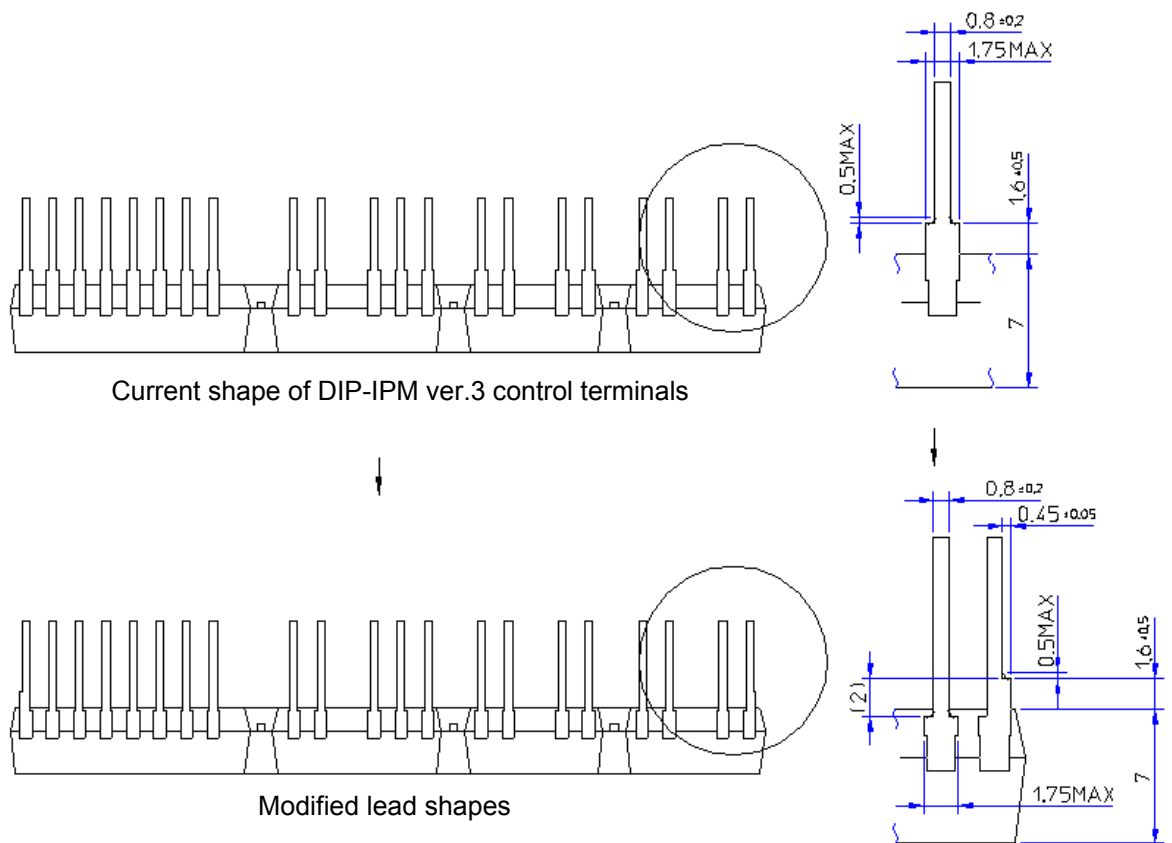
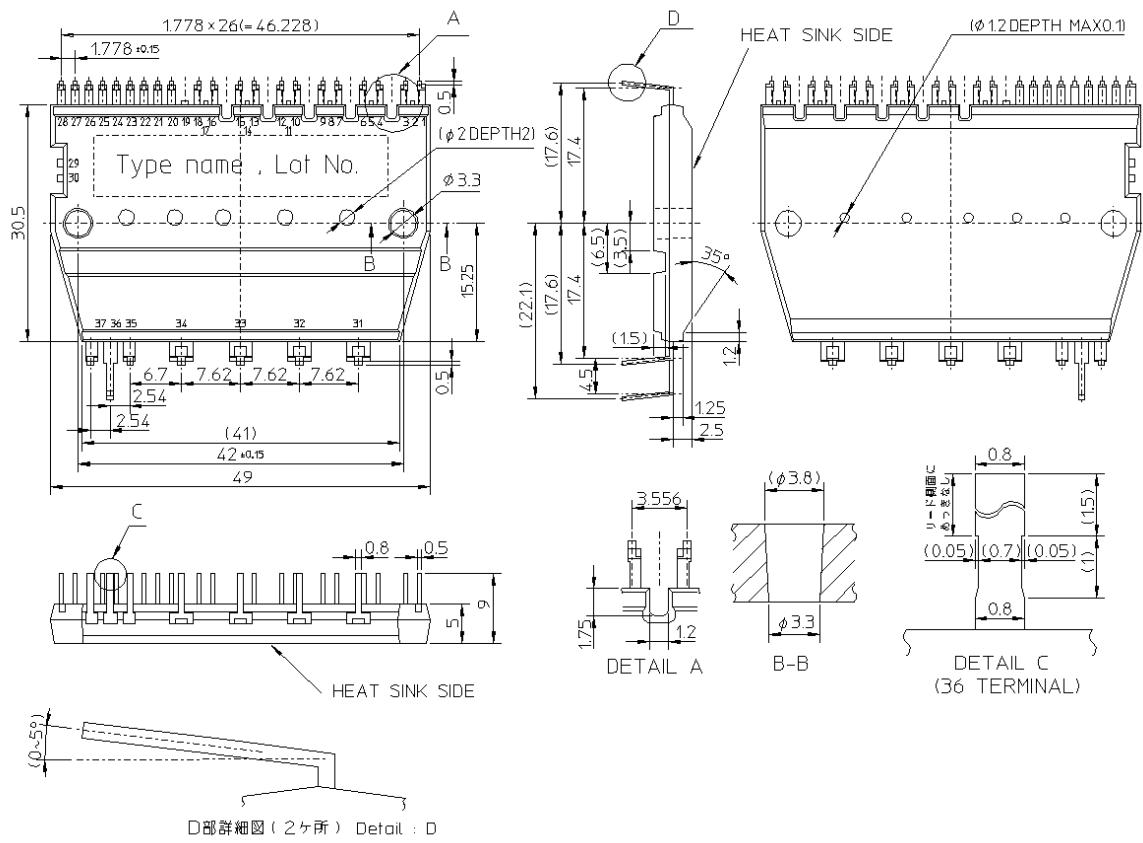


Fig.3-2 Terminal shape modification of Package B type DIP-IPM (control side)



TERMINAL CODE	
1	VUFS
2	<UPG>
3	VUFB
4	VPI
5	<COM>
6	UP
7	VVFS
8	<VPG>
9	VVFB
10	VPI
11	<COM>
12	VP
13	VWFS
14	<WPG>
15	VWFB
16	VPI
17	<COM>
18	WP
19	<UNG>
20	VNO
21	UN
22	VN
23	WN
24	FO
25	CF0
26	CIN
27	VNC
28	VN1
29	<WNG>
30	<VNG>
31	P
32	U
33	V
34	W
35	UN
36	VN
37	WN

Fig.4 N-side open emitter type mini DIP-IPM package outline