

**SUBJECT : Standardization of Lead-forming Options of ECC / ECK Ceramic Disc Capacitors
ECC-X*xxxxxxxx (Class 1) & ECK-X*xxxxxxxx (Class 2)**

BULLETIN # : ECN.PG33.051702-1

DATE : May 17, 2002

EFFECTIVE DATE : April 2002
LAST TIME BUY : Not / Applicable
LAST TIME SHIPMENT : Not / Applicable
SUGGESTED REPLACEMENT : Not / Applicable

OTHER DETAILS :

Change from : All Lead-forming options being 'standard '
[Kinked (A / N), Straight lead-forming (D / Z), Crimped (R)]

Changed to : Only ' Kinked-leads ' being 'standard ' [ECC-A / N or ECK-A / N]

Reason for change :

- 1) To standardize on the most ordered lead-forming types
- 2) Reduce the number of types needed to be inventoried

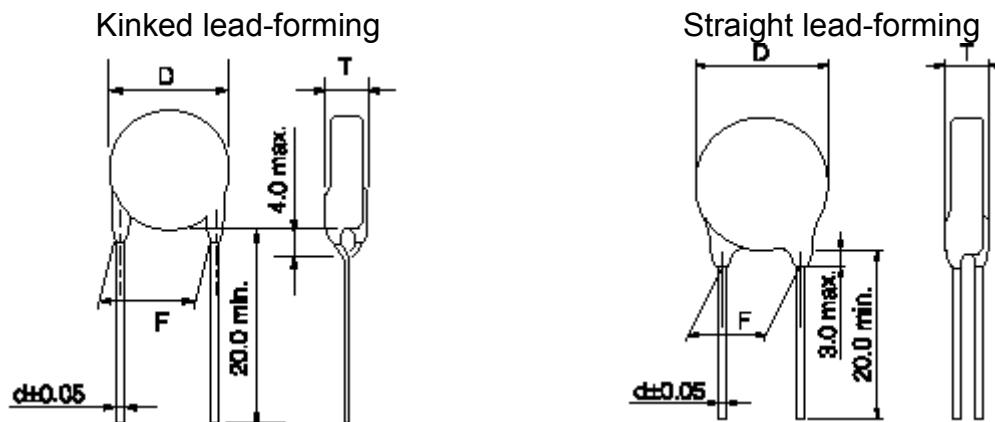
Standard *

A = Kinked leads, Bulk pack
N = Kinked leads, Taped

Non-Standard *

D = Straight leads, Bulk pack
Z = Straight leads, Taped
R = Crimped leads, Taped

Kinked leads are formed in such a way as being co-planar with the center line in the side view, which is not the case with Straight (or Crimped) lead-forming (see diagrams below)



Note(s): Recommend Kinked leads for new designs

Non-Standard lead-forms, for the present, are still supported, but on a 'Non-Standard' basis

Ceramic Business Unit
 LCR Device Company
 Matsushita Electronic Components
 And Ceramic Business Team
 Miyazaki Matsushita Electric Co,Ltd.

**Request for your cooperation on our standardization
 of lead-wire style for CERAMIC DISC CAPACITORS**

We would like to express our sincerely appreciation for your continuous support and cooperation regarding the CD for our ceramic disc capacitors. As caption, we have decided to proceed the standardization of lead-wire style for our ceramic disc capacitors in order to improve delivery to the customers and development of quality and reduction of any loss in the manufacturing process. We will, in future , ask you to follow to order us any new sample referring to the following methods as the following examples. These come from the two aspects, "Standardization of new sample on new order" and "Standardization of the products under current mass production". Regarding the products under being delivered already, please check if you can accept to change our modified new one on the application from new model of your products. We hope you'll understand our points cooperate with us.

(Backgrounds & effects)

1. We can improve delivery time by reduction of any loss through by change of lead-wire in the manufacturing process and making shorten the lead-wire of the process by 30%.
2. The new standard "Kinked lead type" products(A-type, E-type, N-type) are intended to avoid the portion of the coating to be inserted into the lead holes of the PWB and are to be sure to leak gas during soldering.
3. We can improve the quality of process and control on ordering due to reduce the kinds of type part no. from 470 to 280.

(Fundamental ideas of the standardization of lead wire)

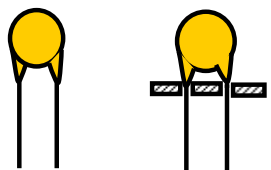
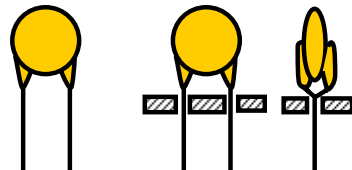
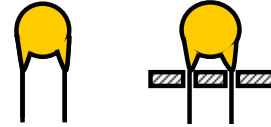
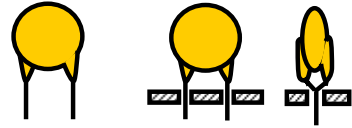
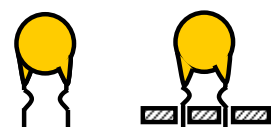
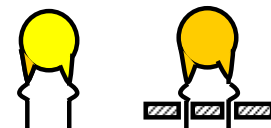
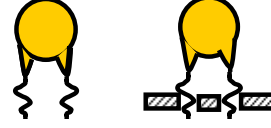
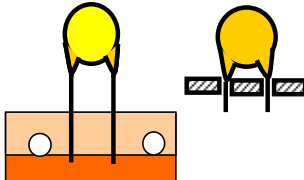
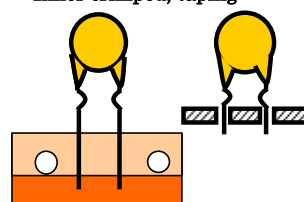
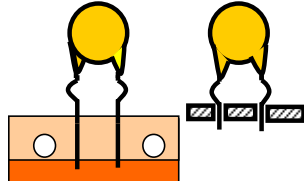
1. This modification must be limited to high voltage ceramic capacitors and safety regulations.
2. New standard Kinked lead type products(A-type, E-type, N-type) are described in the below lists.
3. Please refer enclosed page 2 concerning the differences and characteristics of the style compared with the current products and the new standard products.
4. Please refer enclosed page 3 concerning the structures and characteristics of Kinked lead type.
5. Please refer enclosed page 4,5 "the quick chart for relative part no" and " the real picture of before and after mounting" concerning the concrete examples of part no.

(Example of part no) ECK x 3A102KBP

Current products			New standard (kinked type)	
Name of lead style	style		Name of lead style	style
Straight long lead, Bulk	D		Kinked long lead, Bulk	A
Straight short lead, Bulk	M		Kinked short lead, Bulk	E
Inner crimped lead, Bulk	C			
Outer crimped lead, Bulk	J			
Double crimped lead, Bulk	W			
Straight long lead, taping	Z		Kinked straight, taping	N
Inner crimped lead, taping	R			
Outer crimped lead, taping	K			

The new sample means " the product which needs new approval "

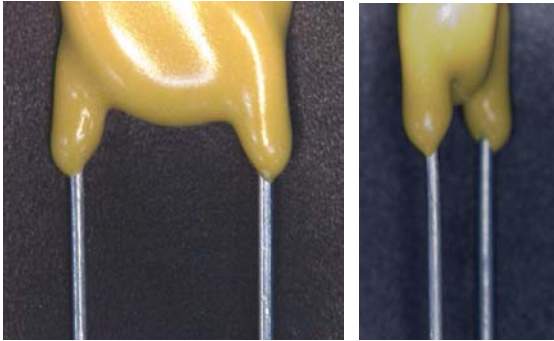
Differences and characteristics compared with the current products and the standard Kinked type products

Type of current			Kinked type products	Characteristics
D	<p>Straight long lead, bulk</p> 	→	<p>A type (kinked long lead, bulk)</p> 	<p>After inserted into PWB</p> <ol style="list-style-type: none"> 1. To avoid the portion of the coating to be inserted into the lead hole of the PWB and to make sure to leak gas during soldering. 2. 1 to 2 mm higher.
M	<p>Straight short lead, bulk</p> 	→	<p>E type (kinked short lead, bulk)</p> 	<p>After inserted into PWB</p> <ol style="list-style-type: none"> 1. To avoid the portion of the coating to be inserted into the lead hole of the PWB and to make sure to leak gas during soldering. 2. M type is 1 to 2mm higher. Another has same height.
C	<p>Inner crimped lead, bulk</p> 			
J	<p>Outer crimped lead, bulk</p> 			
W	<p>Double crimped lead, bulk</p> 			
Z	<p>Straight lead, taping</p> 			
R	<p>Inner crimped, taping</p> 			
K	<p>Outer crimped, taping</p> 			

Current products

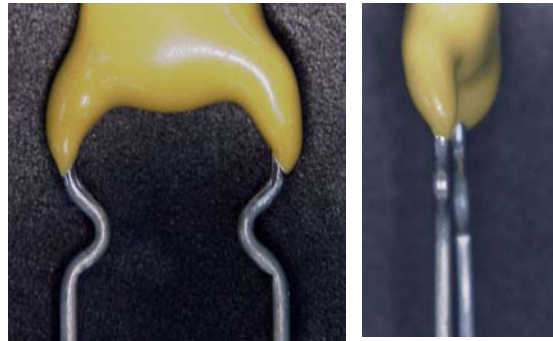
Straight lead type

D, M, Z



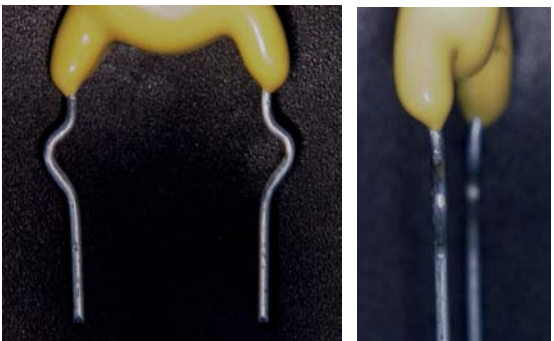
Inner crimped lead type

R, C



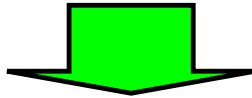
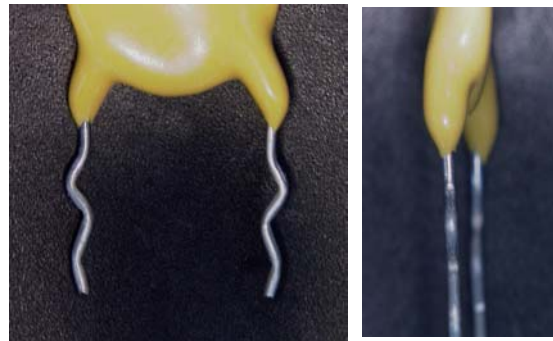
Outer crimped lead type

J, K

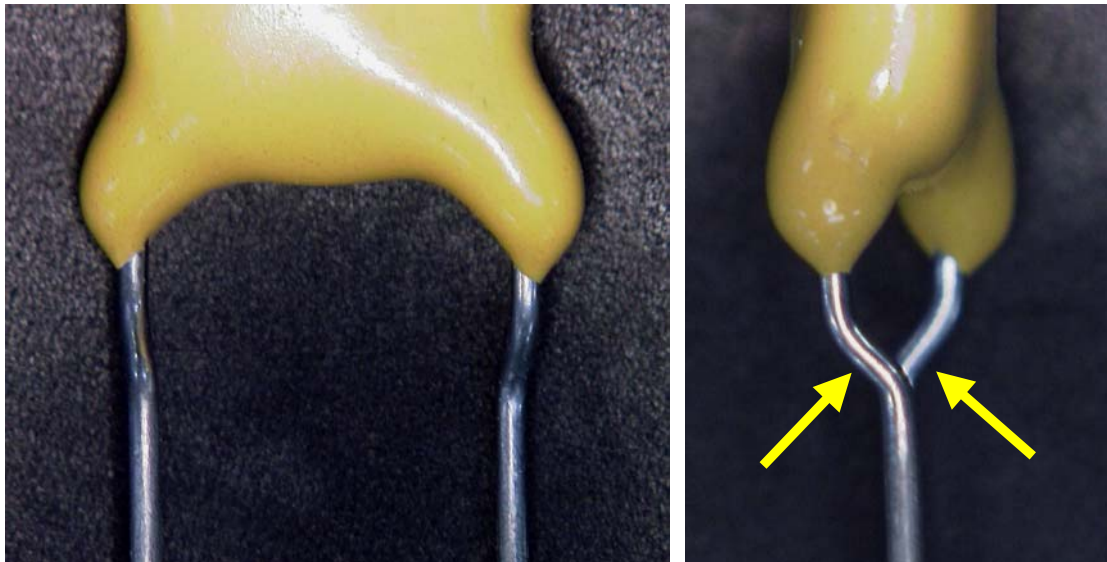


Double crimped lead type

W



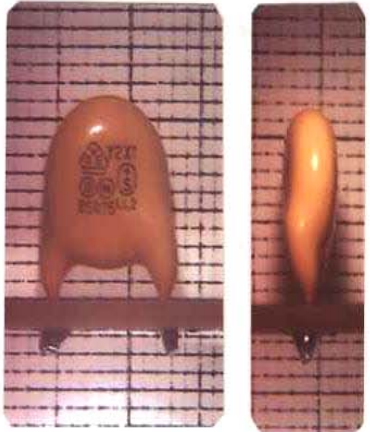
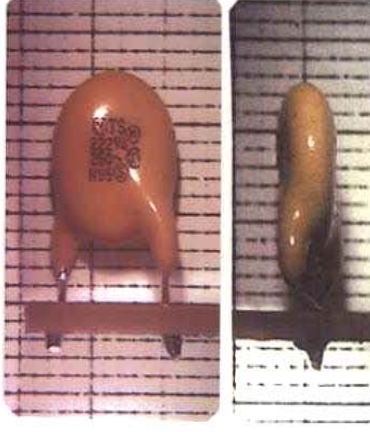
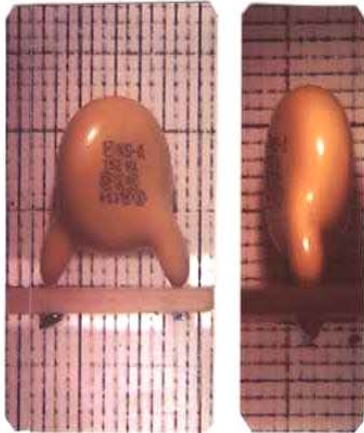
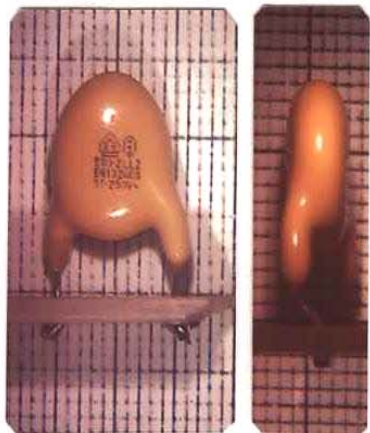
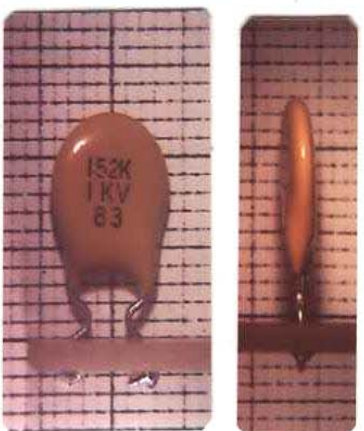
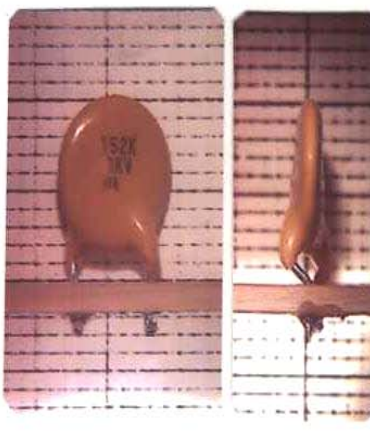
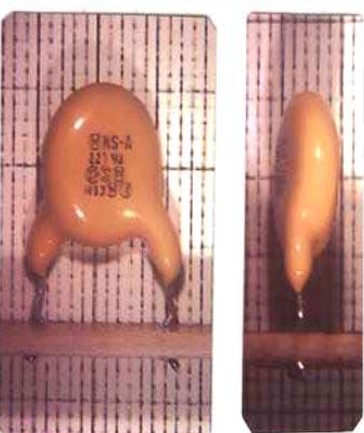
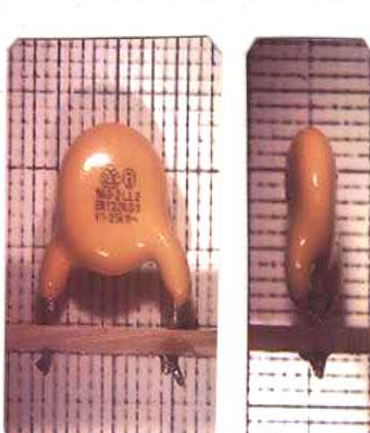
A, E, N, Kinked lead type (new standard)



Compared with the shape of the conventional lead, this new type is twisted against the surface of capacitor element and is formed the lead as a stopper preventing the lead insulating material portion from entering into the printed wiring board.

The real picture of before and after insert

N0-4

Current products			Kinked lead type	
D		→	A	
M		→	E	
C		→	E	
J		→	E	

The real picture of before and after insert

N0-5

Current products			Kinked lead type	
W		→	E	
Z		→	N	
R		→	N	
K		→	N	

Current part No	Kinked part No
ECC D 3A *** KGE	ECC A 3A *** KGE
ECC D 3D *** KGE	ECC A 3D *** KGE
ECC D 3F *** KGE	ECC A 3F *** KGE
ECC M 3A *** KGE	ECC E 3A *** KGE
ECC M 3D *** KGE	ECC E 3D *** KGE
ECC M 3F *** KGE	ECC E 3F *** KGE
ECC Z 3A *** KGE	ECC N 3A *** KGE
ECC Z 3D *** KGE	ECC N 3D *** KGE
ECC Z 3F *** KGE	ECC N 3F *** KGE
ECC C 3A *** KGE	ECC E 3A *** KGE
ECC C 3D *** KGE	ECC E 3D *** KGE
ECC C 3F *** KGE	ECC E 3F *** KGE
ECC R 3A *** KGE	ECC N 3A *** KGE
ECC R 3D *** KGE	ECC N 3D *** KGE
ECC R 3F *** KGE	ECC N 3F *** KGE
ECC K 3A *** KGE	ECC N 3A *** KGE
ECC K 3D *** KGE	ECC N 3D *** KGE
ECC K 3F *** KGE	ECC N 3F *** KGE
ECC W 3A *** KGE	ECC E 3A *** KGE
ECC W 3D *** KGE	ECC E 3D *** KGE
ECC W 3F *** KGE	ECC E 3F *** KGE
ECC J 3A *** KGE	ECC E 3A *** KGE
ECC J 3D *** KGE	ECC E 3D *** KGE
ECC J 3F *** KGE	ECC E 3F *** KGE

Current part No	Kinked part No
ECK D 3A *** KB	ECK A SA *** KB
ECK D 3D *** KB	ECK A SD *** KB
ECK D 3F *** KB	ECK A SF *** KB
ECK M 3A *** KB	ECK E SA *** KB
ECK M 3D *** KB	ECK E SD *** KB
ECK M 3F *** KB	ECK E SF *** KB
ECK Z 3A *** KB	ECK N SA *** KB
ECK Z 3D *** KB	ECK N SD *** KB
ECK Z 3F *** KB	ECK N SF *** KB
ECK C 3A *** KB	ECK E SA *** KB
ECK C 3D *** KB	ECK E SD *** KB
ECK C 3F *** KB	ECK E SF *** KB
ECK R 3A *** KB	ECK N SA *** KB
ECK R 3D *** KB	ECK N SD *** KB
ECK R 3F *** KB	ECK N SF *** KB
ECK K 3A *** KB	ECK N SA *** KB
ECK K 3D *** KB	ECK N SD *** KB
ECK K 3F *** KB	ECK N SF *** KB
ECK W 3A *** KB	ECK E SA *** KB
ECK W 3D *** KB	ECK E SD *** KB
ECK W 3F *** KB	ECK E SF *** KB
ECK J 3A *** KB	ECK E SA *** KB
ECK J 3D *** KB	ECK E SD *** KB
ECK J 3F *** KB	ECK E SF *** KB

ECC D 3A *** KBP	ECC A 3A *** KBP
ECC D 3D *** KBP	ECC A 3D *** KBP
ECC D 3F *** KBP	ECC A 3F *** KBP
ECC M 3A *** KBP	ECC E 3A *** KBP
ECC M 3D *** KBP	ECC E 3D *** KBP
ECC M 3F *** KBP	ECC E 3F *** KBP
ECC Z 3A *** KBP	ECC N 3A *** KBP
ECC Z 3D *** KBP	ECC N 3D *** KBP
ECC Z 3F *** KBP	ECC N 3F *** KBP
ECC C 3A *** KBP	ECC E 3A *** KBP
ECC C 3D *** KBP	ECC E 3D *** KBP
ECC C 3F *** KBP	ECC E 3F *** KBP
ECC R 3A *** KBP	ECC N 3A *** KBP
ECC R 3D *** KBP	ECC N 3D *** KBP
ECC R 3F *** KBP	ECC N 3F *** KBP
ECC K 3A *** KBP	ECC N 3A *** KBP
ECC K 3D *** KBP	ECC N 3D *** KBP
ECC K 3F *** KBP	ECC N 3F *** KBP
ECC W 3A *** KBP	ECC E 3A *** KBP
ECC W 3D *** KBP	ECC E 3D *** KBP
ECC W 3F *** KBP	ECC E 3F *** KBP
ECC J 3A *** KBP	ECC E 3A *** KBP
ECC J 3D *** KBP	ECC E 3D *** KBP
ECC J 3F *** KBP	ECC E 3F *** KBP

ECK D 3A *** MEH	ECK A 3A *** MEH
ECK D 3D *** MEH	ECK A 3D *** MEH
ECK D 3F *** MEH	ECK A 3F *** MEH
ECK M 3A *** MEH	ECC E 3A *** MEH
ECK M 3D *** MEH	ECC E 3D *** MEH
ECK M 3F *** MEH	ECC E 3F *** MEH
ECK Z 3A *** MEH	ECC N 3A *** MEH
ECK Z 3D *** MEH	ECC N 3D *** MEH
ECK Z 3F *** MEH	ECC N 3F *** MEH
ECK C 3A *** MEH	ECC E 3A *** MEH
ECK C 3D *** MEH	ECC E 3D *** MEH
ECK C 3F *** MEH	ECC E 3F *** MEH
ECK R 3A *** MEH	ECC N 3A *** MEH
ECK R 3D *** MEH	ECC N 3D *** MEH
ECK R 3F *** MEH	ECC N 3F *** MEH
ECK K 3A *** MEH	ECC N 3A *** MEH
ECK K 3D *** MEH	ECC N 3D *** MEH
ECK K 3F *** MEH	ECC N 3F *** MEH
ECK W 3A *** MEH	ECC E 3A *** MEH
ECK W 3D *** MEH	ECC E 3D *** MEH
ECK W 3F *** MEH	ECC E 3F *** MEH
ECK J 3A *** MEH	ECC E 3A *** MEH
ECK J 3D *** MEH	ECC E 3D *** MEH
ECK J 3F *** MEH	ECC E 3F *** MEH

Current part No	Kinked part No
ECK D HT*** KB	ECK A HT*** KB
ECK M HT*** KB	ECK E HT*** KB
ECK Z HT*** KB	ECK N HT*** KB
ECK C HT*** KB	ECK E HT*** KB
ECK R HT*** KB	ECK N HT*** KB
ECK K HT*** KB	ECK N HT*** KB
ECK W HT*** KB	ECK E HT*** KB
ECK J HT*** KB	ECK E HT*** KB

Current part No	Kinked part No
ECK D RS*** MEY	ECK A RS*** MEY
ECK M RS*** MEY	ECK E RS*** MEY
ECK Z RS*** MEY	ECK N RS*** MEY
ECK C RS*** MEY	ECK E RS*** MEY
ECK R RS*** MEY	ECK N RS*** MEY
ECK K RS*** MEY	ECK N RS*** MEY
ECK W RS*** MEY	ECK E RS*** MEY
ECK J RS*** MEY	ECK E RS*** MEY

ECK D NA*** ME	ECK A NA*** ME
ECK M NA*** ME	ECK E NA*** ME
ECK Z NA*** ME	ECK N NA*** ME
ECK K NA*** ME	ECK N NA*** ME
ECK W NA*** ME	ECK E NA*** ME
ECK J NA*** ME	ECK E NA*** ME

ECK D NA*** _B	ECK A NA*** _B
ECK M NA*** _B	ECK E NA*** _B
ECK Z NA*** _B	ECK N NA*** _B
ECK K NA*** _B	ECK N NA*** _B
ECK W NA*** _B	ECK E NA*** _B
ECK J NA*** _B	ECK E NA*** _B

ECK D AE*** Z_	ECK A AE*** Z_
ECK M AE*** Z_	ECK E AE*** Z_
ECK Z AE*** Z_	ECK N AE*** Z_
ECK C AE*** Z_	ECK E AE*** Z_
ECK R AE*** Z_	ECK N AE*** Z_
ECK K AE*** Z_	ECK N AE*** Z_
ECK W AE*** Z_	ECK E AE*** Z_
ECK J AE*** Z_	ECK E AE*** Z_

ECK D BE*** Z_	ECK A BE*** Z_
ECK M BE*** Z_	ECK E BE*** Z_
ECK Z BE*** Z_	ECK N BE*** Z_
ECK C BE*** Z_	ECK E BE*** Z_
ECK R BE*** Z_	ECK N BE*** Z_
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ECK W BE*** Z_	ECK E BE*** Z_
ECK J BE*** Z_	ECK E BE*** Z_

ECK D TS*** __	ECK A TS*** __
ECK M TS*** __	ECK E TS*** __
ECK Z TS*** __	ECK N TS*** __
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ECK K TS*** __	ECK N TS*** __
ECK W TS*** __	ECK E TS*** __
ECK J TS*** __	ECK E TS*** __