

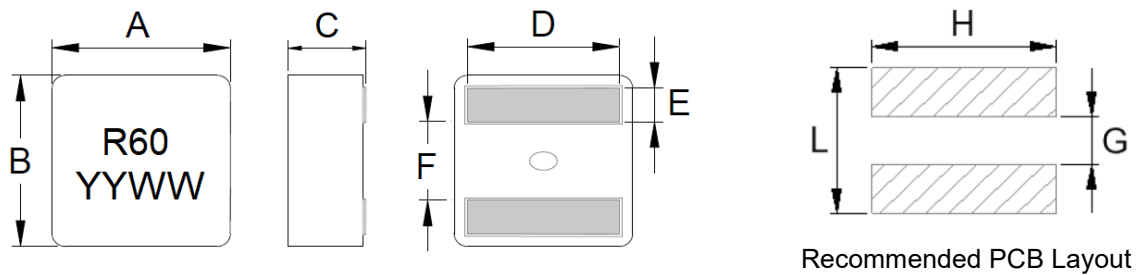
## 1. Part No. Expression

**PIFQ0703AR60MN**

(a) (b) (c) (d) (e) (f)

- |                    |                     |
|--------------------|---------------------|
| (a) Series Code    | (d) Inductance Code |
| (b) Dimension Code | (e) Tolerance Code  |
| (c) Material Code  | (f) Special Code    |

## 2. Configuration & Dimensions (Unit: mm)

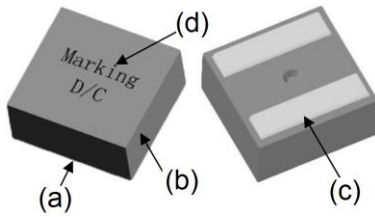


- Note:
1. The above PCB layout reference only.
  2. Recommend solder paste thickness at 0.15 mm and above.
  3. Marking: Top= Inductance Code, Bottom=YYWW (Year/World week), Black

| A         | B         | C         | D                              | E         |
|-----------|-----------|-----------|--------------------------------|-----------|
| 7.80±0.25 | 7.60±0.20 | 2.90±0.20 | See Electrical Characteristics | 1.75±0.20 |
| F         | L         | G         | H                              | -         |
| 3.15±0.25 | 7.40 Ref  | 2.80 Ref  | 7.20 Ref                       | -         |

NOTE: Specifications subject to change without notice. Please check our website for latest information.

## 3. Material List



| NO  | Items  |
|-----|--------|
| (a) | Core   |
| (b) | Wire   |
| (c) | Solder |
| (d) | Ink    |

## 4. General Specifications

- (a) Reliability test for this part meets AEC-Q200 standard.
- (b) Operating Temp.: -55°C to +155°C (including self-temperature rise)
- (c) Storage Temp.: -55°C to +155°C (on board)
- (d) All test data referenced to 25°C ambient.
- (e) Heat Rated Current (Irms) will cause the coil temperature rise approximately  $\Delta T$  of 20°C & 40°C.
- (f) Saturation Current (Isat) will cause inductance L0 to drop approximately 30%.
- (g) Rated DC Current: The lower value of Irms and Isat.
- (h) Part Temperature (Ambient + Temp. Rise): Should not exceed 155°C under worst case operating conditions.
- (i) Maximum Operating Voltage: 40V
- (j) Storage Condition (Component in its packaging)
  - i) Temperature: Less than 40°C
  - ii) Humidity: Less than 60% RH

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## 5. Electrical Characteristics

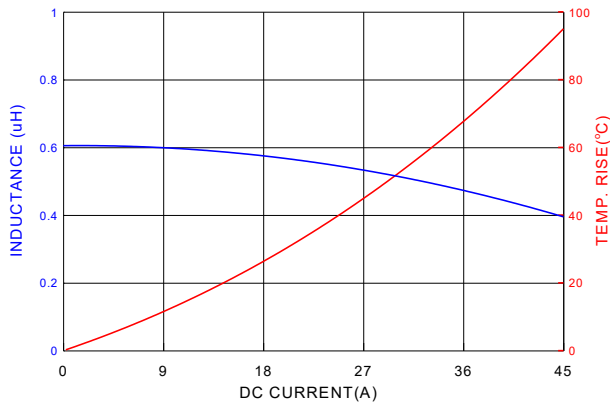
| Part Number    | Inductance<br>( $\mu$ H) @0A<br>$\pm 20\%$ | I <sub>rms</sub><br>(A)<br>Typ |              | I <sub>sat</sub><br>(A) |      | DCR<br>(m $\Omega$ ) |       | D<br>(mm)<br>$\pm 0.3$ |
|----------------|--------------------------------------------|--------------------------------|--------------|-------------------------|------|----------------------|-------|------------------------|
|                |                                            | 20°C<br>rise                   | 40°C<br>rise | Typ                     | Max  | Typ                  | Max   |                        |
| PIFQ0703AR60MN | 0.60                                       | 18.0                           | 23.0         | 36.0                    | 32.0 | 2.90                 | 3.20  | 6.6                    |
| PIFQ0703A1R0MN | 1.00                                       | 16.1                           | 21.8         | 30.0                    | 28.0 | 4.55                 | 5.00  | 6.6                    |
| PIFQ0703A1R5MN | 1.50                                       | 12.0                           | 15.3         | 25.0                    | 23.5 | 7.50                 | 8.25  | 6.6                    |
| PIFQ0703A2R2MN | 2.20                                       | 10.0                           | 13.0         | 19.0                    | 17.0 | 12.4                 | 13.7  | 6.2                    |
| PIFQ0703A2R7MN | 2.70                                       | 9.20                           | 11.4         | 16.0                    | 13.5 | 14.0                 | 15.4  | 6.2                    |
| PIFQ0703A3R3MN | 3.30                                       | 8.00                           | 10.0         | 15.0                    | 13.0 | 16.3                 | 18.0  | 6.2                    |
| PIFQ0703A4R7MN | 4.70                                       | 6.90                           | 9.00         | 13.5                    | 12.2 | 24.2                 | 26.7  | 6.2                    |
| PIFQ0703A5R6MN | 5.60                                       | 5.30                           | 7.30         | 12.5                    | 11.5 | 30.1                 | 33.2  | 6.2                    |
| PIFQ0703A6R8MN | 6.80                                       | 4.50                           | 6.80         | 12.0                    | 11.0 | 38.6                 | 42.5  | 6.2                    |
| PIFQ0703A8R2MN | 8.20                                       | 3.00                           | 5.90         | 10.2                    | 9.0  | 44.3                 | 48.73 | 6.2                    |

Test frequency: 0.1V/100KHz

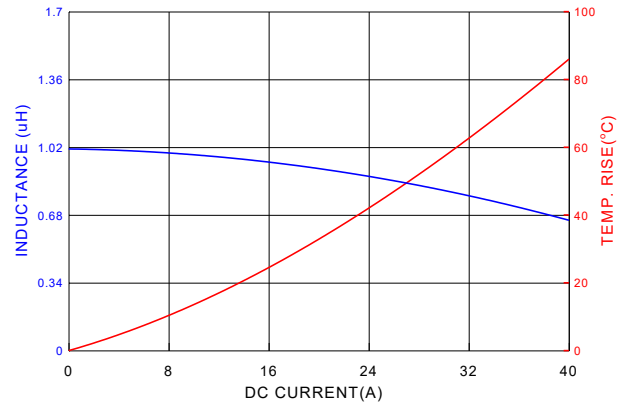
NOTE: Specifications subject to change without notice. Please check our website for latest information.

## 6. Characteristics Curve

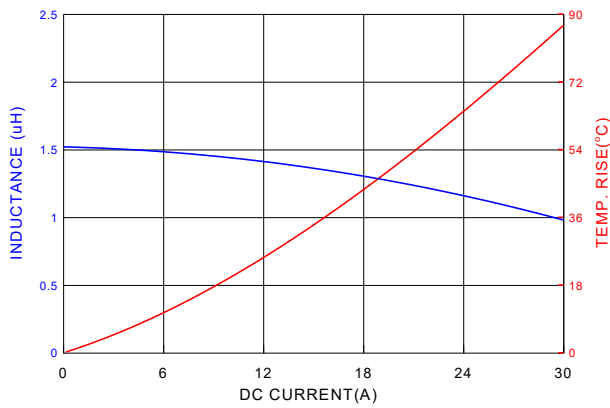
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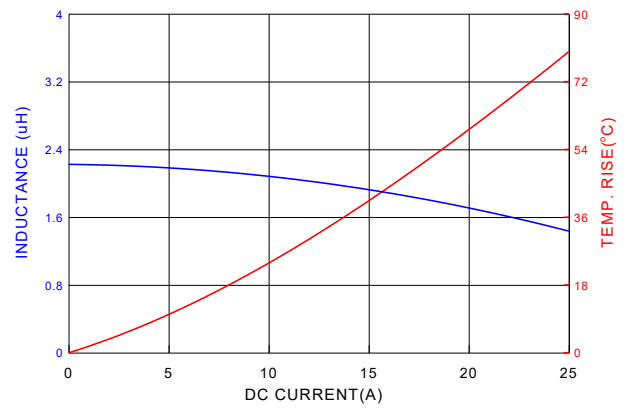
PIFQ0703A1R0MN



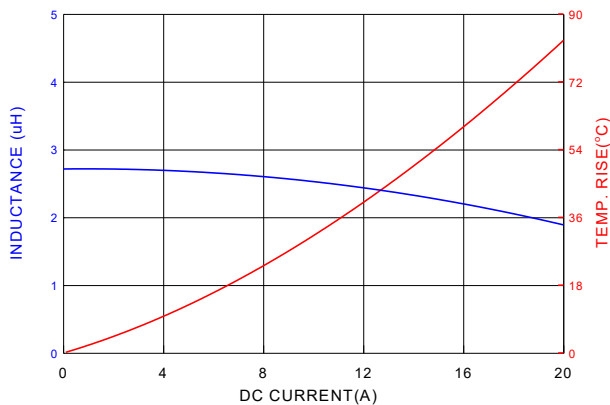
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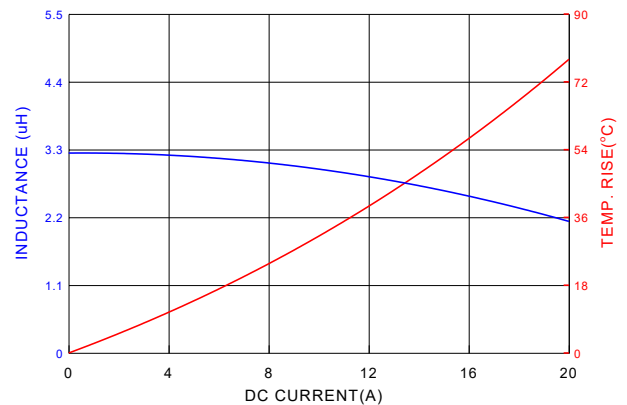
PIFQ0703A2R2MN



PIFQ0703A2R7MN

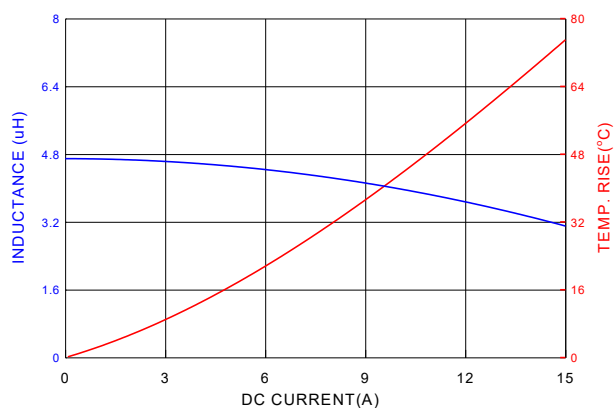


PIFQ0703A3R3MN

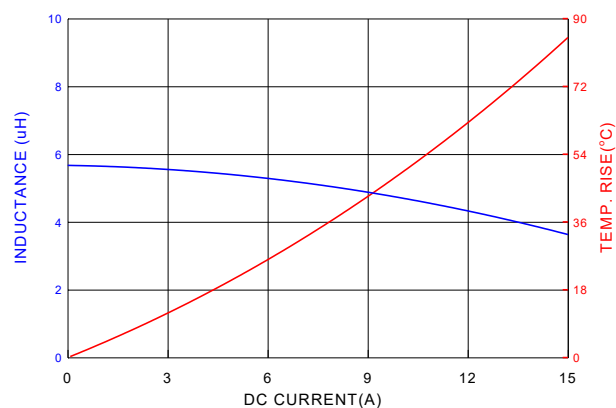


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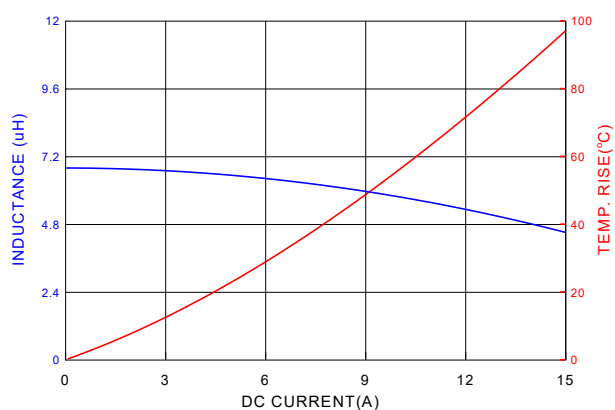
PIFQ0703A4R7MN



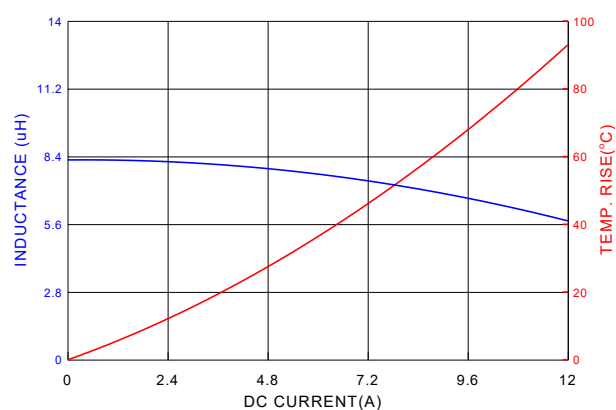
PIFQ0703A5R6MN



PIFQ0703A6R8MN



PIFQ0703A8R2MN



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## 7. Soldering Specification

Mildly activated rosin fluxes are preferred. Our terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

### 7-1. IR Soldering Reflow

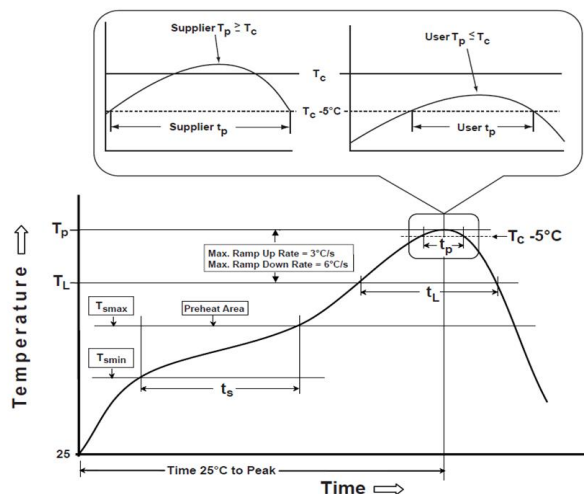
Recommended temperature profiles for lead free re-flow soldering in Figure 1, Table 1.1 & 1.2 (J-STD-020E).

### 7-2. Iron Reflow

Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended (Figure 2).

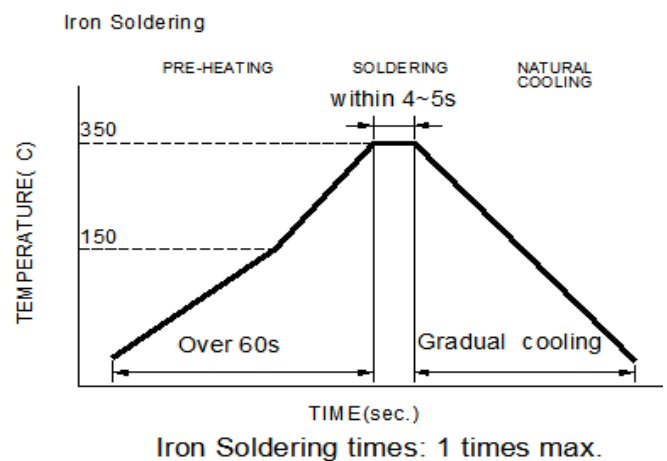
Note:

- Preheat circuit and products to 150°C.
- 355°C tip temperature (Max.)
- Never contact the ceramic with the iron tip
- 1.0mm tip diameter (Max.)
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- Limit soldering time to 4~5 sec.



Reflow times: 3 times Max

Figure 1: IR Soldering Reflow



Soldering iron method: 350±5°C Max

Figure 2: Iron soldering temperature profiles

NOTE: Specifications subject to change without notice. Please check our website for latest information.

**Table (1.1) Reflow Profiles**

|                                                                                            |                  |
|--------------------------------------------------------------------------------------------|------------------|
| Profile Type:                                                                              | Pb-Free Assembly |
| Preheat                                                                                    |                  |
| -Temperature Min ( $T_{smin}$ )                                                            | 150°C            |
| -Temperature Max ( $T_{smax}$ )                                                            | 200°C            |
| -Time ( $t_s$ ) from ( $T_{smin}$ to $T_{smax}$ )                                          | 60-120seconds    |
| Ramp-up rate ( $T_L$ to $T_p$ )                                                            | 3°C /second max. |
| Liquids temperature ( $T_L$ )                                                              | 217°C            |
| Time ( $t_L$ ) maintained above $T_L$                                                      | 60-150 seconds   |
| Classification temperature ( $T_c$ )                                                       | See Table (1.2)  |
| Time ( $t_p$ ) at $T_c - 5^\circ\text{C}$ ( $T_p$ should be equal to or less than $T_c$ .) | * < 30 seconds   |
| Ramp-down rate ( $T_p$ to $T_L$ )                                                          | 6°C /second max. |
| Time 25°C to peak temperature                                                              | 8 minutes max.   |

**$T_p$** : maximum peak package body temperature,  **$T_c$** : the classification temperature.

For user (customer)  **$T_p$**  should be equal to or less than  **$T_c$** .

\*Tolerance for peak profile temperature ( $T_p$ ) is defined as a supplier minimum and a user maximum.

**Table (1.2) Package Thickness/Volume and Classification Temperature ( $T_c$ )**

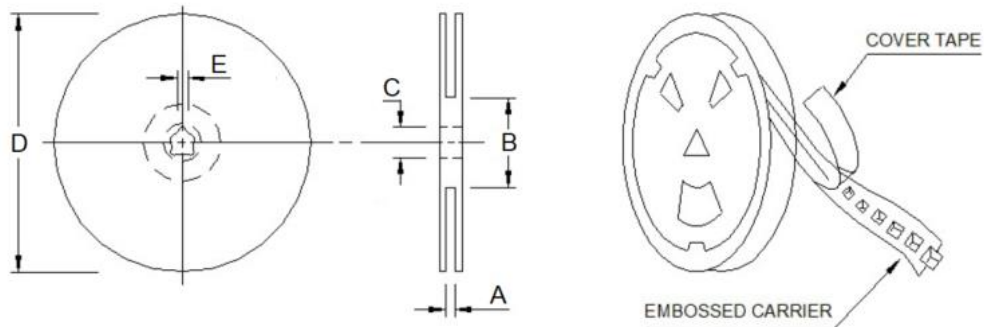
|                  | Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> 350-2000 | Volume mm <sup>3</sup> >2000 |
|------------------|-------------------|-----------------------------|---------------------------------|------------------------------|
| PB-Free Assembly | <1.6mm            | 260°C                       | 260°C                           | 260°C                        |
|                  | 1.6-2.5mm         | 260°C                       | 250°C                           | 245°C                        |
|                  | ≥2.5mm            | 250°C                       | 245°C                           | 245°C                        |

Reflow is referred to standard IPC/JEDEC J-STD-020E.

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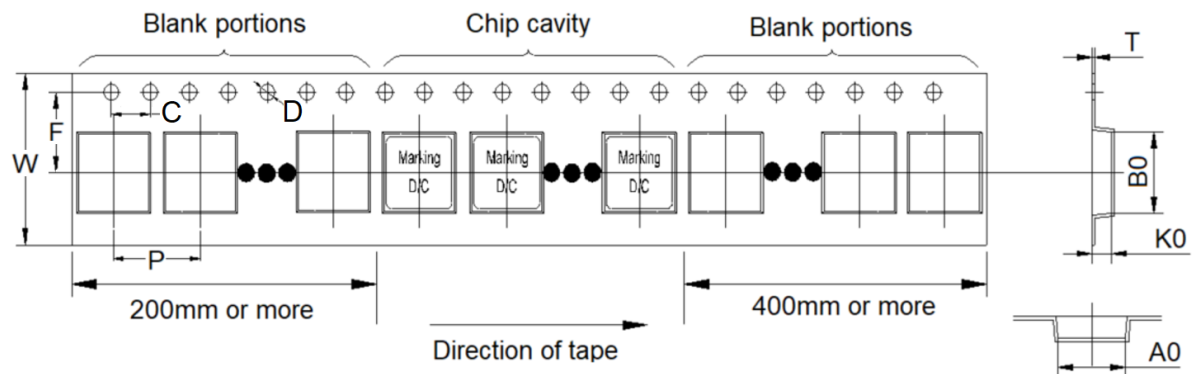
## 8. Packaging Information

### 8-1. Reel Dimension (Unit: mm)



| Type     | A             | B         | C             | D     | E       |
|----------|---------------|-----------|---------------|-------|---------|
| 13"x16mm | 16.4+2.0/-0.0 | 100.0±2.0 | 13.0+0.5/-0.2 | 330.0 | 2.0±0.5 |

### 8-2. Tape Dimension (Unit: mm)



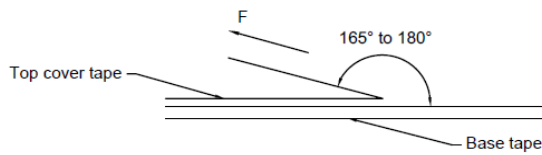
| A0        | B0        | K0        | P          | W          |
|-----------|-----------|-----------|------------|------------|
| 8.20±0.10 | 8.00±0.10 | 3.30±0.10 | 12.00±0.10 | 16.00±0.30 |
| F         | T         | D         | C          | -          |
| 7.50±0.10 | 0.35±0.10 | 1.50±0.10 | 4.00       | -          |

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## 8-3. Packaging Quantity (Unit: Pcs)

|            |        |
|------------|--------|
| Chip/ Reel | 1,500  |
| Inner Box  | 3,000  |
| Carton     | 12,000 |

## 8-4. Tearing Off Force



The force for tearing off cover tape is according to the follow table, in the arrow direction under the following conditions.

(Referenced ANSI/EIA-481-D-2008 of 4.11 standard)

| Room Temp. (°C) | Room Humidity (%) | Room atm (hPa) | Tearing Speed (mm/min) |
|-----------------|-------------------|----------------|------------------------|
| 5~35            | 45~85             | 860~1060       | 300±10                 |

| Tape Size                 | 8 mm   | 12 to 56 mm | 72 mm or Wider |
|---------------------------|--------|-------------|----------------|
| Tearing Off Force (grams) | 10~100 | 10~130      | 10~150         |

## Application Notice

### 1. Storage Conditions

To maintain the solderability of terminal electrodes:

- (a) Recommended products should be used within 12 months from the time of delivery.
- (b) The packaging material should be kept where no chlorine or sulfur exists in the air.

### 2. Transportation

- (a) Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
- (b) Vacuum pick up is strongly recommended for individual components.
- (c) Bulk handling should ensure that abrasion and mechanical shock are minimized.

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