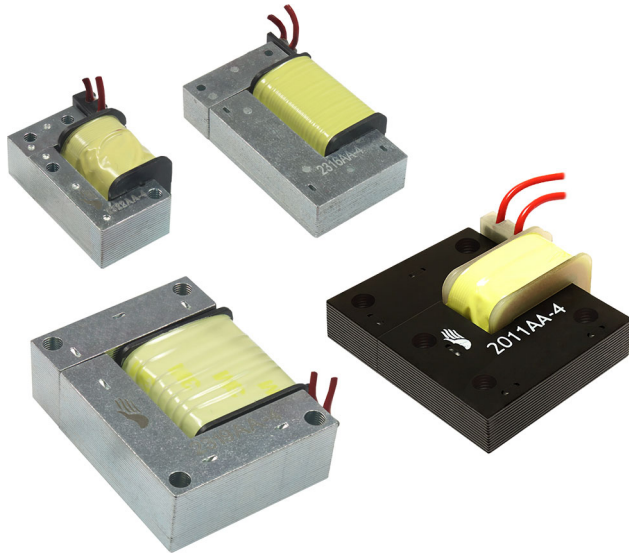


# Automotive IHPT™ Haptic Feedback Actuator With Immersion License



## FEATURES

- High impulse vibrations for clear tactile feedback in noisy environments
- Drives 0.5 kg load to 6 g's of acceleration with 12 V, 5 ms pulse (tested with Vishay's custom spring return fixture)
- Standard lead termination is dipped 100 % tin solder; customer specific connectors available upon request
- Two-piece magnetic solenoid construction with mounting holes; comprised of stationary "U" core and moving "I-bar"
- AEC-Q200 qualified
- Material categorization: for definitions of compliance please see [www.vishay.com/doc?99912](http://www.vishay.com/doc?99912)



**RoHS**  
COMPLIANT  
HALOGEN  
**FREE**  
**GREEN**  
(5-2008)

## APPLICATIONS

- Automotive dashboards, touch screens, and center consoles
- Physical feedback for electronic shift transmissions, steering wheels, seats, control panels
- Touch screens for human-machine interfaces

## LINKS TO ADDITIONAL RESOURCES



| STANDARD ELECTRICAL SPECIFICATIONS |                  |                                  |                         |   |              |              |
|------------------------------------|------------------|----------------------------------|-------------------------|---|--------------|--------------|
| PART NUMBER                        | FORCE OUTPUT (N) | FORCE COEFFICIENT <sup>(1)</sup> | RESPONSE TIME TYP. (ms) | L <sub>0</sub> INDUCTANCE ± 20 % AT 1 kHz, 0.25 V, 0 A (mH) | DCR TYP. (Ω) | DCR MAX. (Ω) |
| IHPT1207AGELR39ABA                 | 25               | 0.39                             | 5                       | 1.35  | 0.95         | 1.04         |
| IHPT1710ACEL1R2ABA                 | 45               | 1.2                              | 5                       | 4.04  | 2.0          | 2.2          |
| IHPT1411AFELR73ABA                 | 80               | 0.73                             | 5                       | 1.8   | 0.95         | 1.09         |
| IHPT1614ACEL2R7BBA                 | 120              | 2.7                              | 5                       | 3.5   | 1.2          | 1.32         |

### Notes

- All specifications are referenced to 25 °C ambient, and assume a 0.75 mm (0.030") gap
  - Operating temperature range -40 °C to +105 °C
  - The part temperature (ambient + temperature rise) should not exceed 105 °C under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application
  - Rated voltage: 16 V maximum
  - Dielectric withstand voltage (coil to core) = 150 V<sub>DC</sub>
- <sup>(1)</sup> Applied force, in newtons, can be estimated by the following equation:  $F = \text{FORCE COEFFICIENT} \times I_{PK}^2$

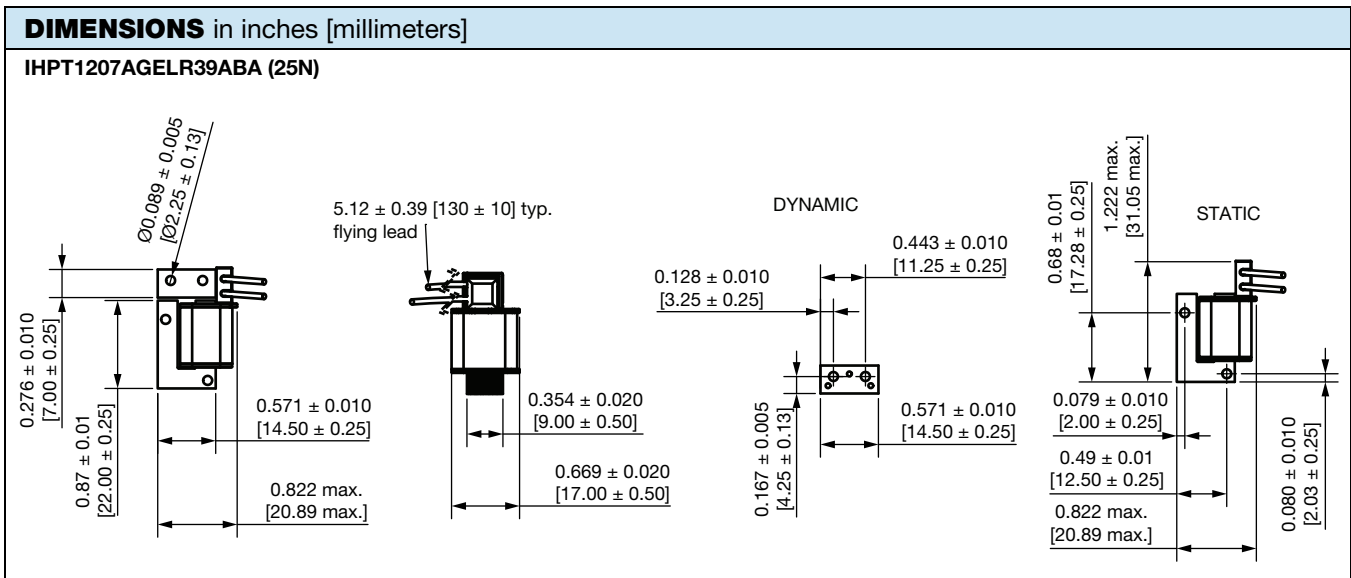
This product is covered by a license from Immersion or its affiliates solely when incorporated into haptic products in an authorized field of use as set forth in more detail at the following link: [www.vishay.com/doc?34602](http://www.vishay.com/doc?34602). Protected under one or more of the U.S. Patents found at the following address [www.immersion.com/patent-marking.html](http://www.immersion.com/patent-marking.html) and other patents.

| GLOBAL PART NUMBER |             |                                 |                   |        |
|--------------------|-------------|---------------------------------|-------------------|--------|
| I H P T            | 1 4 1 1 A F | E L                             | R 7 3             | A B A  |
| PRODUCT FAMILY     | SIZE        | PACKAGE CODE                    | FORCE COEFFICIENT | SERIES |
|                    |             | EL = includes Immersion license | R73 = 0.73        |        |

| DESCRIPTION  |                   |              |                                |
|--------------|-------------------|--------------|--------------------------------|
| IHPT1411AF-A | R73               | TRAY         | e3                             |
| MODEL        | FORCE COEFFICIENT | PACKAGE CODE | JEDEC® LEAD (Pb)-FREE STANDARD |

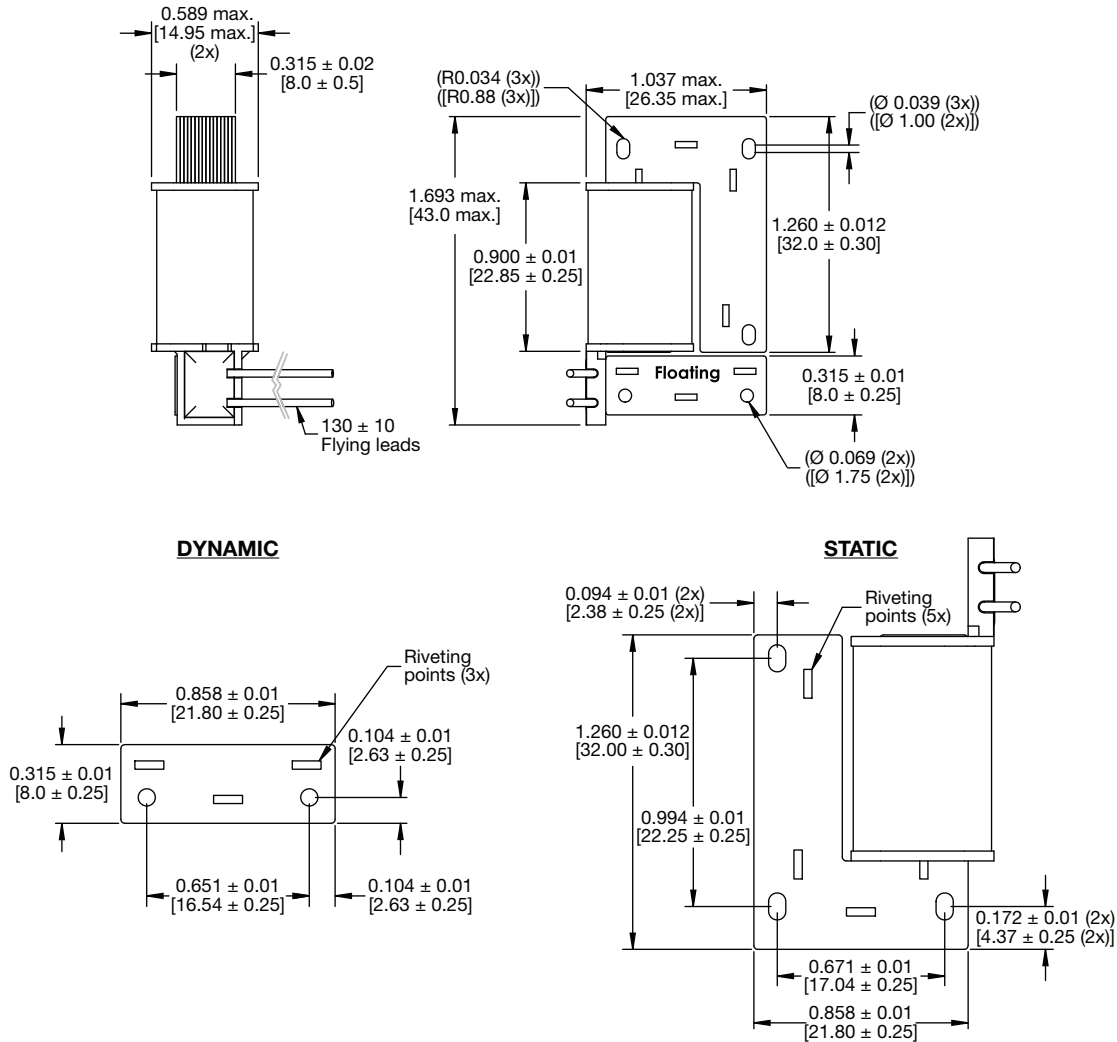
| MATERIAL |                         |
|----------|-------------------------|
| Core     | Laminated steel         |
| Wire     | Copper, PU/PA insulated |
| Solder   | Hot dip tin             |

| SOLDER COMPOSITION |        |
|--------------------|--------|
| Sn                 | 99.3 % |
| Cu                 | 0.7 %  |

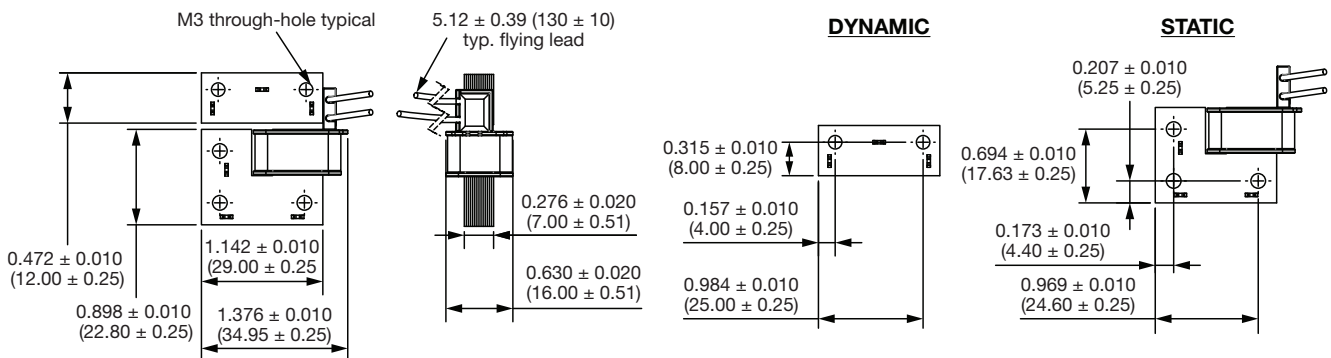


**DIMENSIONS** in inches [millimeters]

**IHPT1710ACEL1R2ABA (45N)**

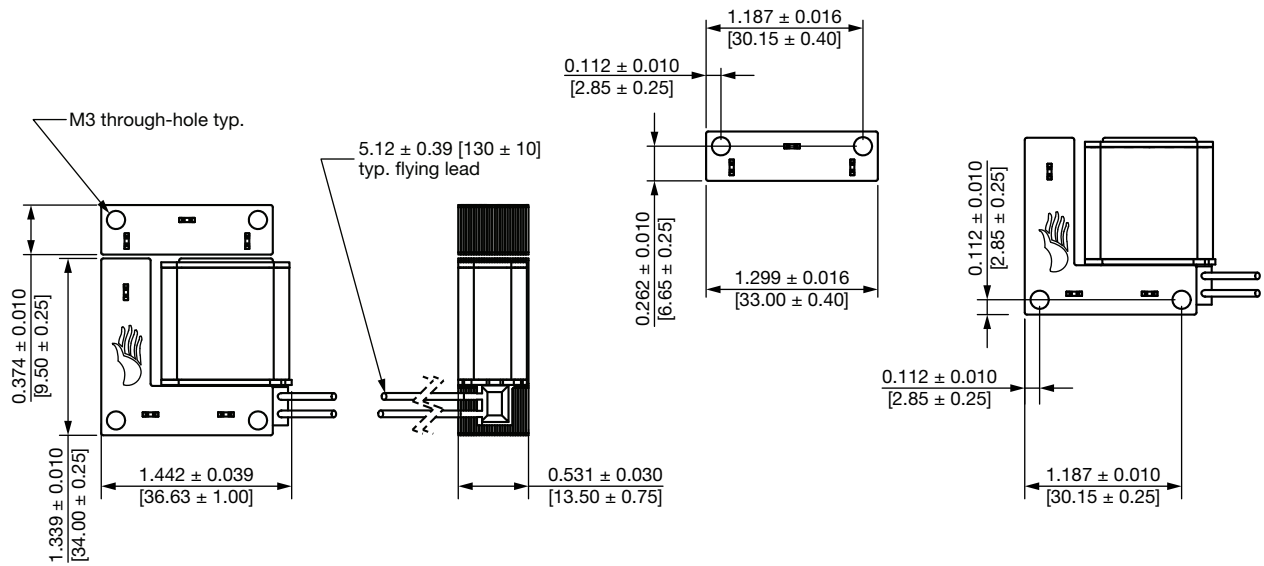


**IHPT1411AFELR73ABA (80N)**

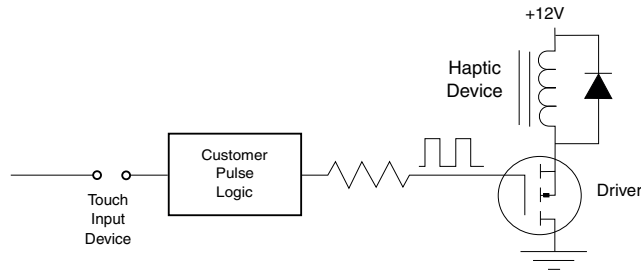


**DIMENSIONS** in inches [millimeters]

**IHPT1614ACEL2R7BBA (120N)**



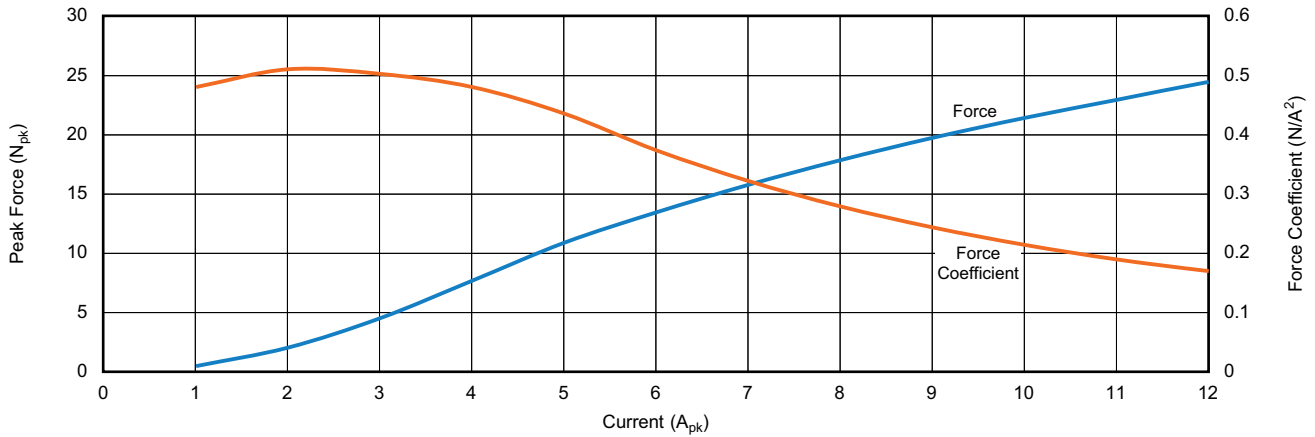
**TYPICAL APPLICATION**



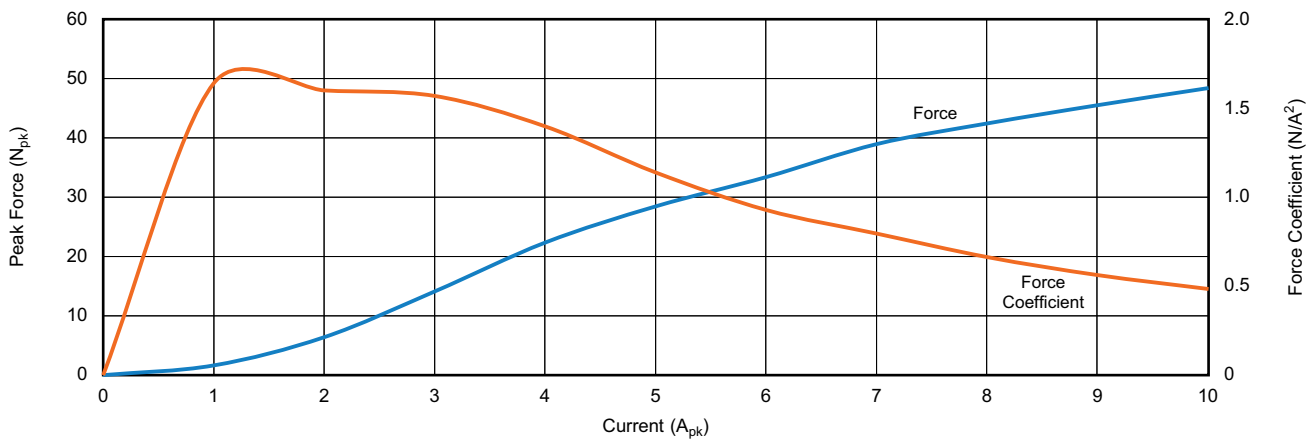


**PEAK FORCE RESPONSE (Typical)**

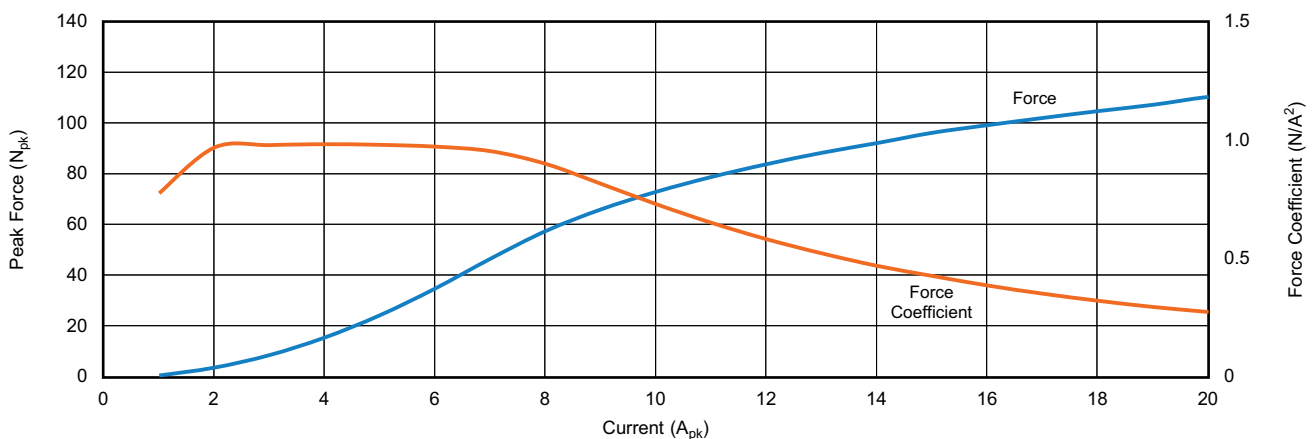
**IHPT1207AGELR39ABA (25N)**

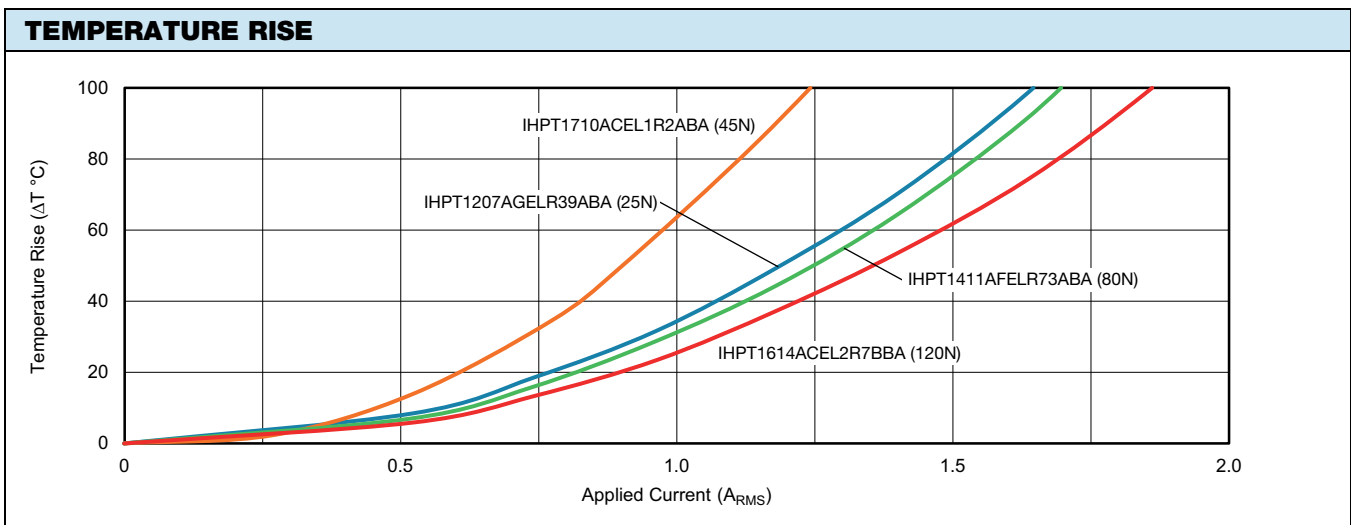
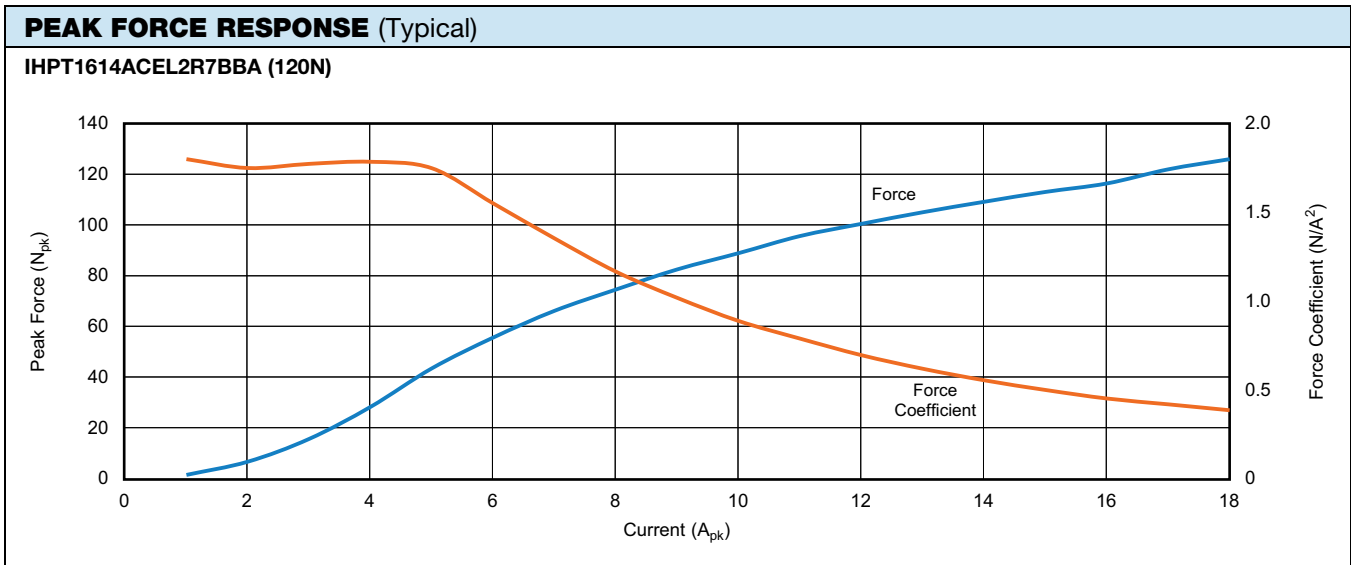


**IHPT1710ACEL1R2ABA (45N)**



**IHPT1411AFELR73ABA (80N)**







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