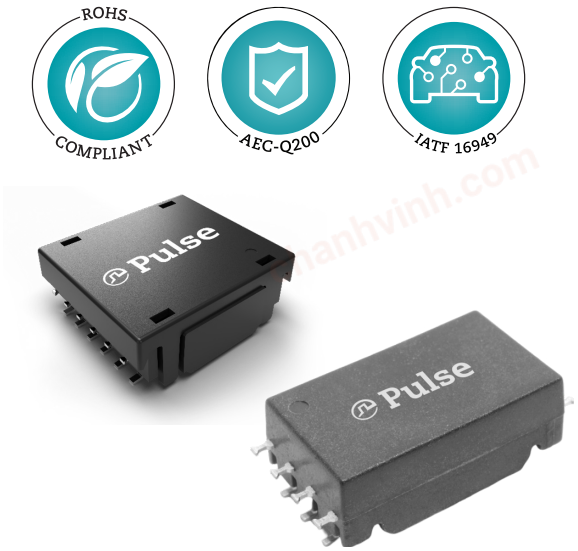
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# Next Generation approved BMS Transformers

## HM2162/66/67/68/69NL for NXP , ADI, TI or Infineon x-channel multi-cell battery monitor IC

YAGEO GROUP PULSE




### *Features and Benefits:*

- *Fully qualified with leading BMS Silicon*
- *Transformer only design provides for flexible PCB layout*
- *Construction meets IEC 61558 and IEC/UL62368-1*
- *High temperature performance up to +125°C*
- *Automated Winding and Production Process*
- *AEC-Q200 qualified, RoHS and REACH Compliant*

### *Applications:*

- *Ideal for Electric Vehicles (EV), Energy Storage (ESS) and marine or aviation transportation.*

**Electrical Specifications @ 25°C – Operating Temperature -40°C to +125°C**

| Part Number | Inductance (100kHz, 100mVrms) | Number of Channels | Choke fitted | Isolation breakdown (Pri:Sec) | Working Voltage | Insulation Creepage (mm) | Winding Style | Qualified BMS Silicon |
|---|---|---|---|---|---|---|---|---|
| HM2162NL | 150 uH min | Dual | YES | 4300Vdc / 60sec | 1600VDC | Functional | 1CT : 1CT | NXP, ADI, Infineon, Texas |
| HM2166NL | 150 uH min | Single | NO | 4300Vdc / 60sec | 1000VDC | Basic (>10) | 1 : 1 | NXP, ADI, Infineon, Texas |
| HM2167NL | 150 uH min | Single | NO | 3700Vrms / 60sec | 1000VDC | Basic (>10) | 1CT : 1CT | NXP, ADI, Infineon, Texas |
| HM2168NL | 150 uH min | Dual | NO | 4300Vdc / 60sec | 1500VDC | Functional | 1CT : 1CT | NXP, ADI, Infineon, Texas |
| HM2169NL | 150 uH min | Single | YES | 4300Vdc / 60sec | 1000VDC | Basic (>10) | 1CT : 1CT | NXP, ADI, Infineon, Texas |

## Additional Electrical performance

**Electrical Specifications @ 25°C – Operating Temperature -40°C to +125°C**

| Part Number | Leakage Inductance (Max) | Winding DCR (Ω) | | Insertion Loss | Return Loss | CMR (dB min) | | Insulation Resistance (MOhms) |
|---|---|---|---|---|---|---|---|---|
| | | PHY Side | Line Side | | \|Z\|out = 100 Ω | 1 - 10MHz | 10- 1000MHz | |
| HM2162NL | 0.50 uH @ 100kHz | 0.45 max | 0.85 max | -0.25dB max @ 4MHz | -20 dB min @ 4MHz | 35 min | 20 min | 400 MIN |
| HM2166NL | 0.50 uH @ 100kHz | 0.45 max | 0.45 max | -0.50dB max @ 4MHz | -20 dB min @ 4MHz | - | - | - |
| HM2167NL | 0.50 uH @ 100kHz | 0.45 max | 0.45 max | -0.50dB max @ 4MHz | -20 dB min @ 4MHz | - | - | - |
| HM2168NL | 0.50 uH @ 100kHz | 0.45 max | 0.45 max | -0.25dB max @ 4MHz | -20 dB min @ 4MHz | - | - | - |
| HM2169NL | 0.50 uH @ 100kHz | 0.45 max | 0.85 max | -0.50dB max @ 4MHz | -20 dB min @ 4MHz | 35 min | 20 min | 400 MIN |

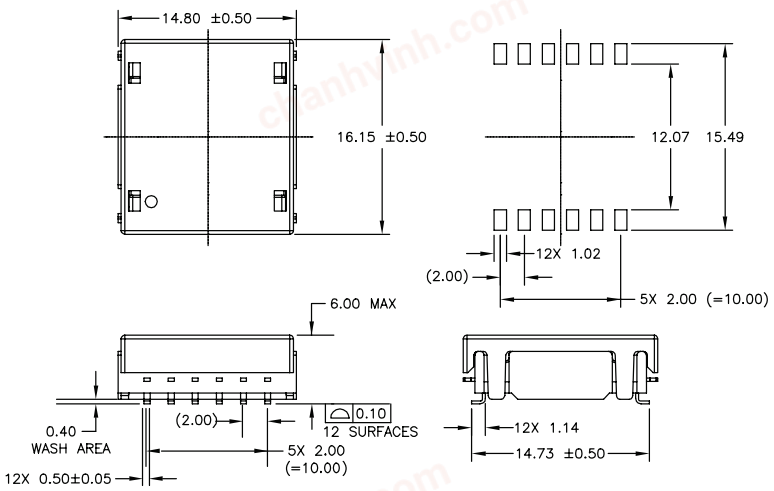
**Notes:**

1. Storage Temperature: -50°C to +125°C
2. Compliance to J-STD:
   A. J-STD-002: Solderability at 245°C Reflow Profile
   B. J-STD-020: Moisture Sensitive Level 1
   C. J-STD-075: R7, 245°C Maximum Through Reflow Solder
3. The NL suffix part comes in Tubes with 35pcs per tube. To order tape and reel packaging add a 'T' suffix to the part number (ie: HM2168NL becomes HM2168NLT). Quantity per reel is 350pcs and 500pcs /reel.
4. Header: DAP (Diallyl Phthalate) with flammability Rating UL 94V-0 or better
5. Lead Frame: Cooper Alloy
   Under plated: Half Hard Ductile Nickel 50-100" (1.3-2.5um)
   Over plated : 100% Tin electro-deposited per ASTM B545 300 - 50u"(8-13um)
   Finish : Matte finish 100% Tin solder
6. AEC-Q200 Qualified, PPAP on request

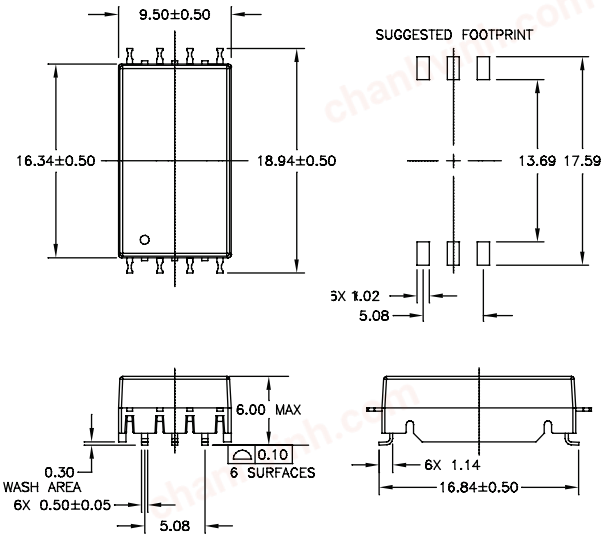
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## x-channel multi-cell battery monitor IC

## MECHANICALS

### HM2162/68NL



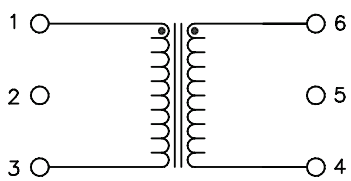

### HM2166/67/69NL



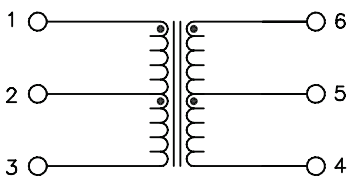

**Dimensions:**
Unless otherwise specified,
all tolerances are ± 0,25

## SCHEMATICS

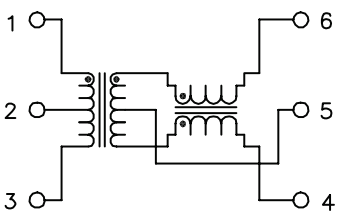
### HM2166NL



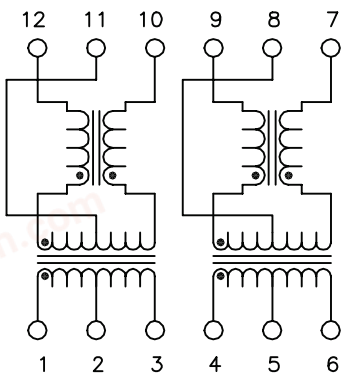

### HM2167NL



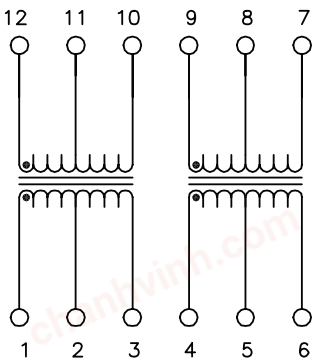

### HM2169NL




### HM2162NL



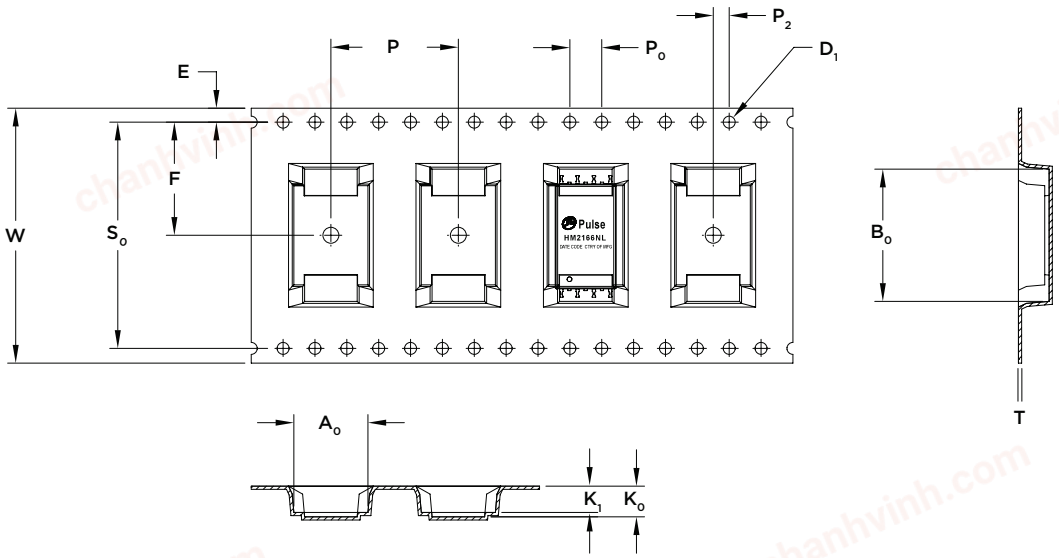

### HM2168NL



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x-channel multi-cell battery monitor IC

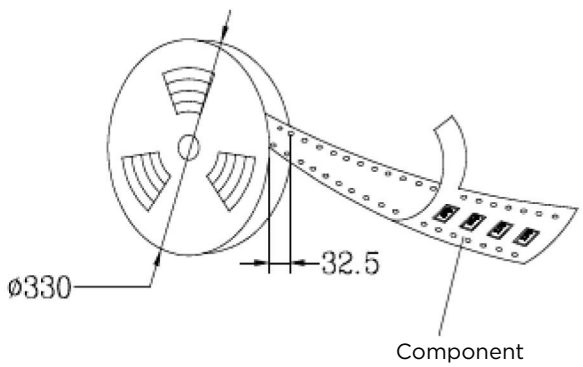
# TAPE & REEL

## HM2162/66/67/68/69NL




| HM2166/67/69NL | | | | | | | |
|---|---|---|---|---|---|---|---|
| W | 32.0±0.30 | P | 16.00 | $A_0$ | 9.90 | $B_0$ | 16.60 |
| $S_0$ | 28.40 | $P_0$ | 4.00 | $A_1$ | -------- | $B_1$ | -------- |
| E | 1.75 | $P_2$ | 2.00 | $A_2$ | -------- | $B_2$ | -------- |
| F | 14.20 | $D_0$ | -------- | $K_0$ | 6.60 | $K_1$ | 5.80 |
| T | 0.50±0.05 | $D_1$ | 1.50 +0.10 -0.00 | QUANTITY PER REEL | | | 500 pcs |

| HM2162NL, HM2168NL | | | | | | | |
|---|---|---|---|---|---|---|---|
| W | 32.0±0.30 | P | 24.00 | $A_0$ | 16.10 | $B_0$ | 15.10 |
| $S_0$ | 28.40 | $P_0$ | 4.00 | $A_1$ | -------- | $B_1$ | -------- |
| E | 1.75 | $P_2$ | 2.00 | $A_2$ | -------- | $B_2$ | -------- |
| F | 14.20 | $D_0$ | -------- | $K_0$ | 7.00 | $K_1$ | 5.60 |
| T | 0.50±0.05 | $D_1$ | 1.50 +0.10 -0.00 | QUANTITY PER REEL | | | 350 pcs |




1. **Material:** Black Conductive Polystyrene
2. **Components per Reel:** see table
3. **Quantity per carton:**
   5reels x 350 = 1750 pcs
   6reels x 500 = 2500 pcs

All Dimensions meet EIA-481-D requirements.

**For More Information:**
**Americas -** prodinfo_network_americas@yageo.com | **Europe -** prodinfo_network_emea@yageo.com | **Asia -** prodinfo_network_apac@yageo.com

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