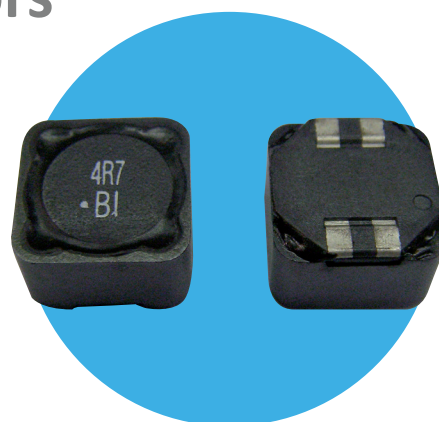


## Shielded Surface Mount Inductors

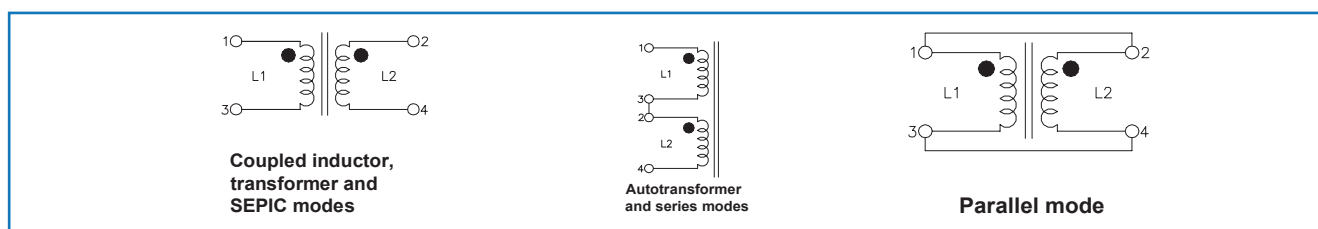
MODELS HM78D1210XXXMLF

### Features

- Operating Temperature Range -40°C to +125°C
- Temperature Rise, Maximum 40°C
- Ideal for SEPIC applications, high inductance, high efficiency and excellent current handling in rugged, low cost part
- Use as DC-DC converter and in applications like hand phones, CD/DVD player, digital camera, GPS system. Also used as two single inductors connected series or parallel or as 1:1 transformer
- RoHS Compliant



### Electrical Schematic

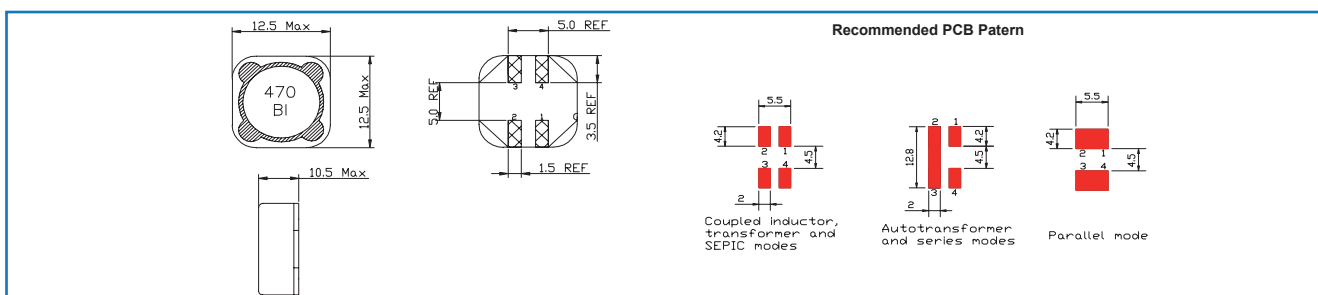


### Specifications @ 25°C

| Leads connected in parallel |            |             |                        |                      |                      | Leads connected in series |             |                        |                      |                      |
|-----------------------------|------------|-------------|------------------------|----------------------|----------------------|---------------------------|-------------|------------------------|----------------------|----------------------|
| Part Number                 | L (μH)     | DCR Max (Ω) | I <sub>rated</sub> (A) | I <sub>sat</sub> (A) | I <sub>rms</sub> (A) | L (μH)                    | DCR Max (Ω) | I <sub>rated</sub> (A) | I <sub>sat</sub> (A) | I <sub>rms</sub> (A) |
| HM78D-12104R7MLF            | 4.70±20%   | 0.014       | 10.60                  | 18.00                | 3.250                | 18.80±25%                 | 0.056       | 5.30                   | 9.00                 | 1.625                |
| HM78D-12106R8MLF            | 6.80±20%   | 0.017       | 10.40                  | 14.20                | 3.100                | 27.20±25%                 | 0.068       | 5.20                   | 7.10                 | 1.550                |
| HM78D-12108R2MLF            | 8.20±20%   | 0.018       | 9.50                   | 12.85                | 2.250                | 32.80±25%                 | 0.072       | 4.75                   | 6.45                 | 1.125                |
| HM78D-1210100MLF            | 10.00±20%  | 0.020       | 8.60                   | 11.75                | 3.200                | 41.12±25%                 | 0.080       | 4.30                   | 5.85                 | 1.600                |
| HM78D-1210220MLF            | 22.00±20%  | 0.040       | 5.40                   | 8.20                 | 2.700                | 88.00±25%                 | 0.160       | 2.70                   | 4.10                 | 1.350                |
| HM78D-1210330MLF            | 33.00±20%  | 0.050       | 4.50                   | 6.60                 | 2.000                | 132.00±25%                | 0.200       | 2.25                   | 3.30                 | 1.000                |
| HM78D-1210470MLF            | 47.00±20%  | 0.065       | 3.70                   | 5.50                 | 1.900                | 188.00±25%                | 0.260       | 1.85                   | 2.75                 | 0.950                |
| HM78D-1210560MLF            | 56.00±20%  | 0.081       | 3.28                   | 4.90                 | 0.850                | 224.00±25%                | 0.324       | 1.64                   | 2.45                 | 0.425                |
| HM78D-1210680MLF            | 68.00±20%  | 0.098       | 2.96                   | 4.45                 | 0.800                | 272.00±25%                | 0.392       | 1.48                   | 2.20                 | 0.400                |
| HM78D-1210101MLF            | 100.00±20% | 0.128       | 2.54                   | 3.70                 | 0.700                | 400.00±25%                | 0.512       | 1.27                   | 1.85                 | 0.350                |
| HM78D-1210121MLF            | 120.00±20% | 0.170       | 2.38                   | 3.40                 | 0.630                | 480.00±25%                | 0.680       | 1.19                   | 1.70                 | 0.315                |
| HM78D-1210331MLF            | 330.00±20% | 0.440       | 1.32                   | 2.10                 | 0.410                | 1320.00±25%               | 1.760       | 0.66                   | 1.05                 | 0.205                |
| HM78D-1210471MLF            | 470.00±20% | 0.570       | 1.22                   | 1.80                 | 0.300                | 1880.00±25%               | 2.280       | 0.61                   | 0.90                 | 0.150                |

Notes : (1) Inductance is measured at 100kHz, 0.1Vrms, 0Adc.  
 (2) When leads connected in parallel, DCR is half the value.  
 (3) I<sub>sat</sub> current is the saturation current at which inductance rolls off approximately 30% from its initial (zero DC) value.  
 (4) I<sub>rms</sub> equals DC current, that causes component to increase by 40°C from 25°C ambient.  
 (5) I<sub>rated</sub> current is the rated current at which inductance rolls off approximately 10% from its initial (zero DC) value.

### Mechanical Outline (mm)



### General Note

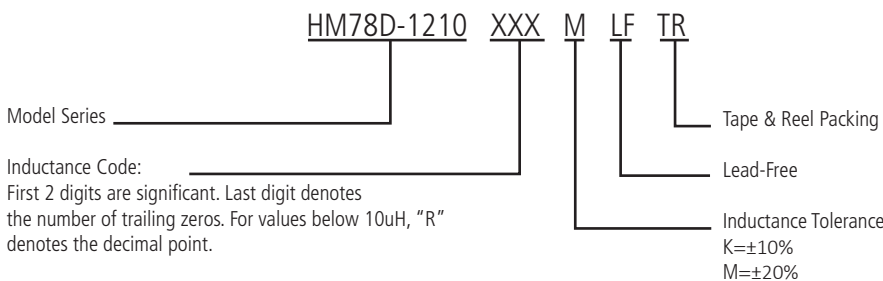
TT Electronics reserves the right to make changes in product specification without notice or liability.  
 All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

## Packaging

- 1) Tape and reel packaging.

2) 300pcs per 13" reel.

## Ordering Information



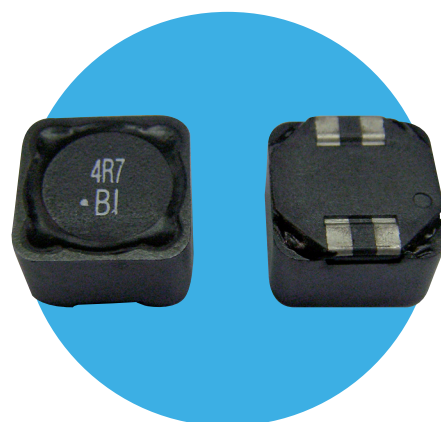
### General Note

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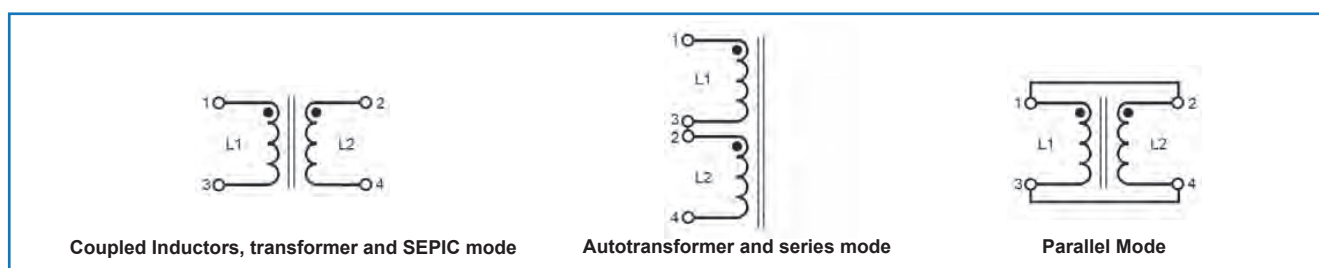
# Shielded Surface Mount Coupled Inductors

MODELS HM78D-128XXXXLF, HM78D-755XXXMLF

- Operating Temperature Range -40°C to +125°C
- Temperature Rise, Maximum 40°C
- Operating Frequency Up to 3MHz
- RoHS Compliant



## Electrical Schematic



## Specifications @ 25°C

| Parallel Connection |                          |                                |                                        |                                        | Series Connection        |                                |                                        |                                        |
|---------------------|--------------------------|--------------------------------|----------------------------------------|----------------------------------------|--------------------------|--------------------------------|----------------------------------------|----------------------------------------|
| Part Number         | L <sup>(1)</sup><br>(μH) | DCR Typ. <sup>(2)</sup><br>(Ω) | I <sub>sat</sub> <sup>(3)</sup><br>(A) | I <sub>rms</sub> <sup>(4)</sup><br>(A) | L <sup>(1)</sup><br>(μH) | DCR Typ. <sup>(2)</sup><br>(Ω) | I <sub>sat</sub> <sup>(3)</sup><br>(A) | I <sub>rms</sub> <sup>(4)</sup><br>(A) |
| HM78D-1284R7MLF     | 4.7 ± 20%                | 0.019                          | 14.90                                  | 7.40                                   | 18.8 ± 25%               | 0.076                          | 7.70                                   | 3.60                                   |
| HM78D-1285R6MLF     | 5.6 ± 20%                | 0.023                          | 13.40                                  | 7.20                                   | 22.4 ± 25%               | 0.092                          | 6.60                                   | 3.50                                   |
| HM78D-1286R8MLF     | 6.8 ± 20%                | 0.024                          | 13.10                                  | 6.90                                   | 27.2 ± 25%               | 0.096                          | 6.40                                   | 3.40                                   |
| HM78D-1288R2MLF     | 8.2 ± 20%                | 0.025                          | 10.80                                  | 6.60                                   | 32.8 ± 25%               | 0.100                          | 5.60                                   | 3.30                                   |
| HM78D-128100MLF     | 10 ± 20%                 | 0.029                          | 10.50                                  | 6.20                                   | 40 ± 25%                 | 0.116                          | 5.40                                   | 3.20                                   |
| HM78D-128120MLF     | 12 ± 20%                 | 0.031                          | 9.60                                   | 6.00                                   | 48 ± 25%                 | 0.124                          | 4.80                                   | 2.90                                   |
| HM78D-128150MLF     | 15 ± 20%                 | 0.036                          | 9.10                                   | 5.80                                   | 60 ± 25%                 | 0.144                          | 4.30                                   | 2.70                                   |
| HM78D-128180MLF     | 18 ± 20%                 | 0.040                          | 8.00                                   | 5.50                                   | 72 ± 25%                 | 0.158                          | 3.90                                   | 2.50                                   |
| HM78D-128220MLF     | 22 ± 20%                 | 0.048                          | 6.80                                   | 5.20                                   | 88 ± 25%                 | 0.190                          | 3.50                                   | 2.20                                   |
| HM78D-128270MLF     | 27 ± 20%                 | 0.060                          | 6.50                                   | 4.70                                   | 108 ± 25%                | 0.240                          | 3.40                                   | 2.00                                   |
| HM78D-128330MLF     | 33 ± 20%                 | 0.075                          | 5.60                                   | 4.20                                   | 132 ± 25%                | 0.300                          | 3.10                                   | 1.70                                   |
| HM78D-128390MLF     | 39 ± 20%                 | 0.080                          | 5.50                                   | 3.60                                   | 156 ± 25%                | 0.320                          | 2.80                                   | 1.60                                   |
| HM78D-128470MLF     | 47 ± 20%                 | 0.090                          | 5.20                                   | 3.00                                   | 188 ± 25%                | 0.360                          | 2.60                                   | 1.50                                   |
| HM78D-128560MLF     | 56 ± 20%                 | 0.095                          | 4.50                                   | 2.80                                   | 224 ± 25%                | 0.380                          | 2.40                                   | 1.40                                   |
| HM78D-128680MLF     | 68 ± 20%                 | 0.105                          | 4.10                                   | 2.60                                   | 272 ± 25%                | 0.420                          | 2.10                                   | 1.30                                   |
| HM78D-128820MLF     | 82 ± 20%                 | 0.140                          | 3.80                                   | 2.30                                   | 328 ± 25%                | 0.560                          | 1.90                                   | 1.20                                   |
| HM78D-128101MLF     | 100 ± 20%                | 0.150                          | 3.40                                   | 2.00                                   | 400 ± 25%                | 0.600                          | 1.70                                   | 1.10                                   |
| HM78D-128121KLF     | 120 ± 10%                | 0.205                          | 3.20                                   | 1.90                                   | 480 ± 25%                | 0.820                          | 1.60                                   | 1.00                                   |
| HM78D-128151KLF     | 150 ± 10%                | 0.230                          | 2.80                                   | 1.80                                   | 600 ± 25%                | 0.920                          | 1.40                                   | 0.89                                   |
| HM78D-128181KLF     | 180 ± 10%                | 0.255                          | 2.50                                   | 1.70                                   | 720 ± 25%                | 1.02                           | 1.30                                   | 0.84                                   |
| HM78D-128221KLF     | 220 ± 10%                | 0.345                          | 2.30                                   | 1.60                                   | 880 ± 25%                | 1.38                           | 1.10                                   | 0.75                                   |
| HM78D-128271KLF     | 270 ± 10%                | 0.450                          | 2.10                                   | 1.50                                   | 1080 ± 25%               | 1.80                           | 1.00                                   | 0.71                                   |
| HM78D-128331KLF     | 330 ± 10%                | 0.510                          | 1.90                                   | 1.30                                   | 1320 ± 25%               | 2.04                           | 0.92                                   | 0.62                                   |
| HM78D-128391KLF     | 390 ± 10%                | 0.560                          | 1.70                                   | 1.10                                   | 1560 ± 25%               | 2.24                           | 0.84                                   | 0.53                                   |
| HM78D-128471KLF     | 470 ± 10%                | 0.765                          | 1.60                                   | 0.87                                   | 1880 ± 25%               | 3.06                           | 0.80                                   | 0.43                                   |
| HM78D-128561KLF     | 560 ± 10%                | 0.845                          | 1.50                                   | 0.83                                   | 2240 ± 25%               | 3.38                           | 0.73                                   | 0.40                                   |
| HM78D-128681KLF     | 680 ± 10%                | 1.145                          | 1.30                                   | 0.76                                   | 2720 ± 25%               | 4.58                           | 0.63                                   | 0.36                                   |
| HM78D-128821KLF     | 820 ± 10%                | 1.275                          | 1.20                                   | 0.69                                   | 4000 ± 30%               | 5.10                           | 0.58                                   | 0.33                                   |
| HM78D-128102KLF     | 1000 ± 10%               | 1.415                          | 1.10                                   | 0.60                                   | 4800 ± 30%               | 5.66                           | 0.56                                   | 0.30                                   |
| HM78D-755R33MLF     | 0.33 ± 20%               | 0.0074                         | 18.4                                   | 0.620                                  | 1.176 ± 20%              | 0.0295                         | 9.18                                   | 3.10                                   |
| HM78D-7551R0MLF     | 1.0 ± 20%                | 0.0100                         | 10.20                                  | 5.33                                   | 3.808 ± 20%              | 0.0400                         | 5.10                                   | 2.66                                   |
| HM78D-7551R5MLF     | 1.5 ± 20%                | 0.0115                         | 8.35                                   | 4.96                                   | 5.688 ± 20%              | 0.0461                         | 4.17                                   | 2.48                                   |
| HM78D-7552R2MLF     | 2.2 ± 20%                | 0.0130                         | 7.06                                   | 4.66                                   | 7.944 ± 20%              | 0.0521                         | 3.53                                   | 2.33                                   |
| HM78D-7553R3MLF     | 3.3 ± 20%                | 0.0183                         | 5.40                                   | 3.94                                   | 13.58 ± 20%              | 0.0732                         | 2.70                                   | 1.97                                   |
| HM78D-7554R7MLF     | 4.7 ± 20%                | 0.0254                         | 4.37                                   | 3.34                                   | 20.73 ± 20%              | 0.102                          | 2.19                                   | 1.67                                   |

### General Note

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## Specifications @ 25°C continued

| Parallel Connection |                          |                                |                                        |                                        | Series Connection        |                                |                                        |                                        |
|---------------------|--------------------------|--------------------------------|----------------------------------------|----------------------------------------|--------------------------|--------------------------------|----------------------------------------|----------------------------------------|
| Part Number         | L <sup>(1)</sup><br>(μH) | DCR Typ. <sup>(2)</sup><br>(Ω) | I <sub>sat</sub> <sup>(3)</sup><br>(A) | I <sub>rms</sub> <sup>(4)</sup><br>(A) | L <sup>(1)</sup><br>(μH) | DCR Typ. <sup>(2)</sup><br>(Ω) | I <sub>sat</sub> <sup>(3)</sup><br>(A) | I <sub>rms</sub> <sup>(4)</sup><br>(A) |
| HM78D-7556R8MLF     | 6.8 ± 20%                | 0.0418                         | 3.67                                   | 2.60                                   | 29.38 ± 20%              | 0.167                          | 1.84                                   | 1.30                                   |
| HM78D-7558R2MLF     | 8.2 ± 20%                | 0.0441                         | 3.40                                   | 2.53                                   | 34.26 ± 20%              | 0.177                          | 1.70                                   | 1.27                                   |
| HM78D-755100MLF     | 10 ± 20%                 | 0.0489                         | 3.17                                   | 2.41                                   | 39.53 ± 20%              | 0.196                          | 1.58                                   | 1.20                                   |
| HM78D-755150MLF     | 15 ± 20%                 | 0.0637                         | 2.48                                   | 2.11                                   | 64.36 ± 20%              | 0.255                          | 1.24                                   | 1.05                                   |
| HM78D-755220MLF     | 22 ± 20%                 | 0.0925                         | 2.13                                   | 1.75                                   | 86.92 ± 20%              | 0.371                          | 1.07                                   | 0.874                                  |
| HM78D-755330MLF     | 33 ± 20%                 | 0.143                          | 1.73                                   | 1.41                                   | 132 ± 20%                | 0.574                          | 0.87                                   | 0.702                                  |
| HM78D-755470MLF     | 47 ± 20%                 | 0.216                          | 1.41                                   | 1.15                                   | 198.6 ± 20%              | 0.865                          | 0.71                                   | 0.573                                  |
| HM78D-755680MLF     | 68 ± 20%                 | 0.265                          | 1.19                                   | 1.03                                   | 278.7 ± 20%              | 1.06                           | 0.60                                   | 0.517                                  |
| HM78D-755820MLF     | 82 ± 20%                 | 0.345                          | 1.11                                   | 0.91                                   | 323.8 ± 20%              | 1.38                           | 0.55                                   | 0.453                                  |
| HM78D-755101MLF     | 100 ± 20%                | 0.383                          | 0.99                                   | 0.86                                   | 406.4 ± 20%              | 1.53                           | 0.49                                   | 0.430                                  |
| HM78D-755151MLF     | 150 ± 20%                | 0.591                          | 0.81                                   | 0.69                                   | 600 ± 20%                | 2.37                           | 0.41                                   | 0.346                                  |
| HM78D-755221MLF     | 220 ± 20%                | 0.907                          | 0.66                                   | 0.56                                   | 908 ± 20%                | 3.63                           | 0.33                                   | 0.279                                  |
| HM78D-755331MLF     | 330 ± 20%                | 1.41                           | 0.54                                   | 0.45                                   | 1342 ± 20%               | 5.66                           | 0.27                                   | 0.224                                  |
| HM78D-755471MLF     | 470 ± 20%                | 1.74                           | 0.46                                   | 0.40                                   | 1861 ± 20%               | 6.97                           | 0.23                                   | 0.202                                  |
| HM78D-755681MLF     | 680 ± 20%                | 2.58                           | 0.38                                   | 0.33                                   | 2685 ± 20%               | 10.30                          | 0.19                                   | 0.166                                  |
| HM78D-755821MLF     | 820 ± 20%                | 2.93                           | 0.35                                   | 0.31                                   | 3251 ± 20%               | 11.70                          | 0.17                                   | 0.156                                  |
| HM78D-755102MLF     | 1000 ± 20%               | 3.89                           | 0.31                                   | 0.27                                   | 4036 ± 20%               | 15.60                          | 0.16                                   | 0.135                                  |

- Notes: (1) Inductance is measured at 100 kHz, 0.1Vrms without DC current.  
(2) DCR Typ. is only for 755 series while 128 series is of DCR Max.  
(3) I<sub>sat</sub> is the saturation current at which inductance rolls off approximately 30% from its initial (zero DC) value.  
(4) I<sub>rms</sub> is the approximate current at which ΔT = 40°C.

## Outline Dimensions (mm)

| Top View  |      | Side View |      | Bottom View |     | Recommended Solder Pad Layout |      |     |     |     |     |      |     |     |     |     |     |     |
|-----------|------|-----------|------|-------------|-----|-------------------------------|------|-----|-----|-----|-----|------|-----|-----|-----|-----|-----|-----|
|           |      |           |      |             |     |                               |      |     |     |     |     |      |     |     |     |     |     |     |
| Case Size | A    | B         | C    | D           | E   | F                             | G    | H   | I   | J   | K   | L    | M   | N   | P   | Q   | R   | S   |
| 128       | 12.5 | 12.5      | 8.05 | 5.0         | 5.0 | 3.5                           | 1.5  | 4.2 | 5.5 | 4.5 | 2.0 | 12.8 | 4.2 | 4.5 | 2.0 | 4.2 | 5.5 | 4.5 |
| 755       | 7.7  | 7.7       | 4.8  | 3.9         | 2.7 | 1.55                          | 0.72 | 2.2 | 2.8 | 3.1 | 1.0 | 7.5  | 2.2 | 3.1 | 1.0 | 2.2 | 2.8 | 3.1 |

## Packaging

|           |                        |               |  |  |  |  |  |  |  |  |  |                 |  |  |  |  |  |  |
|-----------|------------------------|---------------|--|--|--|--|--|--|--|--|--|-----------------|--|--|--|--|--|--|
| Standard: | Embossed Tape and Reel |               |  |  |  |  |  |  |  |  |  |                 |  |  |  |  |  |  |
|           | Reel:                  | Diameter:     |  |  |  |  |  |  |  |  |  | = 13" (330.2mm) |  |  |  |  |  |  |
|           |                        | Capacity:     |  |  |  |  |  |  |  |  |  | = 500 Units     |  |  |  |  |  |  |
|           |                        | Case size 755 |  |  |  |  |  |  |  |  |  | = 1,000 Units   |  |  |  |  |  |  |

## Ordering Information

|                                                                                                                                        |             |     |   |    |    |                      |
|----------------------------------------------------------------------------------------------------------------------------------------|-------------|-----|---|----|----|----------------------|
| Model Series                                                                                                                           | HM78D - 128 | 4R7 | M | LF | TR | Tape & Reel Packing  |
| Case Size:                                                                                                                             | 128, 755    |     |   |    |    | Lead-Free            |
| Inductance Code:                                                                                                                       |             |     |   |    |    | Inductance Tolerance |
| First 2 digits are significant. Last digit denotes the number of trailing zeros. For values below 10μH, "R" denotes the decimal point. |             |     |   |    |    | K = ± 10%            |
|                                                                                                                                        |             |     |   |    |    | M = ± 20%            |

### General Note

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