

# Power Inductors

## HA78DM Series



### Features:

- Operating temperature range  $-55^{\circ}\text{C}$  to  $+155^{\circ}\text{C}$
- Tight coupling factor, typically 99%
- Ambient temperature,  $115^{\circ}\text{C}$  Max
- Temperature rise,  $40^{\circ}\text{C}$
- Operating frequency up to 3MHz
- AEC-Q200 certified



### Description:

The HA78DM series is a SMD coupling of two shielded, ferrite-based power inductors, designed to meet a tight coupling factor. Custom design is available for some special leakage inductance requests. This series offers inductance from  $4.7\mu\text{H}$  to  $470\mu\text{H}$ , and rated current from 1.185A up to 7.559A. The series also has series and parallel connections. The HA78DM is available in 2 case sizes; 128 and 1210.

### Applications:

- Common mode choke
- DC-DC converter, especially for SEPIC topology
- 1:1 Transformer

#### General Note

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### Electrical Specifications

#### Parallel connections

Part Number	Inductance ( $\mu\text{H} \pm 20\%$ ) @0A	DCR (m $\Omega$ ) Max	Isat (A) - Max	Irms (A) - Max
HA78DM-1284R7LFTR	4.7	19	14.9	7.4
HA78DM-1288R2LFTR	8.2	25	10.8	6.6
HA78DM-128100LFTR	10.0	29	10.5	6.2
HA78DM-128220LFTR	22.0	48	6.8	5.2
HA78DM-128270LFTR	27.0	60	6.5	4.7
HA78DM-128330LFTR	33.0	75	5.6	4.2
HA78DM-128470LFTR	47.0	90	5.2	3.0
HA78DM-128680LFTR	68.0	105	4.1	2.8
HA78DM-128101LFTR	100.0	150	3.4	2.0
HA78DM-12104R7LFTR	4.7	14	10.60	7.559
HA78DM-12106R8LFTR	6.8	17	10.40	6.860
HA78DM-1210100LFTR	10.0	20	8.60	6.325
HA78DM-1210220LFTR	22.0	40	5.40	4.472
HA78DM-1210330LFTR	33.0	50	4.50	4.000
HA78DM-1210470LFTR	47.0	65	3.70	3.508
HA78DM-1210680LFTR	68.0	98	2.95	2.857
HA78DM-1210101LFTR	100.0	128	2.54	2.500
HA78DM-1210121LFTR	120.0	170	2.38	2.169
HA78DM-1210471LFTR	470.0	570	1.22	1.185

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A-1445, Jalan Tanjung Api, 25050 Kuantan, Pahang Darul Makmur, Malaysia

Ph: +60 9 565 8888

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### Electrical Specifications

#### Series connections

Part Number	Inductance ( $\mu\text{H} \pm 20\%$ ) @0A	DCR (m $\Omega$ ) Max	Isat (A) - Max	Irms (A)- Max
HA78DM-1284R7LFTR	18.8	76	7.7	3.6
HA78DM-1288R2LFTR	32.8	100	6.4	3.4
HA78DM-128100LFTR	40.0	116	5.4	3.2
HA78DM-128220LFTR	88.0	190	3.5	2.2
HA78DM-128270LFTR	108.0	240	3.4	2.0
HA78DM-128330LFTR	132.0	300	3.1	1.7
HA78DM-128470LFTR	188.0	360	2.6	1.5
HA78DM-128680LFTR	272.0	420	2.1	1.3
HA78DM-128101LFTR	400.0	600	1.7	1.1
HA78DM-12104R7LFTR	18.80	56	5.30	3.780
HA78DM-12106R8LFTR	27.20	68	5.20	3.430
HA78DM-1210100LFTR	41.12	80	4.30	3.162
HA78DM-1210220LFTR	88.00	160	2.70	2.236
HA78DM-1210330LFTR	132.00	200	2.25	2.000
HA78DM-1210470LFTR	188.00	260	1.85	1.754
HA78DM-1210680LFTR	272.00	392	1.48	1.429
HA78DM-1210101LFTR	400.00	512	1.27	1.250
HA78DM-1210121LFTR	480.00	680	1.19	1.085
HA78DM-1210471LFTR	1880.00	2280	0.61	0.592

- Notes: (1) Isat is the saturation current at which inductance rolls off at 35% approximately from its initial (zero DC current)  
 (2) Irms is the approximate current at which  $\Delta T = 40^\circ\text{C}$  max  
 (3) Test condition 100kHz @ 0.3V  
 (4) Tested at 25°C

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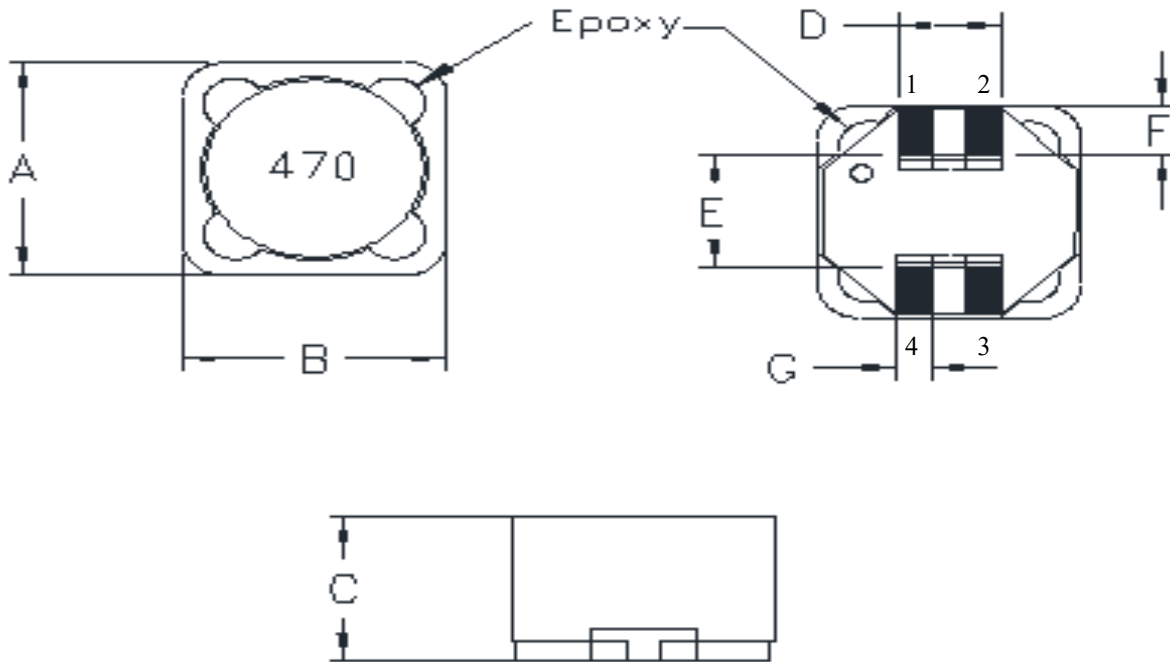
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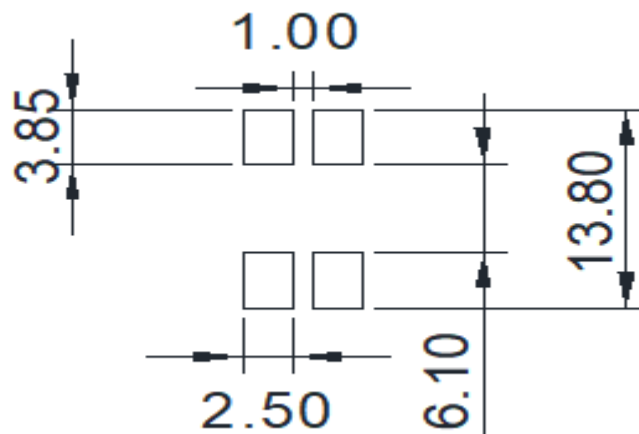
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### Mechanical Outline (mm)

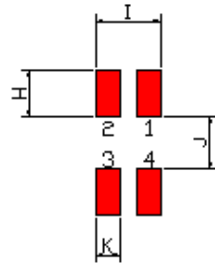


Case Size	A Max.	B Max.	C Max.	D Ref.	E Ref.	F Ref.	G Ref.
128	12.5	12.5	8.05	5.00	7.00	2.35	1.80
1210	12.5	12.5	10.5	5.00	7.00	2.35	1.80

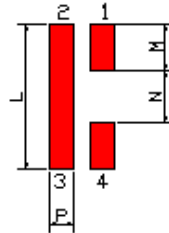
### PCB Layout (mm)



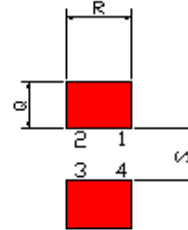
### Recommended Solder Pad Layout



Coupled Inductor,  
transformer and  
SEPIC modes



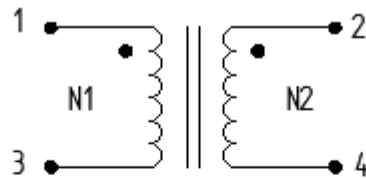
Series mode



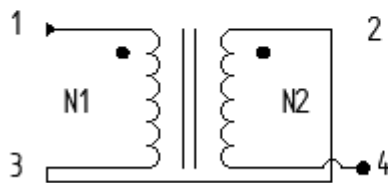
Parallel mode

Case Size	H	I	J	K	L	M	N	P	Q	R	S
128	3.85	6.00	6.10	2.50	13.80	3.85	6.10	2.50	3.85	6.00	6.10
1210	3.85	6.00	6.10	2.50	13.80	3.85	6.10	2.50	3.85	6.00	6.10

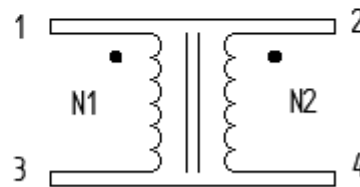
### Electrical Schematic



Coupled Inductor,  
transformer and  
SEPIC modes



Series Mode



Parallel Mode

**General Note**

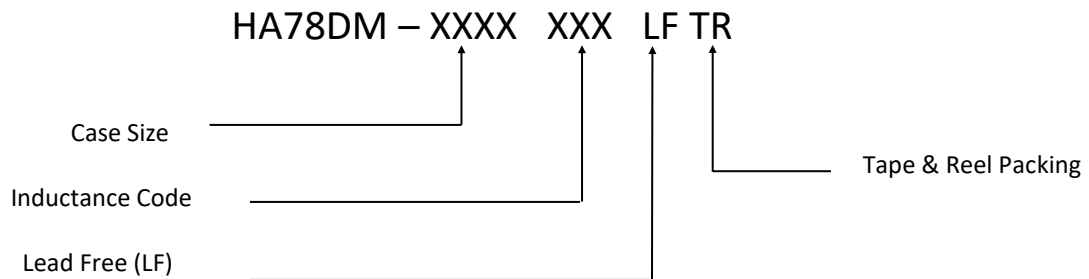
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### Packaging



Case Size	Reel Size	Qty/Reel	Qty/Carton
128	13"	500	3,000
1210	13"	300	1,800