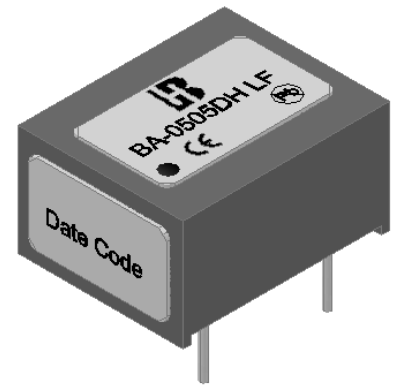
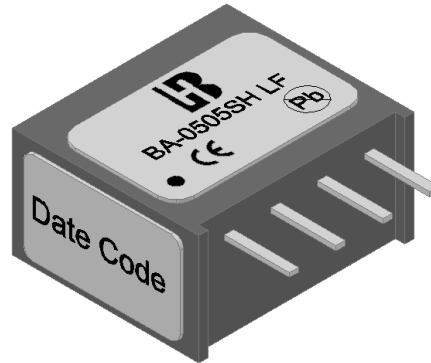


# BA-SH LF - Series

0.5 To 1 Watt Isolated DC-DC Converter

## 1 . Features

- 4 Pin SIL / 8 Pin SIL Package
- Low Ripple And Noise
- Input / Output Isolation : 3000 Vdc
- 100% Burn-In
- Input Filter With Internal Capacitor
- Custom Design Available
- Net Weight: 1.4 g / 1.8 g Typical
- RoHS Converter Certified By SGS



## 2 . Model Selection Guide

(Specifications typical at Ta= +25°C, Nominal input voltage, Rated output current unless otherwise noted)

Model No.	Input Voltage (Vdc)	Output Voltage (Vdc)	Output Current (mA) Max	Input Current @No Load (mA) Typ.	Input Current @Max. Load (mA) Typ.	Output Ripple (mV) Max.	Load Regulation (%) Max.	Efficiency (%)Typ.
<b>1) 0.5 W Single Output SIL Package Style</b>								
BA-053R3SH LF	5	3.3	150	28	135	50	± 12	74
BA-0505SH LF		5	100	28	135	60	± 10	74
BA-0509SH LF		9	56	28	135	80	± 8	74
BA-0512SH LF		12	42	28	132	100	± 8	76
BA-0515SH LF		15	34	28	132	120	± 8	76
BA-123R3SH LF	12	3.3	150	18	56	50	± 12	74
BA-1205SH LF		5	100	18	56	60	± 10	74
BA-1209SH LF		9	56	18	55	80	± 8	76
BA-1212SH LF		12	42	18	55	100	± 8	76
BA-1215SH LF		15	34	18	55	120	± 8	76
BA-243R3SH LF	24	3.3	150	5	28	50	± 12	74
BA-2405SH LF		5	100	5	28	60	± 10	74
BA-2409SH LF		9	56	5	28	80	± 8	75
BA-2412SH LF		12	42	5	28	100	± 8	75
BA-2415SH LF		15	34	5	28	120	± 8	75
<b>2) 0.5 W Single Output DIL Package Style</b>								
BA-0505DH LF	5	5	100	28	135	60	± 10	74
BA-0509DH LF		9	56	28	135	80	± 8	74
BA-0512DH LF		12	42	28	132	100	± 8	76
BA-0515DH LF		15	34	28	132	120	± 8	76

# BA-SH LF - Series

0.5 To 1 Watt Isolated DC-DC Converter

BA-1205DH LF	12	5	100	18	56	60	± 10	74
BA-1209DH LF		9	56	18	55	80	± 8	76
BA-1212DH LF		12	42	18	55	100	± 8	76
BA-1215DH LF		15	34	18	55	120	±8	76
BA-2405SH LF	24	5	100	5	28	60	± 10	74
BA-2409SH LF		9	56	5	28	80	± 8	75
BA-2412SH LF		12	42	5	28	100	± 8	75
BA-2415SH LF		15	34	5	28	120	± 8	75

### 3) 1.0 W Single Output SIL Package Style

BA-053R3S1H LF	5	3.3	300	30	263	50	± 12	76
BA-0505S1H LF		5	200	30	253	60	± 10	79
BA-0509S1H LF		9	111	30	256	100	± 8	78
BA-0512S1H LF		12	84	30	256	100	± 8	78
BA-0515S1H LF		15	67	30	250	120	± 8	80
BA-123R3S1H LF	12	3.3	300	16	109	50	± 12	76
BA-1205S1H LF		5	200	16	105	60	± 10	79
BA-1209S1H LF		9	111	16	105	60	± 8	79
BA-1212S1H LF		12	84	16	105	100	± 8	79
BA-1215S1H LF		15	67	16	104	120	± 8	80
BA-243R3S1H LF	24	3.3	300	6	55	50	± 12	76
BA-2405S1H LF		5	200	6	54	60	± 10	77
BA-2409S1H LF		9	111	6	54	60	± 8	77
BA-2412S1H LF		12	84	6	52	100	± 8	80
BA-2415S1H LF		15	67	6	50	120	± 8	80

### 4) 1.0 W Single Output DIL Package Style

BA-0505D1H LF	5	5	200	30	253	60	± 10	79
BA-0509D1H LF		9	111	30	256	100	± 8	78
BA-0512D1H LF		12	84	30	256	100	± 8	78
BA-0515D1H LF		15	67	30	250	120	± 8	80
BA-1205D1H LF	12	5	200	16	105	60	± 10	79
BA-1209D1H LF		9	111	16	105	60	± 8	79
BA-1212D1H LF		12	84	16	105	100	± 8	79
BA-1215D1H LF		15	67	16	104	120	± 8	80
BA-2405D1H LF	24	5	200	6	54	60	± 10	77
BA-2409D1H LF		9	111	6	54	60	± 8	77
BA-2412D1H LF		12	84	6	52	100	± 8	80
BA-2415D1H LF		15	67	6	50	120	± 8	80

Notes: Load regulation is for output current change from 20% to 100% Max. Load.



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### 3 . Absolute Maximum Ratings

(Exceeding these values may damage the module. These are not continuous operating ratings)

Parameter	Condition	Min.	Typ.	Max.	Unit
Input Absolute Voltage Range	5V Input Model	- 0.7	5	7.5	Vdc
	12V Input Model	- 0.7	12	15	
	24V Input Model	- 0.7	24	30	
Max. Output Power		---	---	0.5	W
		---	---	1.0	
Output Short Circuit Duration		---	---	1.0	Second
Operation Temperature (Ambient Temperature)	Output Full Load	- 40	---	+ 85	°C
Operation Temperature (Case Surface Temperature)		-40	---	+95	
Storage Temperature		-55	---	+105	

### 4 . Nominal Input/Output Electrical Specifications

(Specifications typical at Ta= +25°C ,Nominal input voltage, Rated output current unless otherwise noted)

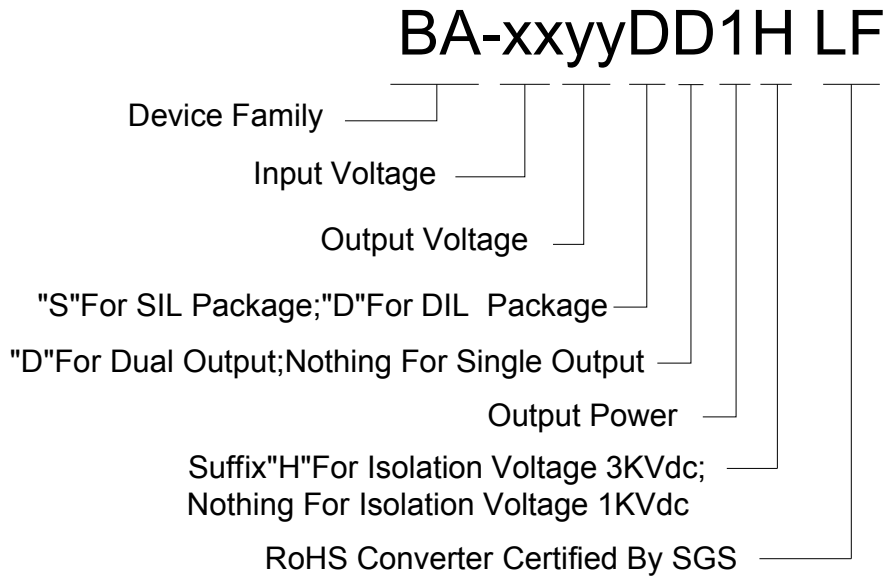
Parameter	Condition	Min.	Typ.	Max.	Unit	
Input Voltage Range	5V Input Model	4.5	5	5.5	Vdc	
	12V Input Model	10.8	12	13.2		
	24V Input Model	21.6	24	26.4		
Line Regulation (Per1.0% change in input change)		---	---	1.3	%	
Output Voltage Accuracy	Nominal Input	---	---	± 5.0		
Voltage Balance (Dual Outputs)		---	---	± 1.0		
Switching Frequency		---	80	---		KHz
Temperature Coefficient		---	± 0.01	± 0.02		%/ °C
Isolation Voltage	60 Second/0.5mA	3000	---	---	Vdc	
Isolation Resistance	500Vdc	1000	---	---	MΩ	
Isolation Capacitance	1KHz / 250mV rms	---	40	---	pF	
Capacitive Load	0.5 Watt	---	---	110	μ F	
	1 Watt	---	---	220		

### 5 . General Specification

Parameter	Specification	Condition
Isolation Voltage	3000 Vdc	Test Duration 60 Seconds / 0.5 mA
Isolation Resistance	1000 MΩ Min.	@ 500 Vdc
Humidity	Up To 90 %	---
Cooling	Free Air Convection	---
Case Type	Plastic	---

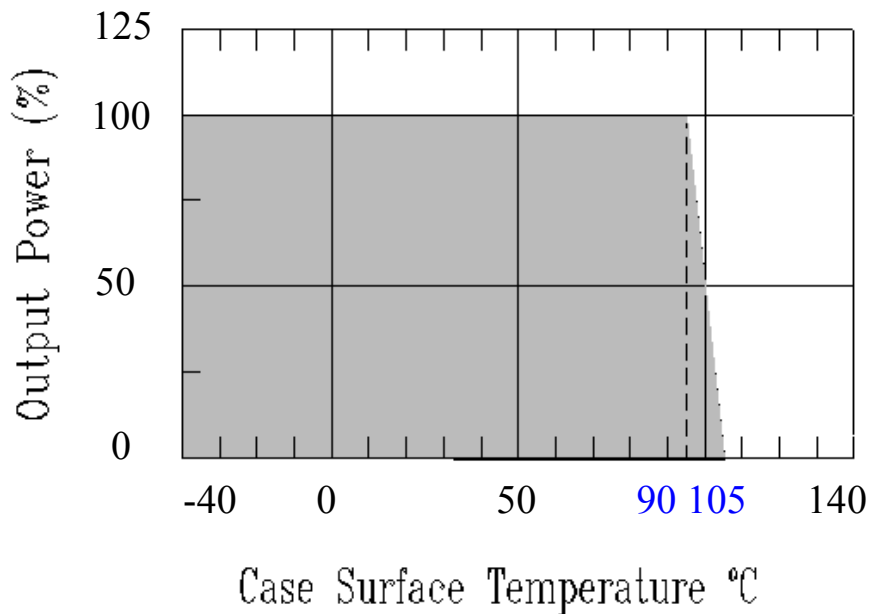


## 6 . Ordering Information



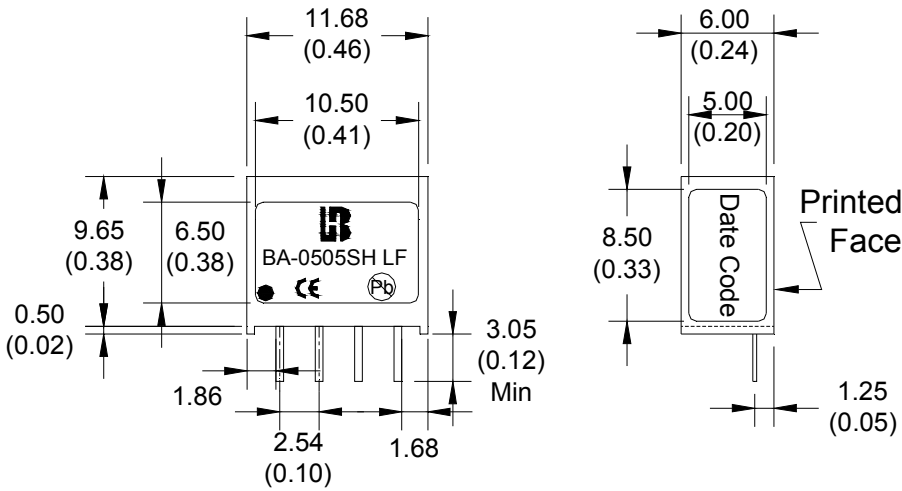
## 7 . Power Derating Curve

Temperature derating graph



### 8 . Mechanical Dimension

#### Single Output SIL Package Style

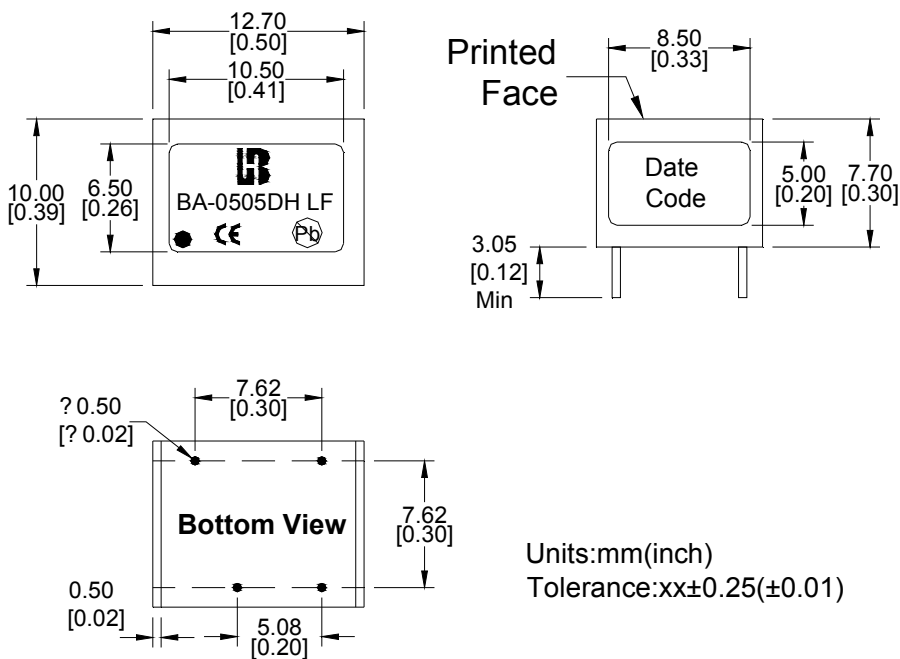


Pin	3K Vdc - Single
1	-Vin
2	+Vin
3	-Vo
4	+Vo

Units : mm ( inch )

Tolerance : .xx ± 0.25 ( ± 0.01 )

#### Single Output DIL Package Style



Pin	3K Vdc - Single		Pin
1	-Vin	No Pin	8
2	No Pin	-Vo	7
3	No Pin	No Pin	6
4	+Vin	+Vo	5

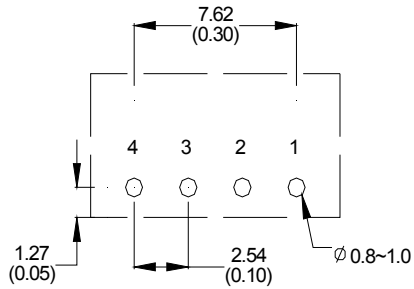
Units:mm(inch)

Tolerance:xx±0.25(±0.01)

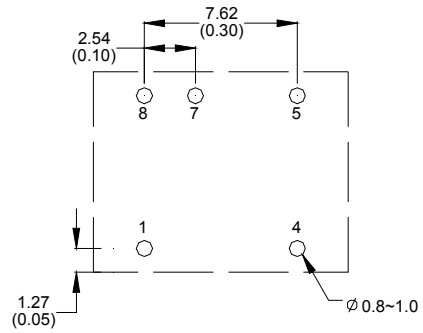


### 9. Recommended Footprint Details

#### SIL Package Style



#### DIL Package Style

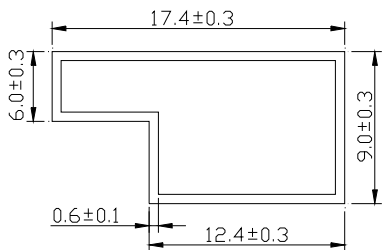


Units : mm ( inch )

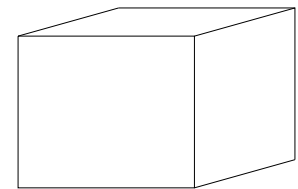
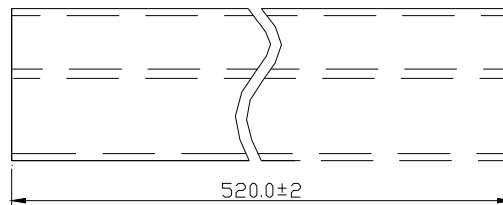
Tolerance : .xx  $\pm$  0.25 (  $\pm$  0.01 )

### 10. Package

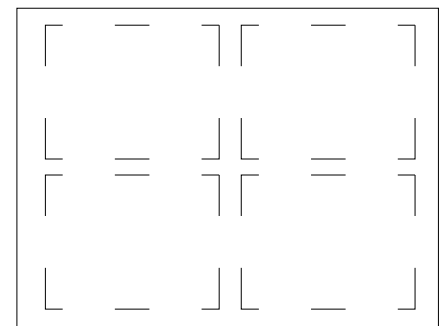
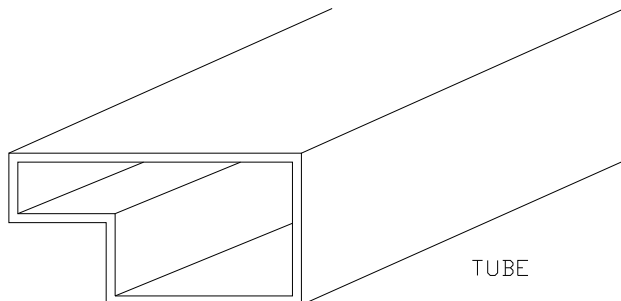
#### SIL Package Style



TUBE MECHANICAL DIMENSION



INNER CARTON:565\*115\*117

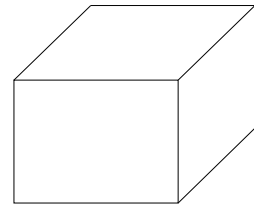
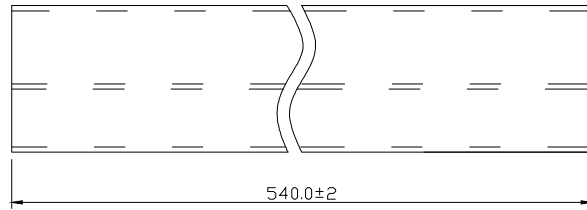
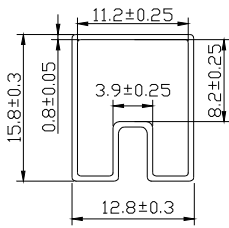


EXPORT CARTON:580\*255\*265

1. TUBE=41PCS
2. INNER CARTON=50 TUBE=50\*41=2050PCS
3. EXPORT CARTON=4 INNER CARTON=4\*2050=8200PCS

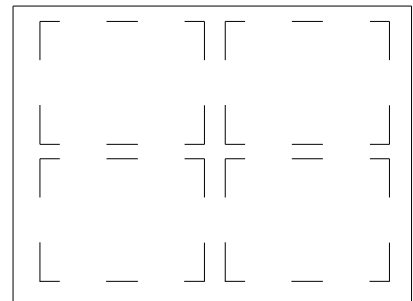
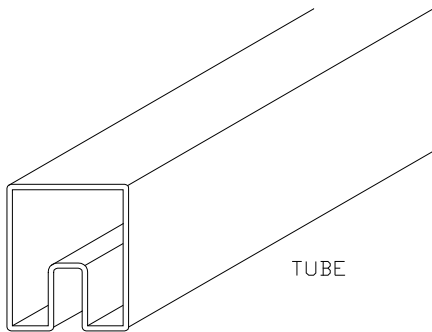


### DIL Package Style



TUBE MECHANICAL DIMENSION

INNER CARTON:575\*170\*87



EXPORT CARTON:583\*380\*210

1. TUBE=40PCS
2. INNER CARTON=50TUBE=50\*40=2000PCS
3. EXPORT CARTON=4 INNER CARTON=4\*2000=8000PCS

