

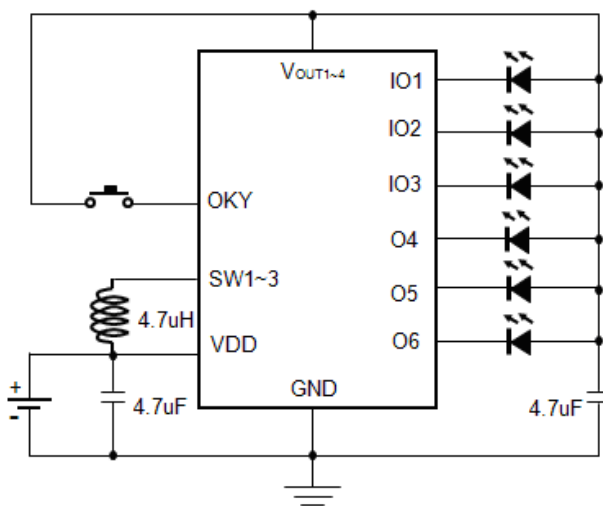
NY1C007A 电感效率比较

内容：当使用 NY1C007A 时，选用的电感不同，会影响升压的转换效率。




原因：NY1C007A 会随着电感内阻的不同，造成转换效率的差异，电感的内阻也会影响到最大电流 I_{OUT} 的输出。

方法：以下信息可以帮助您如何选择所需的电感。

1. 在 NY1C007A 应用电路中，有一颗 4.7 μ H 的电感，如下图。目前市面上常见的电感有 SMD 线圈电感、色码电感或 SMD 一般电感等，依照电感制程不同，电感内阻（DCR）会有差异，进而影响 NY1C007A 的转换效率，如下表。



NY1C007A 单键触发应用线路图

名称	SMD 线圈电感 (SLF6045T)	色码电感	SMD 一般电感 (1206)
外观			
DCR	0.026 Ω	0.320 Ω	0.520 Ω
价格	贵	中	便宜
加工方式	简单	麻烦	简单

2. 电感内阻越低的电感效率越好，可以依照不同应用选择适合的电感，不同电感在不同条件下的转换效率如下表。

V _{OUT} =3.5V 转换效率								
电感种类	I _{OUT}	V _{DD}						
		0.9V	1.1V	1.2V	1.5V	1.8V	2.4V	3.0V
SMD 线圈电感 (SLF6045)	10mA	79.13%	79.28%	80.36%	82.00%	84.80%	85.07%	87.98%
	20mA	81.80%	83.49%	83.89%	81.47%	86.88%	86.16%	88.69%
	30mA	82.56%	83.99%	84.82%	86.95%	82.49%	87.22%	89.59%
	50mA	79.56%	83.52%	84.39%	87.41%	88.17%	88.69%	90.16%
	100mA	65.05%	80.04%	82.63%	86.99%	89.18%	88.14%	87.89%
	150mA	-	67.43%	72.36%	83.46%	87.06%	92.71%	86.59%
	200mA	-	-	-	78.77%	85.26%	90.79%	91.45%
	250mA	-	-	-	73.69%	81.82%	89.61%	92.60%
色码电感	10mA	79.65%	79.51%	79.67%	81.27%	84.03%	86.12%	88.03%
	20mA	80.71%	82.89%	83.99%	81.09%	86.36%	86.75%	88.41%
	30mA	80.40%	82.99%	84.39%	86.56%	86.82%	88.79%	88.97%
	50mA	74.64%	81.36%	83.16%	85.96%	87.89%	87.65%	89.40%
	100mA	-	62.71%	76.06%	83.28%	86.95%	88.01%	87.07%
	150mA	-	-	-	76.93%	83.37%	89.74%	85.51%
	200mA	-	-	-	65.20%	78.12%	88.13%	90.98%
	250mA	-	-	-	-	71.87%	85.15%	90.99%
SMD 一般电感 (1206)	10mA	68.58%	68.90%	69.10%	71.31%	72.15%	79.28%	82.20%
	20mA	65.18%	69.92%	71.01%	74.56%	74.11%	79.40%	81.59%
	30mA	62.09%	67.90%	69.47%	74.17%	76.61%	80.38%	83.53%
	50mA	48.12%	61.97%	65.37%	71.96%	75.58%	82.83%	81.13%
	100mA	-	-	-	60.72%	67.83%	81.27%	86.33%
	150mA	-	-	-	-	62.48%	76.34%	85.54%
	200mA	-	-	-	-	-	71.84%	85.76%
	250mA	-	-	-	-	-	70.60%	82.94%

注意：“-”表示 NY1C007A 因功率转换效率过低，而无法提供足够的输出功率，以致于无法达到正常的 V_{OUT} 与 I_{OUT} (P_{OUT} = V_{OUT} × I_{OUT})。

V _{OUT} =3.3V 转换效率								
电感种类	I _{OUT}	V _{DD}						
		0.9V	1.1V	1.2V	1.5V	1.8V	2.4V	3.0V
SMD 线圈电感 (SLF6045T)	10mA	80.07%	81.77%	82.32%	82.44%	83.26%	87.46%	90.15%
	20mA	82.82%	84.45%	84.87%	86.16%	86.91%	88.06%	90.90%
	30mA	84.36%	84.84%	86.09%	88.01%	88.80%	90.31%	91.58%
	50mA	80.68%	85.52%	86.08%	88.04%	88.85%	90.59%	91.53%
	100mA	68.82%	82.33%	83.84%	87.78%	90.08%	93.02%	89.01%
	150mA	-	71.72%	75.84%	84.94%	88.49%	92.74%	86.31%
	200mA	-	-	-	81.02%	86.38%	91.78%	94.05%
	250mA	-	-	-	75.98%	83.70%	90.47%	93.00%
色码电感	10mA	81.18%	82.74%	82.48%	83.63%	83.78%	87.81%	90.15%
	20mA	82.48%	84.33%	85.32%	86.65%	87.39%	88.27%	90.90%
	30mA	82.62%	84.72%	85.97%	87.25%	88.46%	90.11%	91.48%
	50mA	75.53%	82.57%	83.95%	86.90%	88.78%	89.67%	90.77%
	100mA	-	73.47%	77.77%	84.82%	88.11%	91.88%	88.75%
	150mA	-	-	61.55%	78.90%	84.96%	91.45%	85.33%
	200mA	-	-	-	70.74%	81.07%	89.39%	92.64%
	250mA	-	-	-	-	76.03%	86.84%	90.91%
SMD 一般电感 (1206)	10mA	71.16%	73.40%	73.94%	77.10%	78.44%	81.09%	85.40%
	20mA	69.87%	73.05%	74.11%	77.34%	80.06%	83.84%	86.96%
	30mA	66.60%	70.65%	72.42%	76.09%	79.57%	84.53%	87.87%
	50mA	47.84%	65.32%	67.73%	73.96%	77.87%	84.45%	85.99%
	100mA	-	-	-	65.31%	71.28%	83.02%	86.78%
	150mA	-	-	-	-	65.80%	78.76%	89.33%
	200mA	-	-	-	-	-	75.48%	88.56%
	250mA	-	-	-	-	-	72.29%	86.23%

注意: “-”表示 NY1C007A 因功率转换效率过低, 而无法提供足够的输出功率, 以致于无法达到正常的 V_{OUT} 与 I_{OUT} (P_{OUT} = V_{OUT} × I_{OUT})。

V _{OUT} =3.0V 转换效率								
电感种类	I _{OUT}	V _{DD}						
		0.9V	1.1V	1.2V	1.5V	1.8V	2.4V	3.0V
SMD 线圈电感 (SLF6045T)	10mA	78.83%	79.66%	79.99%	81.35%	84.44%	87.85%	86.08%
	20mA	81.70%	83.06%	83.92%	83.77%	82.19%	87.96%	85.73%
	30mA	82.38%	84.12%	84.26%	86.02%	85.94%	88.83%	85.83%
	50mA	80.21%	83.95%	85.35%	86.83%	88.20%	89.36%	88.07%
	100mA	72.89%	81.84%	84.11%	87.92%	89.84%	90.35%	83.95%
	150mA	-	64.47%	77.89%	85.64%	89.00%	91.16%	84.73%
	200mA	-	-	-	81.89%	86.58%	92.19%	83.82%
	250mA	-	-	-	72.83%	84.13%	90.59%	83.28%
色码电感	10mA	79.12%	80.25%	80.42%	81.08%	85.26%	87.25%	85.38%
	20mA	81.12%	83.40%	83.88%	84.27%	83.57%	87.15%	85.06%
	30mA	80.82%	83.17%	83.95%	86.47%	83.89%	87.38%	84.88%
	50mA	76.99%	83.84%	85.14%	86.75%	88.68%	88.68%	87.43%
	100mA	-	76.02%	79.64%	85.29%	89.45%	84.69%	83.47%
	150mA	-	-	65.13%	80.67%	86.26%	90.44%	82.76%
	200mA	-	-	-	73.86%	82.56%	90.03%	82.26%
	250mA	-	-	-	-	77.78%	87.85%	81.61%
SMD 一般电感 (1206)	10mA	71.39%	72.28%	72.18%	75.00%	77.54%	81.50%	84.59%
	20mA	69.74%	73.68%	74.22%	78.00%	78.39%	82.34%	84.66%
	30mA	68.27%	72.00%	72.63%	77.20%	81.46%	83.03%	86.26%
	50mA	53.58%	68.38%	70.47%	75.87%	80.66%	81.11%	87.10%
	100mA	-	-	-	68.66%	76.36%	85.48%	83.68%
	150mA	-	-	-	-	71.10%	84.04%	83.01%
	200mA	-	-	-	-	-	81.80%	84.92%
	250mA	-	-	-	-	-	77.19%	86.25%

注意: “-”表示 NY1C007A 因功率转换效率过低, 而无法提供足够的输出功率, 以致于无法达到正常的 V_{OUT} 与 I_{OUT} (P_{OUT} = V_{OUT} × I_{OUT})。

V _{OUT} =2.7V 转换效率								
电感种类	I _{OUT}	V _{DD}						
		0.9V	1.1V	1.2V	1.5V	1.8V	2.4V	3.0V
SMD 线圈电感 (SLF6045T)	10mA	80.23%	79.74%	82.17%	83.85%	85.30%	86.49%	80.01%
	20mA	83.74%	85.04%	84.42%	84.25%	86.88%	86.75%	80.36%
	30mA	83.64%	84.63%	85.73%	85.11%	88.15%	85.22%	79.80%
	50mA	81.26%	84.29%	85.82%	87.66%	86.01%	90.04%	80.78%
	100mA	73.49%	82.49%	84.29%	88.36%	90.19%	89.20%	82.62%
	150mA	-	75.57%	78.57%	86.11%	89.73%	88.85%	80.37%
	200mA	-	-	-	82.46%	87.18%	90.32%	81.44%
	250mA	-	-	-	69.44%	84.58%	91.44%	81.08%
色码电感	10mA	79.44%	79.77%	81.56%	82.87%	84.18%	85.83%	79.90%
	20mA	82.83%	84.73%	83.06%	82.71%	86.82%	85.05%	79.81%
	30mA	81.81%	83.62%	85.01%	83.82%	87.50%	86.74%	79.42%
	50mA	75.21%	82.18%	84.12%	86.78%	84.81%	87.20%	80.07%
	100mA	-	76.48%	79.14%	85.60%	88.53%	87.86%	82.53%
	150mA	--	-	70.42%	81.55%	86.60%	87.19%	79.45%
	200mA	-	-	-	74.65%	82.92%	89.54%	80.42%
	250mA	-	-	-	-	78.73%	88.43%	79.49%
SMD 一般电感 (1206)	10mA	69.68%	70.12%	70.59%	73.00%	73.11%	80.82%	80.27%
	20mA	69.24%	72.65%	74.38%	74.27%	75.00%	81.58%	81.35%
	30mA	65.74%	69.66%	72.02%	76.85%	77.47%	83.35%	80.85%
	50mA	54.99%	64.94%	67.70%	74.72%	79.92%	81.20%	79.75%
	100mA	-	-	-	67.19%	74.93%	84.95%	82.39%
	150mA	-	-	-	-	69.23%	84.62%	80.91%
	200mA	-	-	-	-	-	82.20%	80.43%
	250mA	-	-	-	-	-	78.31%	79.12%

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