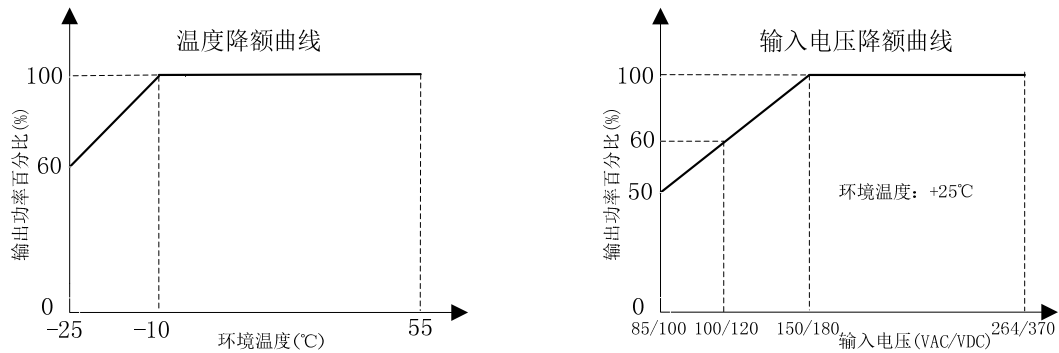


| 广州能达电源 | NH(L)05-T2SXX | 5W 超小体积 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------------------------------|--------------|------|-----|------|---------|------|------------|------------------------------|-----------|-----|------------|-----------|-----|------------|-----------|-----|------------|------------------------------|-----------|-----|------------|-----------|-----|------------|-----------|-----|----|------|-----|-----|-----|----|--------|------|----|---|-----|-----|------|-----|---|-----|-----|--------|--|----|---|----|----|------|--------|---|---|-----|----|--------|---|---|----|----|------|-----|-----|-----|----|--------|--|---|----|---|---|-------|--|---|----|---|-------|------------|---|----|---|------------------|--------------------------------|---|-----|---|----|--------|--|------------|--|--|--|--------|--|--------------|--|--|--|------|--|---|---|---|---|--------|------------|---|----|---|----|
| | 产品规格书 | AC/DC 电源模块 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>● 主要特点</p> <ul style="list-style-type: none"> ■ 宽输入电压：85-264VAC 或 100-370VDC ■ 单路稳压输出 ■ 输出过流保护，输出短路保护 ■ 输入与输出隔离 ■ 单列直插，超小体积 ■ 产品质保两年 <p>● 产品综述</p> <p>NH(L)05-T2SXX 为最大功率 5W，兼容交直流输入的 AC/DC 电源模块，体积小，采用 PWM 高频变换技术，具有输入电压范围宽、安全隔离、可靠性好等优点，广泛应用于智能家居、仪器仪表等领域。</p> <p>● 选型表</p> <table border="1"> <thead> <tr> <th>型号</th> <th>产品尺寸</th> <th>输出电压和电流</th> <th>典型效率</th> </tr> </thead> <tbody> <tr> <td>NH05-T2S05</td> <td rowspan="3">26.0mm×13.5mm×24.0mm (立式)</td> <td>5V/1000mA</td> <td>68%</td> </tr> <tr> <td>NH05-T2S12</td> <td>12V/416mA</td> <td>71%</td> </tr> <tr> <td>NH05-T2S24</td> <td>24V/208mA</td> <td>75%</td> </tr> <tr> <td>NL05-T2S05</td> <td rowspan="3">26.0mm×24.0mm×13.5mm (卧式)</td> <td>5V/1000mA</td> <td>68%</td> </tr> <tr> <td>NL05-T2S12</td> <td>12V/416mA</td> <td>71%</td> </tr> <tr> <td>NL05-T2S24</td> <td>24V/208mA</td> <td>75%</td> </tr> </tbody> </table> <p>● 输入特性</p> <table border="1"> <thead> <tr> <th>项目</th> <th>工作条件</th> <th>最小值</th> <th>典型值</th> <th>最大值</th> <th>单位</th> </tr> </thead> <tbody> <tr> <td rowspan="2">输入电压范围</td> <td>交流输入</td> <td>85</td> <td>-</td> <td>264</td> <td>VAC</td> </tr> <tr> <td>直流输入</td> <td>100</td> <td>-</td> <td>370</td> <td>VDC</td> </tr> <tr> <td>输入电压频率</td> <td></td> <td>47</td> <td>-</td> <td>63</td> <td>Hz</td> </tr> <tr> <td rowspan="2">输入电流</td> <td>115VAC</td> <td>-</td> <td>-</td> <td>150</td> <td rowspan="2">mA</td> </tr> <tr> <td>230VAC</td> <td>-</td> <td>-</td> <td>75</td> </tr> </tbody> </table> <p>● 输出特性</p> <table border="1"> <thead> <tr> <th>项目</th> <th>工作条件</th> <th>最小值</th> <th>典型值</th> <th>最大值</th> <th>单位</th> </tr> </thead> <tbody> <tr> <td>输出电压精度</td> <td></td> <td>-</td> <td>±3</td> <td>-</td> <td rowspan="3">%</td> </tr> <tr> <td>线性调整率</td> <td></td> <td>-</td> <td>±2</td> <td>-</td> </tr> <tr> <td>负载调整率</td> <td>10%-100%负载</td> <td>-</td> <td>±2</td> <td>-</td> </tr> <tr> <td>输出纹波噪声 (峰-峰值)</td> <td>输出部分参考典型应用电路, 20MHz 带宽, 平行线靠测法</td> <td>-</td> <td>100</td> <td>-</td> <td>mV</td> </tr> <tr> <td>输出短路保护</td> <td></td> <td colspan="4">可长期短路, 自恢复</td> </tr> <tr> <td>输出过流保护</td> <td></td> <td colspan="4">≥110%Io, 自恢复</td> </tr> <tr> <td>最小负载</td> <td></td> <td>0</td> <td>-</td> <td>-</td> <td>%</td> </tr> <tr> <td>掉电保持时间</td> <td>230VAC, 满载</td> <td>-</td> <td>10</td> <td>-</td> <td>ms</td> </tr> </tbody> </table> | | | | 型号 | 产品尺寸 | 输出电压和电流 | 典型效率 | NH05-T2S05 | 26.0mm×13.5mm×24.0mm (立式) | 5V/1000mA | 68% | NH05-T2S12 | 12V/416mA | 71% | NH05-T2S24 | 24V/208mA | 75% | NL05-T2S05 | 26.0mm×24.0mm×13.5mm (卧式) | 5V/1000mA | 68% | NL05-T2S12 | 12V/416mA | 71% | NL05-T2S24 | 24V/208mA | 75% | 项目 | 工作条件 | 最小值 | 典型值 | 最大值 | 单位 | 输入电压范围 | 交流输入 | 85 | - | 264 | VAC | 直流输入 | 100 | - | 370 | VDC | 输入电压频率 | | 47 | - | 63 | Hz | 输入电流 | 115VAC | - | - | 150 | mA | 230VAC | - | - | 75 | 项目 | 工作条件 | 最小值 | 典型值 | 最大值 | 单位 | 输出电压精度 | | - | ±3 | - | % | 线性调整率 | | - | ±2 | - | 负载调整率 | 10%-100%负载 | - | ±2 | - | 输出纹波噪声 (峰-峰值) | 输出部分参考典型应用电路, 20MHz 带宽, 平行线靠测法 | - | 100 | - | mV | 输出短路保护 | | 可长期短路, 自恢复 | | | | 输出过流保护 | | ≥110%Io, 自恢复 | | | | 最小负载 | | 0 | - | - | % | 掉电保持时间 | 230VAC, 满载 | - | 10 | - | ms |
| 型号 | 产品尺寸 | 输出电压和电流 | 典型效率 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NH05-T2S05 | 26.0mm×13.5mm×24.0mm (立式) | 5V/1000mA | 68% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NH05-T2S12 | | 12V/416mA | 71% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NH05-T2S24 | | 24V/208mA | 75% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NL05-T2S05 | 26.0mm×24.0mm×13.5mm (卧式) | 5V/1000mA | 68% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NL05-T2S12 | | 12V/416mA | 71% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| NL05-T2S24 | | 24V/208mA | 75% | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 项目 | 工作条件 | 最小值 | 典型值 | 最大值 | 单位 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输入电压范围 | 交流输入 | 85 | - | 264 | VAC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 直流输入 | 100 | - | 370 | VDC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输入电压频率 | | 47 | - | 63 | Hz | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输入电流 | 115VAC | - | - | 150 | mA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | 230VAC | - | - | 75 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 项目 | 工作条件 | 最小值 | 典型值 | 最大值 | 单位 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输出电压精度 | | - | ±3 | - | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 线性调整率 | | - | ±2 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 负载调整率 | 10%-100%负载 | - | ±2 | - | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输出纹波噪声 (峰-峰值) | 输出部分参考典型应用电路, 20MHz 带宽, 平行线靠测法 | - | 100 | - | mV | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输出短路保护 | | 可长期短路, 自恢复 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 输出过流保护 | | ≥110%Io, 自恢复 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 最小负载 | | 0 | - | - | % | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 掉电保持时间 | 230VAC, 满载 | - | 10 | - | ms | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

● 一般特性

| 项目 | 工作条件 | 最小值 | 典型值 | 最大值 | 单位 |
|------|----------------------------|--------|-----|-----|-------|
| 工作温度 | | -25 | - | +55 | °C |
| 存储温度 | | -40 | - | +85 | °C |
| 存储湿度 | | - | - | 85 | %RH |
| 开关频率 | | - | 65 | - | kHz |
| 隔离耐压 | | 1500 | - | - | VAC |
| 绝缘阻抗 | 输入-输出, 500VDC, 25°C, 70%RH | 100 | - | - | MOhms |
| MTBF | MIL-HDBK-217F@25°C | 215000 | - | - | 小时 |

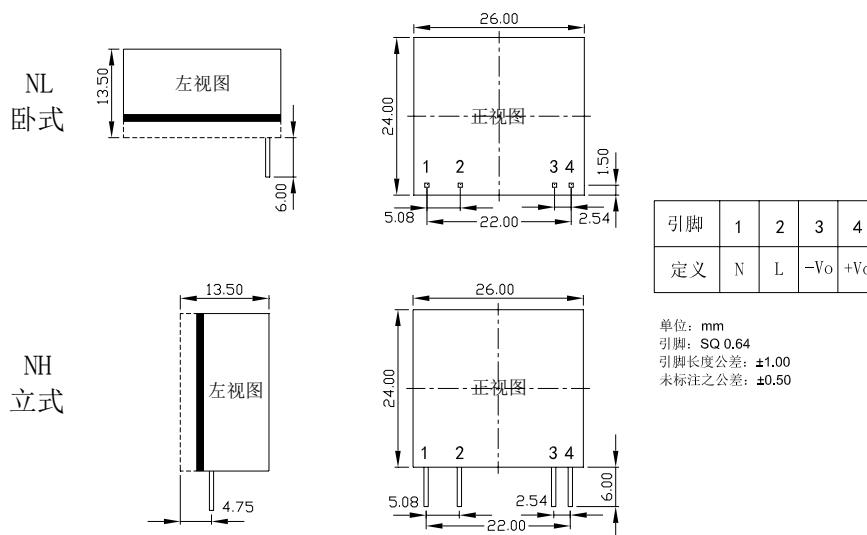
● 降额曲线



注 1: 当输入电压低于 150VAC/180VDC 时, 需在温度降额基础上进行电压降额;

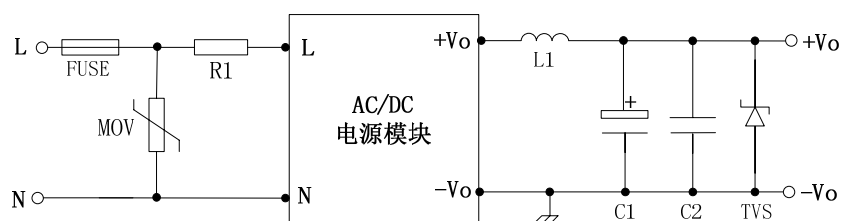
注 2: 若产品使用环境的散热条件不佳 (如密闭环境), 请根据实际情况降额使用。

● 外形尺寸和管脚定义

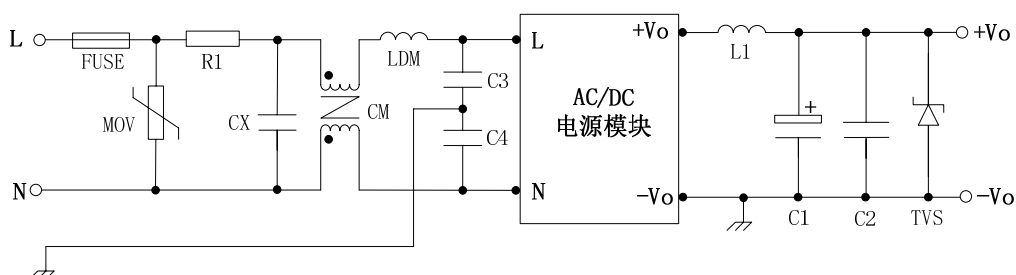


● 设计参考

① 典型应用电路



② EMC 推荐电路



③ 推荐参数

| | 位置 | 参数推荐 |
|------|--------|-------------------------|
| 输入部分 | FUSE | 保险丝, 1A/250VAC, 慢熔断, 必接 |
| | MOV | 压敏电阻, 14D511K |
| | R1 | 限流电阻, 10Ω, 2W |
| | LDM | 差模电感, 330μH |
| | CX | X 电容 (安规电容), 0.1μF |
| | C3, C4 | Y 电容 (安规电容), 1nF |
| | CM | 共模电感, 10mH~30mH |

| | 输出电压 | 位置及参数推荐 | | | |
|------|------|---------|-----------|---------|----------|
| | | L1 | C1 | C2 | TVS |
| 输出部分 | 5V | 10μH | 220μF/10V | 1μF/50V | SMBJ7.0A |
| | 12V | | 100μF/25V | | SMBJ20A |
| | 24V | | 68μF/50V | | SMBJ30A |

备注: C1 建议采用高频低阻电解电容或固态电容; C2 建议采用陶瓷电容, 滤除高频噪声; TVS 管在模块异常时保护后级电路, 建议使用。

● 说明

- 说明 1: 除特殊说明外, 所有参数的测试条件为: 230VAC 输入、额定负载、25℃ 环境温度;
 说明 2: 所有参数的测试方法均依据本公司企业标准;
 说明 3: 本产品不支持热插拔, 不支持输出直接并联使用;
 说明 4: 本文档最终解释权归广州能达电源技术有限公司所有, 如有更新, 恕不另行通知。