High Power PoE Transformers

For ST PM8804 & ST PM8805
Reference Design

• Optimized for STMicroelectronics high-power PoE PD controller evaluation board STEVAL-POE00xV1
• Designed to meet upcoming IEEE 802.3bt standard
• Operates at 250 kHz with 36 – 72 Volts input.

Core material  Ferrite
Terminations  RoHS tin-silver-copper over tin over nickel over phosph bronze. Other terminations available at additional cost.
Weight  11.5 – 13.5 g
Ambient temperature  -40°C to +125°C
Max part temperature  +165°C (ambient + self-heating)
Storage temperature  -40°C to +165°C
Tape and reel packaging: -40°C to +80°C
Resistance to soldering heat  Max three 40 second refloows at +260°C, parts cooled to room temperature between cycles
Moisture Sensitivity Level (MSL)  1 (unlimited floor life at <30°C / 85% relative humidity)
Packaging  175 per 13” reel Plastic tape: 44 mm wide, 0.5 mm thick, 32 mm pocket spacing, 12 mm pocket depth
PCB washing  Tested to MIL-STD-202 Method 215 plus an additional aqueous wash. See Doc787_PCB_Washing.pdf.

Active Clamp Forward Transformers

<table>
<thead>
<tr>
<th>Part* number</th>
<th>Inductance at 0 A (µH)</th>
<th>DCR max (Ohms)</th>
<th>Leakage inductance* (µH)</th>
<th>Turns ratio</th>
<th>Isolation (Vrms)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pri</td>
<td>sec</td>
<td>aux</td>
<td>pri: sec: aux</td>
<td></td>
</tr>
<tr>
<td>RA7129-BLD</td>
<td>134 ±25%</td>
<td>0.0265</td>
<td>0.0035</td>
<td>0.174</td>
<td>0.180</td>
</tr>
<tr>
<td>MA5509-CLD</td>
<td>70 ±10%</td>
<td>0.0590</td>
<td>0.0028</td>
<td>0.300</td>
<td>0.838</td>
</tr>
</tbody>
</table>

Flyback Transformers

<table>
<thead>
<tr>
<th>Part* number</th>
<th>Inductance at 0 A (µH)</th>
<th>Inductance at 3.5 A (µH)</th>
<th>DCR max (Ohms)</th>
<th>Leakage inductance* (µH)</th>
<th>Turns ratio</th>
<th>Isolation (Vrms)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pri</td>
<td>sec</td>
<td>bias</td>
<td>pri: sec: bias</td>
<td></td>
<td></td>
</tr>
<tr>
<td>NA6083-BLD</td>
<td>70 ±10%</td>
<td>60</td>
<td>0.111</td>
<td>0.006</td>
<td>0.66</td>
<td>1.820</td>
</tr>
</tbody>
</table>

1. Packaging: D = 13” machine-ready reel. EIA-481 embossed plastic tape (175 parts per full reel). Quantities less than full reel available: in tape (not machine ready) or with leader and trailer ($25 charge).
2. Inductance for is for the primary, measured at 250 kHz, 0.2 Vrms, 0 Adc.
3. Minimum inductance for the primary, measured at 250 kHz, 0.2 Vrms, 3.5 Adc.
4. Leakage inductance for the primary winding with the secondary windings shorted.
5. Isolation (hipot) is measured for one minute: 1500 Vrms from primary and aux/bias to secondary; 500 Vrms from primary to aux/bias.
6. Electrical specifications at 25°C.

Refer to Doc 362 “Soldering Surface Mount Components” before soldering.

Connect pin 1 to 2 and pin 3 to 4 on the PC board.
Connect pins 10, 11 and 12 together and pins 7, 8 and 9 together on the PC board

Schematic
High Power PoE Transformers

Dimensions

![Diagram of High Power PoE Transformers]

- Dimensions are in inches (mm).