

D.P.P.

Darlington  
Power Pack

thick film hybrid

OUTPUT STAGE OF AF POWER AMP.

## Features

General output stage of power amplifier has a difficult and complex problem about heat sink designing and its setting. Sanyo's D.P.P. intends to decrease electronic parts and rationalize a manufacturing process by designing IC of only output stage of power amplifier.

- IMST system.
- Output stage for AF high power amplifier.
- Dual power supply.

- Darlington type pure / quasi-complementary circuit.
- These same pin assignment and pin interval lead to standardize a printed board.
- Metal substrate use IMST<sup>®</sup> makes good thermal stability.
- Able to design freely previous section of power amplifier. This leads tone control designing.

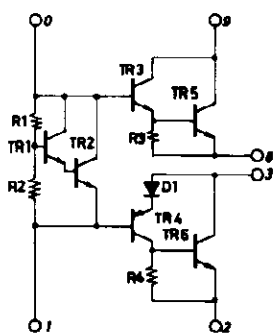
| Type Number                                                  |                             | Maximum Ratings at Ta=25°C                                   |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            | Operation Characteristics at Ta=25°C |                    |  |  |
|--------------------------------------------------------------|-----------------------------|--------------------------------------------------------------|-------------------------------|-------------------------|--------------------------|-----------------------|--------------------------|----------------------------------|------------------------------------------------|--------------------------------|--------------------------------------------|--------------------------------------|--------------------|--|--|
|                                                              |                             | Case Outline                                                 | Maximum Supply Voltage VCCmax | Junction Temperature Tj | Storage Temperature Tstg | Thermal Resistance, θ | Collector Current, ICmax | Allowable Load Shorting Time, ts | Supply Voltage at Rated Power at Output PL=50% | Output Power, Po f=20 to 20kHz | Total Harmonic Distortion THDf=20 to 20kHz | Quiescent Current, Iqcc              | Equivalent Circuit |  |  |
|                                                              |                             | V                                                            | °C                            | °C                      | °C/W                     | A                     | sec                      | V                                | W                                              | %                              | mA                                         |                                      |                    |  |  |
| Pure-Complementary Circuit                                   | Quasi-Complementary Circuit | 1-Channel Darlington Power Pack (Without emitter resistance) |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            |                                      |                    |  |  |
| STK 0030                                                     | STK 0025                    | 4002                                                         | ±35                           | 150                     | -30 to +105              | 2.6                   | 3                        | 2                                | ±24.4                                          | 23 min.                        | 0.05 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 0029                    | 4002                                                         | ±37                           | 150                     | -30 to +105              | 2.4                   | 5                        | 2                                | ±25.0                                          | 25 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4002                                                         | ±40                           | 150                     | -30 to +105              | 2.4                   | 4                        | 2                                | ±28.5                                          | 30 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0040                                                     | STK 0039                    | 4004                                                         | ±45                           | 150                     | -30 to +105              | 2.0                   | 5                        | 2                                | ±31                                            | 35 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4002                                                         | ±48                           | 150                     | -30 to +105              | 2.0                   | 5                        | 2                                | ±33                                            | 40 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0050                                                     | STK 0049                    | 4004                                                         | ±50                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±35                                            | 45 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4004                                                         | ±53                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±36                                            | 50 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0060                                                     | STK 0059                    | 4004                                                         | ±52.5                         | 150                     | -30 to +105              | 1.6                   | 7                        | —                                | ±38                                            | 55 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4006                                                         | ±55                           | 150                     | -30 to +105              | 1.4                   | 7                        | —                                | ±40                                            | 60 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0070                                                     |                             | 4006                                                         | ±55                           | 150                     | -30 to +105              | 1.4                   | 7                        | —                                | ±43                                            | 70 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0080                                                     |                             | 4006                                                         | ±65                           | 150                     | -30 to +105              | 1.3                   | 10                       | —                                | ±46                                            | 80 min.                        | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 0105                    | 4007                                                         | ±75                           | 150                     | -30 to +105              | 1.0                   | 10                       | —                                | ±50                                            | 100 min.                       | 0.1 max.                                   | 40 typ, 80 max.                      |                    |  |  |
| STK 0040II                                                   |                             | 4002                                                         | ±48                           | 150                     | -30 to +105              | 1.8                   | 5                        | 1                                | ±36                                            | 40 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 0050II                                                   |                             | 4004                                                         | ±53                           | 150                     | -30 to +105              | 1.6                   | 6                        | 1                                | ±39                                            | 50 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 0060II                                                   |                             | 4006                                                         | ±55                           | 150                     | -30 to +105              | 1.3                   | 8                        | 1                                | ±41                                            | 60 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 0070II                                                   |                             | 4006                                                         | ±60                           | 150                     | -30 to +105              | 1.3                   | 10                       | 1                                | ±45                                            | 70 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 0080II                                                   |                             | 4006                                                         | ±65                           | 150                     | -30 to +105              | 1.2                   | 12                       | 1                                | ±47                                            | 80 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| 1-Channel Darlington Power Pack (With emitter resistance)    |                             |                                                              |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            |                                      |                    |  |  |
| STK 1030                                                     |                             | 4004                                                         | ±40                           | 150                     | -30 to +105              | 2.4                   | 5                        | 2                                | ±28.5                                          | 30 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 1035                    | 4004                                                         | ±40                           | 150                     | -30 to +105              | 2.4                   | 5                        | 2                                | ±28.5                                          | 30 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
| STK 1040                                                     | STK 1039                    | 4004                                                         | ±46.1                         | 150                     | -30 to +105              | 1.85                  | 6                        | 2                                | ±30                                            | 35 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4004                                                         | ±48                           | 150                     | -30 to +105              | 1.8                   | 7                        | 2                                | ±33                                            | 40 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
| STK 1050                                                     | STK 1045                    | 4004                                                         | ±48                           | 150                     | -30 to +105              | 1.8                   | 7                        | 2                                | ±33                                            | 40 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 1049                    | 4004                                                         | ±50                           | 150                     | -30 to +105              | 1.8                   | 7                        | 2                                | ±34                                            | 45 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
| STK 1060                                                     | STK 1059                    | 4004                                                         | ±53                           | 150                     | -30 to +105              | 1.8                   | 7                        | 2                                | ±36                                            | 50 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4004                                                         | ±53                           | 150                     | -30 to +105              | 1.6                   | 7                        | —                                | ±38                                            | 55 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4004                                                         | ±56                           | 150                     | -30 to +105              | 1.6                   | 10                       | —                                | ±40                                            | 60 min.                        | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
| STK 1050II                                                   |                             | 4020                                                         | ±55                           | 150                     | -30 to +105              | 1.6                   | 6                        | 1                                | ±38                                            | 50 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 1060II                                                   |                             | 4020                                                         | ±56                           | 150                     | -30 to +105              | 1.3                   | 8                        | 1                                | ±40                                            | 60 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 1070II                                                   |                             | 4020                                                         | ±63                           | 150                     | -30 to +105              | 1.3                   | 10                       | 1                                | ±43                                            | 70 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| STK 1080II                                                   |                             | 4020                                                         | ±65                           | 150                     | -30 to +105              | 1.2                   | 10                       | 1                                | ±45                                            | 80 min.                        | 0.01 max.                                  | 40 typ, 70 max.                      |                    |  |  |
| 2-Channel Darlington Power Pack (Without emitter resistance) |                             |                                                              |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            |                                      |                    |  |  |
|                                                              | STK 2025                    | 4015                                                         | ±40                           | 150                     | -30 to +105              | 2.6                   | 3                        | 2                                | ±24                                            | 20x2 min.                      | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 2029                    | 4015                                                         | ±43                           | 150                     | -30 to +105              | 2.2                   | 4                        | 2                                | ±25.5                                          | 25x2 min.                      | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
| 2-Channel Darlington Power Pack (With emitter resistance)    |                             |                                                              |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            |                                      |                    |  |  |
| STK 2230                                                     | STK 2135                    | 4015                                                         | ±48                           | 150                     | -30 to +105              | 2.1                   | 4                        | 2                                | ±28.5                                          | 30x2 min.                      | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 2139                    | 4015                                                         | ±50                           | 150                     | -30 to +105              | 1.85                  | 5                        | 2                                | ±30                                            | 35x2 min.                      | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              | STK 2145                    | 4015                                                         | ±54                           | 150                     | -30 to +105              | 1.8                   | 7                        | 2                                | ±32                                            | 40x2 min.                      | 0.02 max.                                  | 40 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4015                                                         | ±48                           | 150                     | -30 to +105              | 2.1                   | 4                        | 2                                | ±30                                            | 30x2 min.                      | 0.01 max.                                  | 35 typ, 80 max.                      |                    |  |  |
|                                                              |                             | 4015                                                         | ±54                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±33.5                                          | 40x2 min.                      | 0.01 max.                                  | 35 typ, 80 max.                      |                    |  |  |
| STK 2240                                                     |                             | 4015                                                         | ±54                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±33.5                                          | 40x2 min.                      | 0.01 max.                                  | 35 typ, 80 max.                      |                    |  |  |
| STK 2250                                                     |                             | 4015                                                         | ±59                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±37                                            | 50x2 min.                      | 0.01 max.                                  | 35 typ, 80 max.                      |                    |  |  |
| 1-Channel No Switching Darlington Power Pack                 |                             |                                                              |                               |                         |                          |                       |                          |                                  |                                                |                                |                                            |                                      |                    |  |  |
| STK 8250                                                     |                             | 4006                                                         | ±56                           | 150                     | -30 to +105              | 1.8                   | 5                        | 2                                | ±38                                            | 50 min.                        | 0.01 max.                                  | 80 max.                              |                    |  |  |
| STK 8260                                                     |                             | 4006                                                         | ±59                           | 150                     | -30 to +105              | 1.4                   | 7                        | 2                                | ±42                                            | 60 min.                        | 0.01 max.                                  | 80 max.                              |                    |  |  |
| STK 8270                                                     |                             | 4006                                                         | ±60                           | 150                     | -30 to +105              | 1.4                   | 7                        | 2                                | ±44                                            | 70 min.                        | 0.01 max.                                  | 80 max.                              |                    |  |  |
| STK 8280                                                     |                             | 4006                                                         | ±65                           | 150                     | -30 to +105              | 1.4                   | 7                        | 2                                | ±47                                            | 80 min.                        | 0.01 max.                                  | 80 max.                              |                    |  |  |
| STK 8250II                                                   |                             | 4020                                                         | ±55                           | 150                     | -30 to +105              | 1.6                   | 6                        | 1                                | ±38                                            | 50 min.                        | 0.005 max.                                 | 70 max.                              |                    |  |  |
| STK 8260II                                                   |                             | 4020                                                         | ±56                           | 150                     | -30 to +105              | 1.3                   | 8                        | 1                                | ±40                                            | 60 min.                        | 0.005 max.                                 | 40 typ, 70 max.                      |                    |  |  |
| STK 8270II                                                   |                             | 4020                                                         | ±63                           | 150                     | -30 to +105              | 1.3                   | 10                       | 1                                | ±44                                            | 70 min.                        | 0.005 max.                                 | 40 typ, 70 max.                      |                    |  |  |
| STK 8280II                                                   |                             | 4020                                                         | ±65                           | 150                     | -30 to +105              | 1.2                   | 12                       | 1                                | ±45                                            | 80 min.                        | 0.01 max.                                  | 70 max.                              |                    |  |  |

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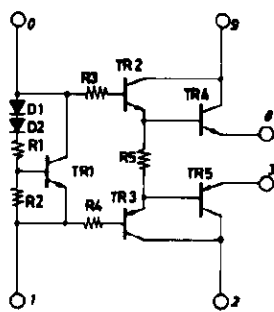
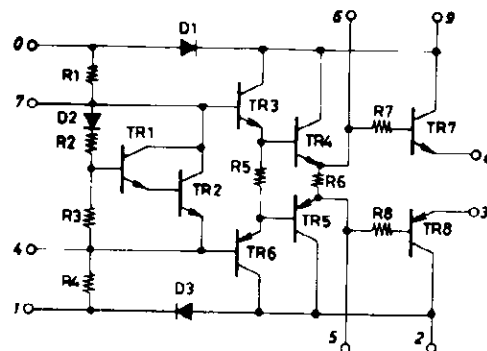
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Series  
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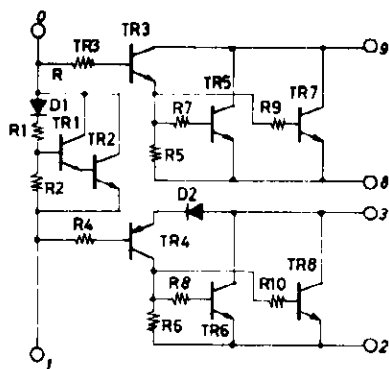
## EQUIVALENT CIRCUIT



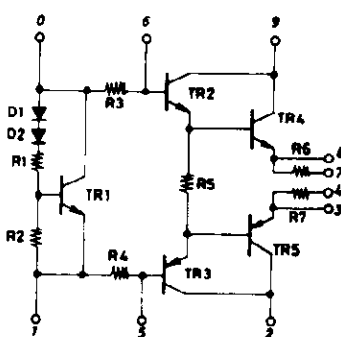
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STK 0030, 0040, 0050, 0060, 0070  
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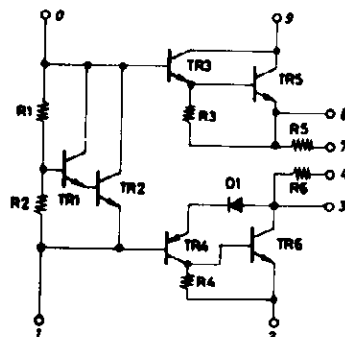
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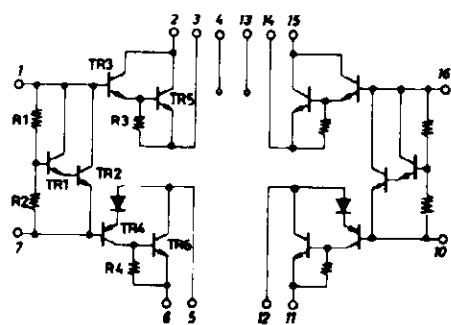
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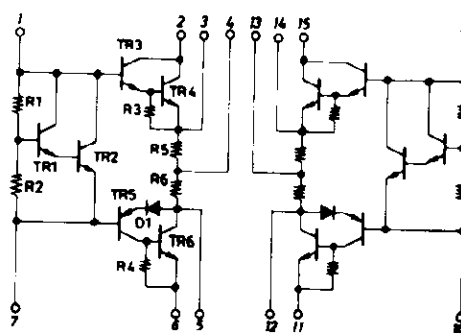
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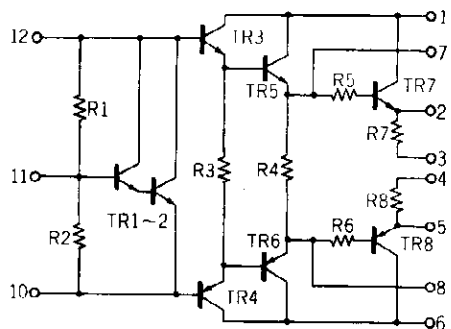
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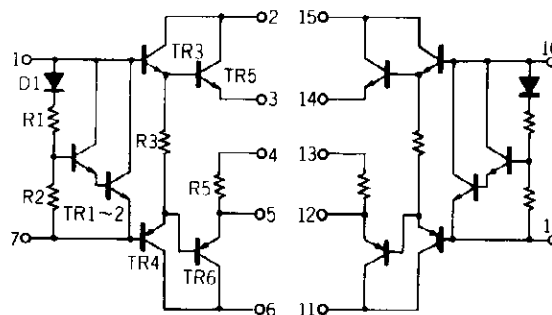
STK 2025, 2029



STK 2135, 2139, 2145



STK 1050II, 1060II, 1070II, 1080II



STK 2230, 2240, 2250