Features

- Compact packaging supports slimmer set designs
- Series designed from 20 up to 100 W (200 W) and pin-compatibility (120 to 200 W have 18 pins)
- Simpler heat sink design facilitates thermal design of slim stereo sets
- Current mirror circuit application reduces distortion to 0.08%
- Supports addition of electronic circuits for thermal shutdown and load-short protection circuit as well as pop noise muting which occurs when the power supply switch is turned on and off

Package Dimensions

unit : mm

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>4075</td>
<td></td>
</tr>
</tbody>
</table>

Specifications

Maximum Ratings at $T_a = 25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum supply voltage</td>
<td>$V_{CC \ max}$</td>
<td>±73 V</td>
</tr>
<tr>
<td>Thermal resistance</td>
<td>$\theta_{jc}$</td>
<td>1.1 °C/W</td>
</tr>
<tr>
<td>Junction temperature</td>
<td>$T_j$</td>
<td>150 °C</td>
</tr>
<tr>
<td>Operating substrate temperature</td>
<td>$T_e$</td>
<td>125 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>$T_{stg}$</td>
<td>-30 to +125 °C</td>
</tr>
<tr>
<td>Available time for load shorted</td>
<td>$t_{ms}$</td>
<td>1 s</td>
</tr>
</tbody>
</table>

Recommended Operating Conditions at $T_a = 25^\circ C$

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Symbol</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recommended supply voltage</td>
<td>$V_{CC}$</td>
<td>±51 V</td>
</tr>
<tr>
<td>Load resistance</td>
<td>$R_L$</td>
<td>8 Ω</td>
</tr>
</tbody>
</table>
Operating Characteristics

at Ta = 25°C, VCC = ±51V, RL = 8Ω, VG = 40dB, Rg = 600Ω, 100k LPF ON, RL (noninductive)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>min</th>
<th>typ</th>
<th>max</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiescent current</td>
<td>15</td>
<td>120</td>
<td>mA</td>
<td></td>
</tr>
<tr>
<td>Output power</td>
<td>100</td>
<td></td>
<td>W</td>
<td></td>
</tr>
<tr>
<td>Total harmonic distortion</td>
<td>0.08%</td>
<td></td>
<td>%</td>
<td></td>
</tr>
<tr>
<td>Frequency response</td>
<td>-3 dB</td>
<td>20</td>
<td>50k Hz</td>
<td></td>
</tr>
<tr>
<td>Input resistance</td>
<td>55</td>
<td></td>
<td>kΩ</td>
<td></td>
</tr>
<tr>
<td>Output noise voltage</td>
<td>1.2</td>
<td>mVms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neutral voltage</td>
<td>-70</td>
<td>0</td>
<td>+70 mV</td>
<td></td>
</tr>
</tbody>
</table>

- Use rated power supply for test unless otherwise specified.

*1 When measuring available time for load shorted and output noise voltage, use transformer power supply indicated below.

*2 Output noise voltage represents the peak value on the rms scale (VTVM). The noise voltage waveform does not include the pulse noise.

Specified Transformer Power Supply
(MG-200 Equivalent)
Unit (resistance:Ω, capacitance:F)

Equivalent Circuit
Sample Application Circuit: 100W min Single-Channel AF Power Amplifier

Sample Printed Circuit Pattern for Application Circuit (Copper-foiled side)
Description of External Parts

R₁, C₁ : Input filter circuit
  - Reduces high-frequency noise.

C₂ : Input coupling capacitor
  - DC current suppression. A reduction in reactance is effective because of increases in capacitor
    reactance at low frequencies and 1/f noise dependence on signal source resistance which result in
    output noise worsening.

R₂ : Input bias resistor
  - Biases the input pin to zero.
  - Affects \( V_N \) stability (refer to NF circuit).
  - Due to differential input, input resistance is more or less determined by this resistance value.

R₄, R₅ : NFB circuit (AC NF circuit). Use of resistor with 1% error is suggested.
C₃ (R₂) : AC NF capacitor
R₄, R₅ : Used for VG setting.

- VG settings are obtained using R₄ and R₅ according to the following equation:
  \[
  \log_{10} \left( \frac{R₅}{R₄} \right) \quad 40 \text{ dB is recommended.}
  \]
- Low-frequency cutoff frequency settings are obtained using R₄ and C₃ according to the following
  equation:
  \[
  f_L = \frac{1}{2\pi R₄ C₃} \quad [\text{Hz}]
  \]

When changing the VG setting, you should change R₄ which requires a recheck of the low cutoff
frequency setting. When the VG setting is changed using R₅, the setting should ensure R₂ equals R₅ so
that \( V_N \) balance stability is maintained. If the resistor value is increased more than the existing value,
\( V_N \) balance may be disturbed and result in deterioration of \( V_N \) temperature characteristics.

R₃ : Differential constant-current bias resistor
R₆, R₇ : For oscillation suppression and phase compensation applications
(For use with differential stage applications)
R₇, C₄ : For oscillation suppression and phase compensation applications
(A Mylar capacitor is recommended for C₄ for use with output stage applications)
C₆, C₉ : For oscillation suppression and phase compensation applications
Power stage (Must be connected near the pin)  C₆: Positive (+) power  C₉: Negative (−) power
C₈ : For oscillation suppression and phase compensation applications
(Oscillation suppression before power step clip)
C₅ : For oscillation suppression and distortion improvement applications
R₈, C₁₀ : Ripple filter circuit on positive (+) side.
R₉, C₁₃ : Ripple filter circuit on negative (−) side.
C₁₁, C₁₂ : For oscillation suppression applications
  - Used for reducing power supply impedance to stable IC operation and should be connected near the IC
    pin. We recommend that you use an electrolytic capacitor.
R₁₀ : Output resistor
  Increases load short handling capability during times of high output.
R₁₄, L₁ : For oscillation suppression applications
  Increases oscillation stability against capacitance loads.
Sample Application Circuit (Protection circuit and muting circuit)

Unit (resistance: Ω, capacitance: F)