Please note: As part of the Fairchild Semiconductor integration, some of the Fairchild orderable part numbers will need to change in order to meet ON Semiconductor’s system requirements. Since the ON Semiconductor product management systems do not have the ability to manage part nomenclature that utilizes an underscore (_), the underscore (_) in the Fairchild part numbers will be changed to a dash (-). This document may contain device numbers with an underscore (_). Please check the ON Semiconductor website to verify the updated device numbers. The most current and up-to-date ordering information can be found at www.onsemi.com. Please email any questions regarding the system integration to Fairchild_questions@onsemi.com.
MMPQ6700
Quad NPN and PNP General-Purpose Amplifier

Description
These complementary devices can be used in switches with collector currents of 10 μA to 100 mA. These devices are best used when space is the primary consideration. Sourced from process 23 and 66. See 2N3904 (NPN) and 2N3906 (PNP) for characteristics.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Top Mark</th>
<th>Package</th>
<th>Packing Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>MMPQ6700</td>
<td>MMPQ6700</td>
<td>SOIC 16L</td>
<td>Tape and Reel</td>
</tr>
</tbody>
</table>

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Value</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$V_{CEO}$</td>
<td>Collector-Emitter Voltage</td>
<td>40</td>
<td>V</td>
</tr>
<tr>
<td>$V_{CBO}$</td>
<td>Collector-Base Voltage</td>
<td>40</td>
<td>V</td>
</tr>
<tr>
<td>$V_{EBO}$</td>
<td>Emitter-Base Voltage</td>
<td>5.0</td>
<td>V</td>
</tr>
<tr>
<td>$I_C$</td>
<td>Collector Current - Continuous</td>
<td>200</td>
<td>mA</td>
</tr>
<tr>
<td>$T_J, T_{STG}$</td>
<td>Operating and Storage Junction Temperature Range</td>
<td>-55 to 150</td>
<td>°C</td>
</tr>
</tbody>
</table>

Notes:
1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or...
Thermal Characteristics

Values are at $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$P_D$</td>
<td>Total Device Dissipation</td>
<td>1000</td>
<td>mW</td>
</tr>
<tr>
<td></td>
<td>Derate Above 25°C</td>
<td>8.0</td>
<td>mW/°C</td>
</tr>
<tr>
<td>$R_{\thetaJA}$</td>
<td>Thermal Resistance, Junction-to-Ambient</td>
<td>125</td>
<td>°C/W</td>
</tr>
<tr>
<td></td>
<td>Effective 4 Dies</td>
<td>240</td>
<td>°C/W</td>
</tr>
<tr>
<td></td>
<td>Each Die</td>
<td>240</td>
<td>°C/W</td>
</tr>
</tbody>
</table>

Note:
3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics

Values are at $T_A = 25^\circ C$ unless otherwise noted.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Parameter</th>
<th>Conditions</th>
<th>Min.</th>
<th>Max.</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$B_{VCEO}$</td>
<td>Collector-Emitter Breakdown Voltage$^{(4)}$</td>
<td>$I_C = 10$ mA, $I_B = 0$</td>
<td>40</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$B_{VCEO}$</td>
<td>Collector-Base Breakdown Voltage</td>
<td>$I_C = 10$ μA, $I_E = 0$</td>
<td>40</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$B_{VBO}$</td>
<td>Emitter-Base Breakdown Voltage</td>
<td>$I_E = 10$ μA, $I_C = 0$</td>
<td>5.0</td>
<td></td>
<td>V</td>
</tr>
<tr>
<td>$I_{CBO}$</td>
<td>Collector Cut-Off Current</td>
<td>$V_{CB} = 30$ V, $I_E = 0$</td>
<td>50</td>
<td>nA</td>
<td></td>
</tr>
<tr>
<td>$I_{EBO}$</td>
<td>Emitter Cut-Off Current</td>
<td>$V_{EB} = 4.0$ V, $I_C = 0$</td>
<td>50</td>
<td>nA</td>
<td></td>
</tr>
<tr>
<td>$h_{FE}$</td>
<td>DC Current Gain$^{(4)}$</td>
<td>$V_{CE} = 1.0$ V, $I_C = 0.1$ mA</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CE} = 1.0$ V, $I_C = 1.0$ mA</td>
<td>50</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>$V_{CE} = 1.0$ V, $I_C = 10$ mA</td>
<td>70</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$V_{CE(sat)}$</td>
<td>Collector-Emitter Saturation Voltage$^{(4)}$</td>
<td>$I_C = 10$ mA, $I_B = 1.0$ mA</td>
<td>0.25</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$V_{BE(sat)}$</td>
<td>Base-Emitter Saturation Voltage$^{(4)}$</td>
<td>$I_C = 10$ mA, $I_B = 1.0$ mA</td>
<td>0.9</td>
<td>V</td>
<td></td>
</tr>
<tr>
<td>$C_{ob}$</td>
<td>Output Capacitance</td>
<td>$V_{CB} = 5.0$ V, $f = 100$ kHz</td>
<td>4.5</td>
<td>pF</td>
<td></td>
</tr>
<tr>
<td>$C_{ib}$</td>
<td>Input Capacitance</td>
<td>$V_{BE} = 0.5$ V, $f = 100$ kHz</td>
<td>10</td>
<td>pF</td>
<td>PNP</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>8.0</td>
<td>pF</td>
<td>NPN</td>
</tr>
<tr>
<td>$f_T$</td>
<td>Current Gain Bandwidth Product</td>
<td>$I_C = 10$ mA, $V_{CE} = 20$ V, $f = 100$ MHz</td>
<td>200</td>
<td>MHz</td>
<td></td>
</tr>
</tbody>
</table>

Note:
4. Pulse test: pulse width $\leq$ 300 μs, duty cycle $\leq$ 2.0%.
Physical Dimensions

Figure 3. 16-LEAD, SOIC, JEDEC MS-012, 0.150 inch, NARROW BODY

NOTES: UNLESS OTHERWISE SPECIFIED
A) THIS PACKAGE CONFORMS TO JEDEC MS-012, VARIATION AC, ISSUE C.
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR PROTRUSIONS
D) CONFORMS TO ASME Y14.5M-1994
E) LANDPATTERN STANDARD: SOIC127P600X175-16AM
F) DRAWING FILE NAME: M16AREV12.
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<table>
<thead>
<tr>
<th>Datasheet Identification</th>
<th>Product Status</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advance Information</td>
<td>Formative / In Design</td>
<td>Datasheet contains the design specifications for product development. Specifications may change in any manner without notice.</td>
</tr>
<tr>
<td>Preliminary</td>
<td>First Production</td>
<td>Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.</td>
</tr>
<tr>
<td>No Identification Needed</td>
<td>Full Production</td>
<td>Datasheet contains final specifications. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve the design.</td>
</tr>
<tr>
<td>Obsolete</td>
<td>Not In Production</td>
<td>Datasheet contains specifications on a product that is discontinued by Fairchild Semiconductor. The datasheet is for reference information only.</td>
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</tbody>
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