

Discrete POWER & Signal **Technologies**

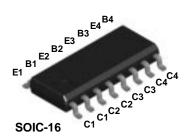
FFB2907A

FMB2907A

MMPQ2907A







PNP Multi-Chip General Purpose Amplifier

This device is designed for use as a general purpose amplifier and switch requiring collector currents to 500 mA. Sourced from Process 63.

Absolute Maximum Ratings*

T_A = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------------------------------|--|-------------|-------|
| V _{CEO} | Collector-Emitter Voltage | 60 | V |
| V _{CBO} | Collector-Base Voltage | 60 | V |
| V _{EBO} | Emitter-Base Voltage | 5.0 | V |
| Ic | Collector Current - Continuous | 600 | mA |
| T _J , T _{stg} | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

^{*}These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

Thermal Characteristics

| Symbol | Characteristic | Max | | | Units |
|-----------------|--|------------|------------|--------------|--------------|
| | | FFB2907A | FMB2907A | MMPQ2907A | |
| P_D | Total Device Dissipation Derate above 25°C | 300 2.4 | 700 5.6 | 1,000 8.0 | mW mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient Effective 4 Die Each Die | 415 | 180 | 125 240 | °C/W °C/W |

¹⁾ These ratings are based on a maximum junction temperature of 150 degrees C.

2) These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

PNP Multi-Chip General Purpose Amplifier (continued)

| Electrica | l Chara | cter | istics |
|-----------|---------|------|--------|
|-----------|---------|------|--------|

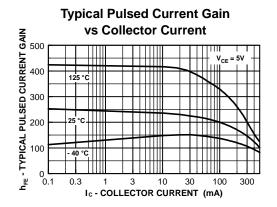
| Symbol | Parameter | Test Conditions | Min | Тур | Max | Units |
|--|--|--|------------|-----------------|------------|----------|
| | | | | | | |
| OFF CHA | RACTERISTICS | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 10 \text{ mA}, I_B = 0$ | 60 | | | V |
| V _{(BR)CBO} | Collector-Base Breakdown Voltage | $I_C = 10 \mu\text{A}, \ I_E = 0$ | 60 | | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 10 \mu A, I_C = 0$ | 5.0 | | | V |
| I _B | Base Cutoff Current | $V_{CB} = 30 \text{ V}, V_{EB} = 0.5 \text{ V}$ | | | 50 | nA |
| I _{CEX} | Collector Cutoff Current | $V_{CE} = 30 \text{ V}, V_{BE} = 0.5 \text{ V}$ | | | 50 | nA |
| I _{CBO} | Collector Cutoff Current | $V_{CB} = 50 \text{ V}, I_{E} = 0$ $V_{CB} = 50 \text{ V}, I_{E} = 0, T_{A} = 125^{\circ}\text{C}$ | | | 0.02 20 | μA μA |
| | | | | | | |
| ON CHAR | ACTERISTICS | | | | | |
| h _{FE} | DC Current Gain | $I_C = 0.1 \text{ mA}, V_{CE} = 10 \text{ V}$ | 75 | | | |
| | | $I_C = 1.0 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ | 100 100 | | | |
| | | $I_{C} = 150 \text{ mA}, V_{CE} = 10 \text{ V}^*$ | 100 | | 300 | |
| | | $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}^*$ | 50 | | | |
| V _{CE(sat)} | Collector-Emitter Saturation Voltage* | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ | | | 0.4 | V |
| V _{BE(sat)} | Base-Emitter Saturation Voltage | I _C = 500 mA, I _B = 50 mA I _C = 150 mA, I _B = 15 mA* | | | 1.6 1.3 | V |
| v BE(Sat) | Base Emilier Saturation Voltage | $I_C = 500 \text{ mA}, I_B = 50 \text{ mA}$ | | | 2.6 | V |
| | | | | | | |
| SMALL SI | GNAL CHARACTERISTICS | | | | | |
| f _T | Current Gain - Bandwidth Product | $I_C = 50 \text{ mA}, V_{CE} = 20 \text{ V},$ | | 250 | | MHz |
| | Outside One and San and | f = 100 MHz $V_{CB} = 10 \text{ V}, I_{E} = 0,$ | | 6.0 | | nΕ |
| | | I VCB = IU V. IF = U. | | 0.0 | | pF |
| C _{obo} | Output Capacitance | | | | | |
| C _{obo} | Input Capacitance | f = 100 kHz $V_{EB} = 2.0 \text{ V}, I_{C} = 0,$ | | 12 | | pF |
| | | f = 100 kHz | | 12 | | pF |
| | | f = 100 kHz $V_{EB} = 2.0 \text{ V}, I_{C} = 0,$ | | 12 | | pF |
| C _{ibo} | | $ f = 100 \text{ kHz} $ $V_{EB} = 2.0 \text{ V}, I_{C} = 0, $ $f = 100 \text{ kHz} $ | | 12 | | pF |
| C _{ibo} | Input Capacitance | f = 100 kHz $V_{EB} = 2.0 \text{ V}, I_{C} = 0,$ | | 12 | | pF |
| C _{ibo} | Input Capacitance NG CHARACTERISTICS | $ f = 100 \text{ kHz} $ $V_{EB} = 2.0 \text{ V}, I_{C} = 0, $ $f = 100 \text{ kHz} $ | | | | |
| C _{ibo} SWITCHII t _{on} | Input Capacitance NG CHARACTERISTICS Turn-on Time | $ f = 100 \text{ kHz} $ $V_{EB} = 2.0 \text{ V, } I_{C} = 0, $ $f = 100 \text{ kHz} $ $V_{CC} = 30 \text{ V, } I_{C} = 150 \text{ mA,} $ | | 30 | | ns |
| SWITCHII ton td | Input Capacitance NG CHARACTERISTICS Turn-on Time Delay Time | $ f = 100 \text{ kHz} $ $V_{EB} = 2.0 \text{ V, } I_{C} = 0, $ $f = 100 \text{ kHz} $ $V_{CC} = 30 \text{ V, } I_{C} = 150 \text{ mA,} $ | | 30 8.0 | | ns ns |
| Cibo SWITCHII ton td | Input Capacitance NG CHARACTERISTICS Turn-on Time Delay Time Rise Time | $ f = 100 \text{ kHz} $ $V_{EB} = 2.0 \text{ V, } I_{C} = 0, $ $f = 100 \text{ kHz} $ $V_{CC} = 30 \text{ V, } I_{C} = 150 \text{ mA,} $ $I_{B1} = 15 \text{ mA} $ | | 30 8.0 20 | | ns ns |

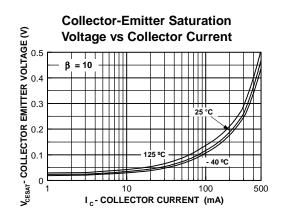
^{*}Pulse Test: Pulse Width \leq 300 μ s, Duty Cycle \leq 2.0%

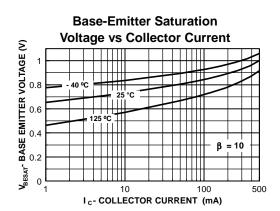
PNP Multi-Chip General Purpose Amplifier

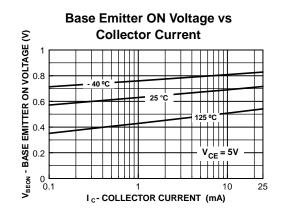
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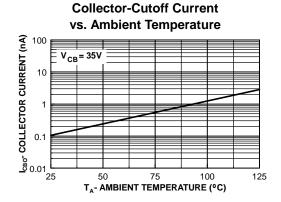
Typical Characteristics

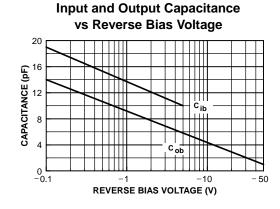










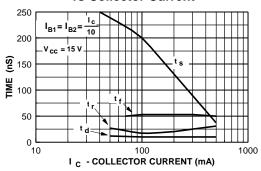


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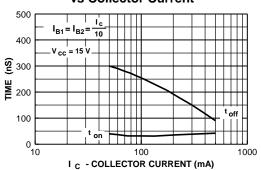
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Typical Characteristics (continued)

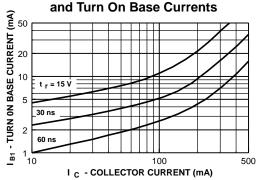




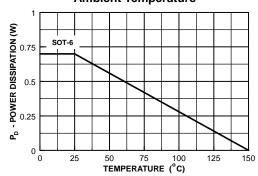
Turn On and Turn Off Times vs Collector Current



Rise Time vs Collector



Power Dissipation vs Ambient Temperature



PNP Multi-Chip General Purpose Amplifier

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Test Circuits

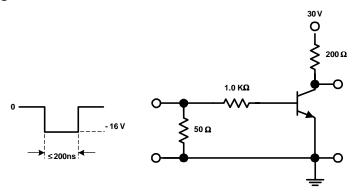


FIGURE 1: Saturated Turn-On Switching Time Test Circuit

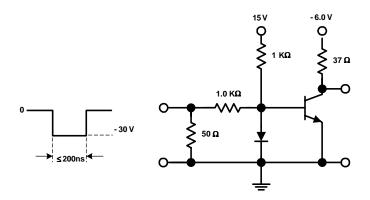


FIGURE 2: Saturated Turn-Off Switching Time Test Circuit