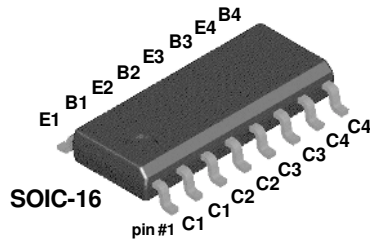


MMPQ2907



PNP 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*

TA = 25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|-----------------------------------|--|-------------|-------|
| V _{CEO} | Collector-Emitter Voltage | 40 | V |
| V _{CBO} | Collector-Base Voltage | 60 | V |
| V _{EBO} | Emitter-Base Voltage | 5.0 | V |
| I _C | 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.

NOTES:

- 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.

Thermal Characteristics

TA = 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|------------------|--|----------|-------|
| | | MMPQ2907 | |
| P _D | Total Device Dissipation Derate above 25°C | 1,000 | mW |
| | | 8.0 | mW/°C |
| R _{θJA} | Thermal Resistance, Junction to Ambient Effective 4 Die Each Die | 125 | °C/W |
| | | 240 | °C/W |
| | | 240 | °C/W |

* Device mounted on FR-4 PCB 36 mm X 18 mm X 1.5 mm; mounting pad for the collector lead min. 6 cm².

** Device mounted on FR-4 PCB 1.6" X 1.6" X 0.06."

PNP General Purpose Amplifier

(continued)

MMMPQ2907

Electrical Characteristics

TA = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|----------------------------|--------------------------------------|---|-----|-----|-------|
| OFF CHARACTERISTICS | | | | | |
| $V_{(BR)CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C = 10 \text{ mA}, I_B = 0$ | 40 | | V |
| $V_{(BR)CBO}$ | Collector-Base Breakdown Voltage | $I_C = 10 \text{ }\mu\text{A}, I_E = 0$ | 60 | | V |
| $V_{(BR)EBO}$ | Emitter-Base Breakdown Voltage | $I_E = 10 \text{ }\mu\text{A}, I_C = 0$ | 5.0 | | V |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 30 \text{ V}$ | | 50 | nA |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 30 \text{ V}$ | | 50 | nA |

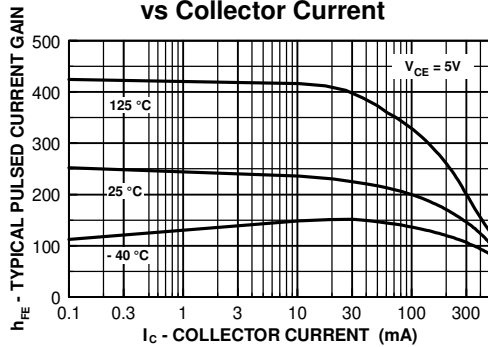
ON CHARACTERISTICS

| | | | | | |
|---------------|---------------------------------------|---|-----------------------|------------|--------|
| h_{FE} | DC Current Gain | $I_C = 10 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 150 \text{ mA}, V_{CE} = 10 \text{ V}^*$ $I_C = 300 \text{ mA}, V_{CE} = 10 \text{ V}$ $I_C = 500 \text{ mA}, V_{CE} = 10 \text{ V}^*$ | 75 100 30 50 | 300 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage* | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}$ $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$ | | 0.4 1.6 | V V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 150 \text{ mA}, I_B = 15 \text{ mA}^*$ $I_C = 300 \text{ mA}, I_B = 30 \text{ mA}$ | | 1.3 2.6 | V V |

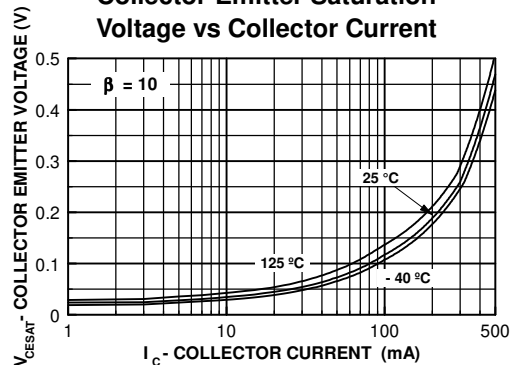
*Pulse Test: Pulse Width $\leq 300 \text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$

Typical Characteristics

Typical Pulsed Current Gain vs Collector Current



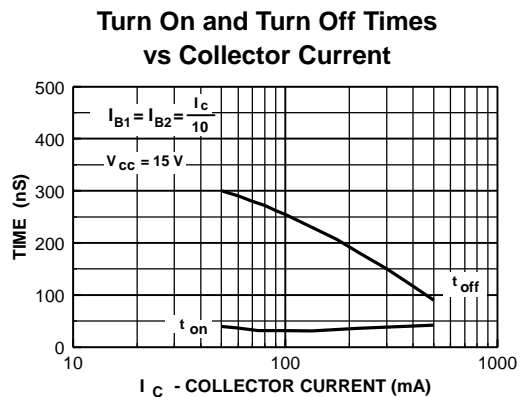
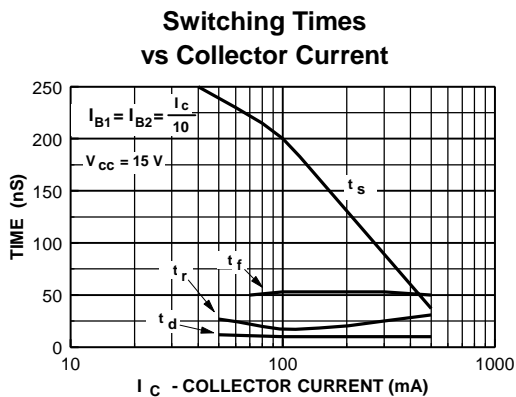
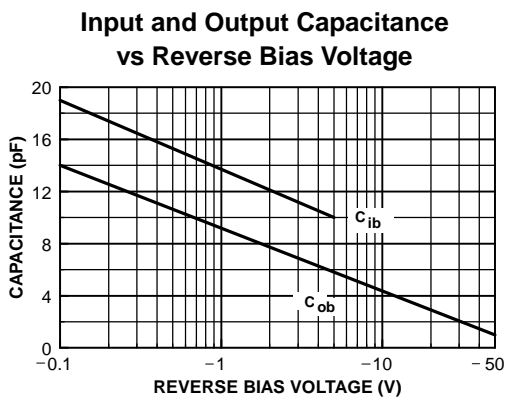
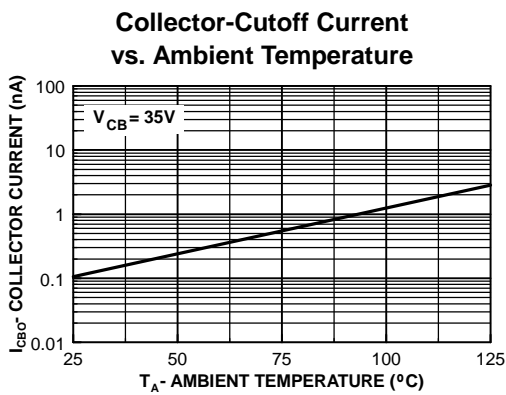
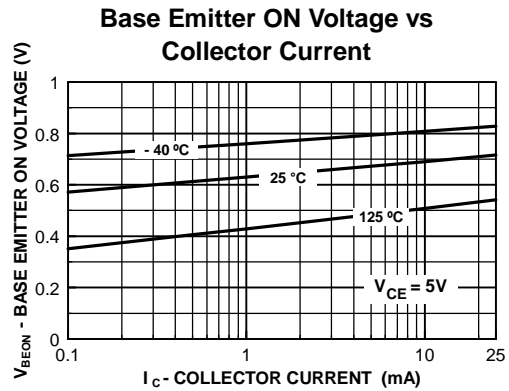
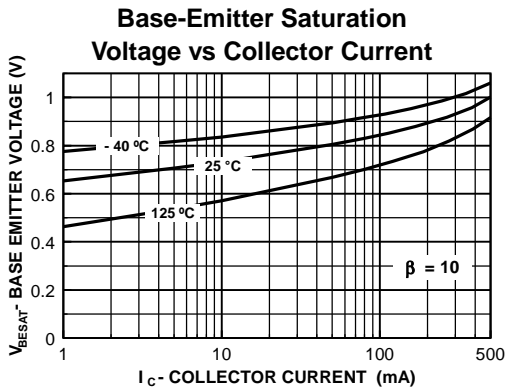
Collector-Emitter Saturation Voltage vs Collector Current



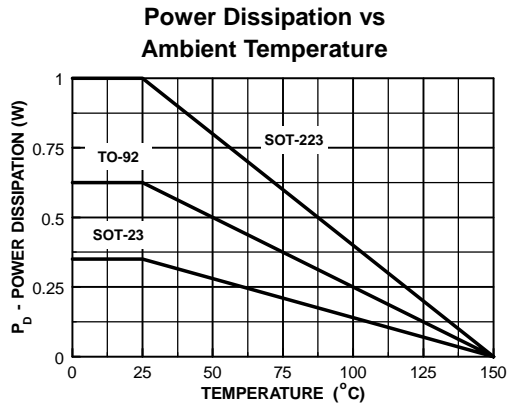
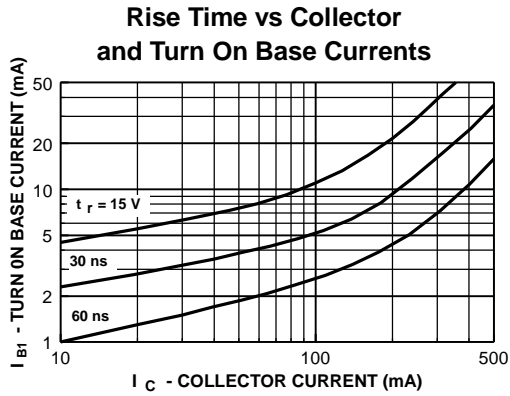
Spice Model

PNP (Is=650.6E-18 Xti=3 Eg=1.11 Vaf=115.7 Bf=231.7 Ne=1.829 Ise=54.81f Ikf=1.079 Xtb=1.5 Br=3.563 Nc=2 Isc=0 Ikr=0 Rc=.715 Cjc=14.76p Mjc=.5383 Vjc=.75 Fc=.5 Cje=19.82p Mje=.3357 Vje=.75 Tr=111.3n Tf=603.7p Itf=.65 Vtf=5 Xtf=1.7 Rb=10)

Typical Characteristics (continued)



Typical Characteristics (continued)



Test Circuits

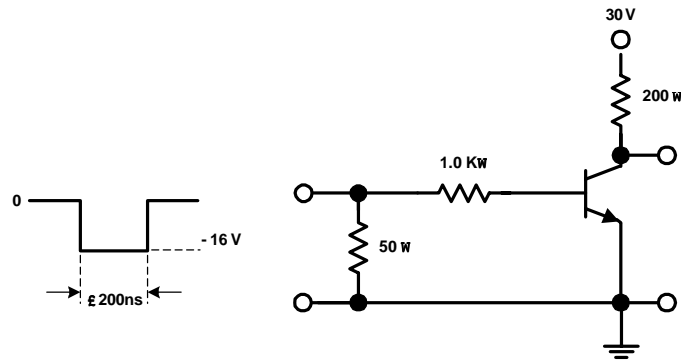


FIGURE 1: Saturated Turn-On Switching Time Test Circuit

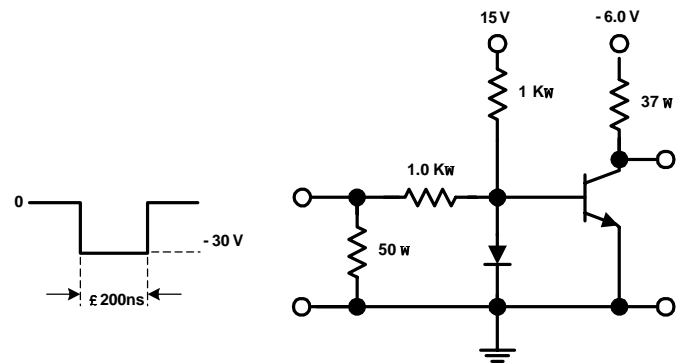


FIGURE 2: Saturated Turn-Off Switching Time Test Circuit

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| CoolFET TM | GlobalOptoisolator TM | PowerTrench [®] | SuperSOT TM -8 |
| CROSSVOLT TM | GTO TM | QFET TM | SyncFET TM |
| DenseTrench TM | HiSeC TM | QS TM | TinyLogic TM |
| DOME TM | ISOPLANAR TM | QT Optoelectronics TM | UHC TM |
| EcoSPARK TM | LittleFET TM | Quiet Series TM | UltraFET [®] |
| E ² CMOS TM | MicroFET TM | SILENT SWITCHER [®] | VCX TM |
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|--------------------------|------------------------|---|
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