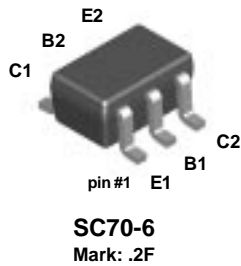
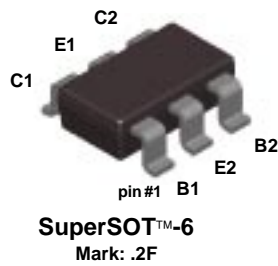


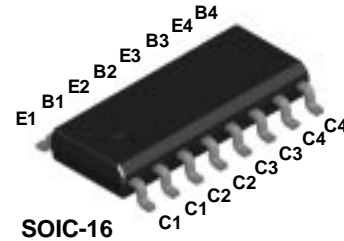
## FFB2907A



## 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\*

$T_A = 25^\circ\text{C}$  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
$I_C$	Collector Current - Continuous	600	mA
$T_J, T_{stg}$	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ\text{C}$

\*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

$T_A = 25^\circ\text{C}$  unless otherwise noted

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

# PNP Multi-Chip General Purpose Amplifier

(continued)

## Electrical Characteristics

$T_A = 25^\circ\text{C}$  unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
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### OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 10\text{ mA}, I_B = 0$	60			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10\text{ }\mu\text{A}, I_E = 0$	60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10\text{ }\mu\text{A}, I_C = 0$	5.0			V
$I_B$	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	$\mu\text{A}$ $\mu\text{A}$

### ON CHARACTERISTICS

$h_{FE}$	DC Current Gain	$I_C = 0.1\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 1.0\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 10\text{ mA}, V_{CE} = 10\text{ V}$ $I_C = 150\text{ mA}, V_{CE} = 10\text{ V}^*$ $I_C = 500\text{ mA}, V_{CE} = 10\text{ V}^*$	75 100 100 100 50		300	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage*	$I_C = 150\text{ mA}, I_B = 15\text{ mA}$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$			0.4 1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = 150\text{ mA}, I_B = 15\text{ mA}^*$ $I_C = 500\text{ mA}, I_B = 50\text{ mA}$			1.3 2.6	V V

### SMALL SIGNAL CHARACTERISTICS

$f_T$	Current Gain - Bandwidth Product	$I_C = 50\text{ mA}, V_{CE} = 20\text{ V},$ $f = 100\text{ MHz}$		250		MHz
$C_{obo}$	Output Capacitance	$V_{CB} = 10\text{ V}, I_E = 0,$ $f = 100\text{ kHz}$		6.0		pF
$C_{ibo}$	Input Capacitance	$V_{EB} = 2.0\text{ V}, I_C = 0,$ $f = 100\text{ kHz}$		12		pF

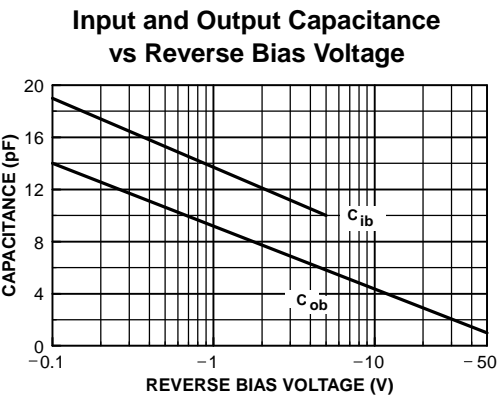
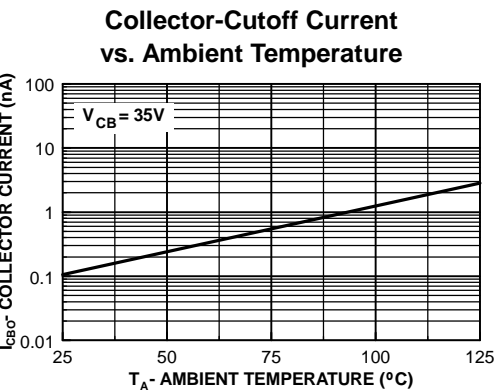
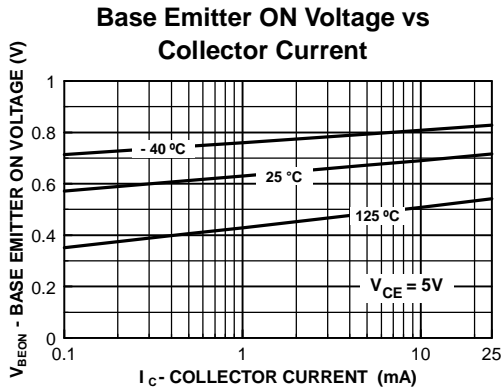
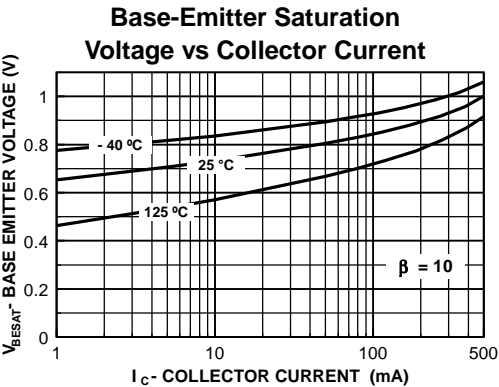
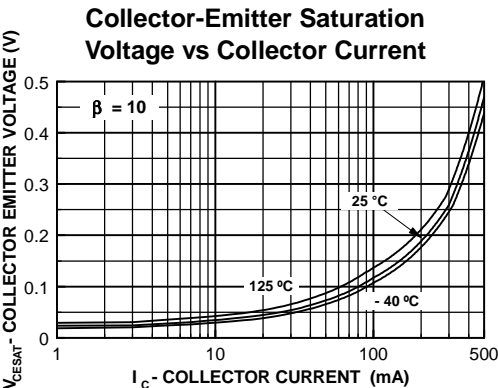
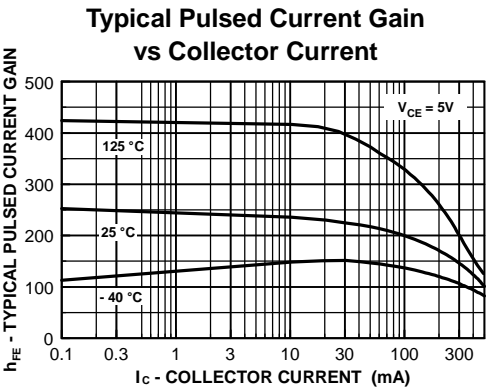
### SWITCHING CHARACTERISTICS

$t_{on}$	Turn-on Time	$V_{CC} = 30\text{ V}, I_C = 150\text{ mA},$ $I_{B1} = 15\text{ mA}$		30		ns
$t_d$	Delay Time			8.0		ns
$t_r$	Rise Time			20		ns
$t_{off}$	Turn-off Time	$V_{CC} = 6.0\text{ V}, I_C = 150\text{ mA}$ $I_{B1} = I_{B2} = 15\text{ mA}$		80		ns
$t_s$	Storage Time			60		ns
$t_f$	Fall Time			20		ns

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

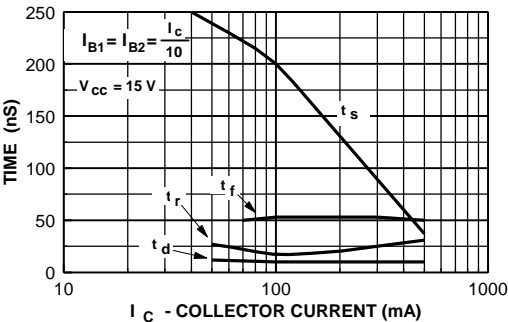
FFB2907A / FMBT2907A / MMPQ2907A

Typical Characteristics

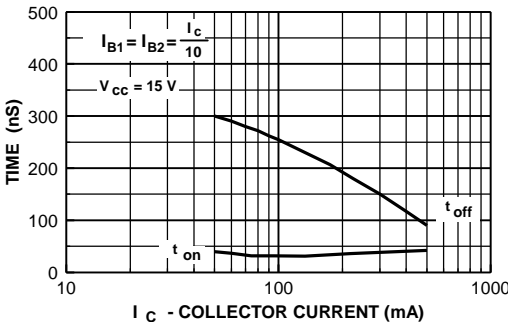


Typical Characteristics (continued)

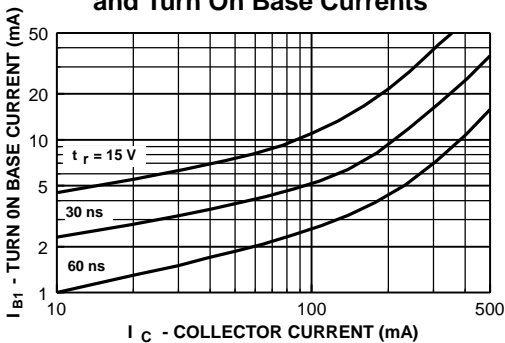
Switching Times  
vs Collector Current



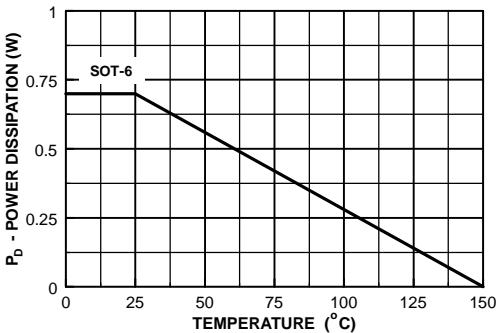
Turn On and Turn Off Times  
vs Collector Current



Rise Time vs Collector  
and Turn On Base Currents



Power Dissipation vs  
Ambient Temperature



## Test Circuits

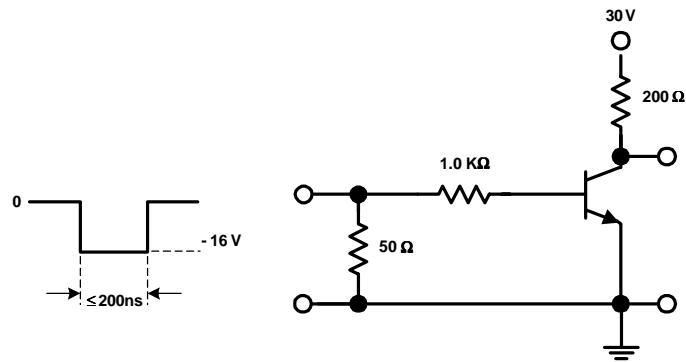


FIGURE 1: Saturated Turn-On Switching Time Test Circuit

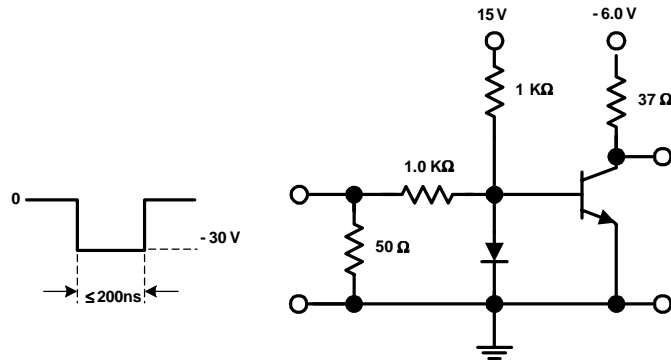


FIGURE 2: Saturated Turn-Off Switching Time Test Circuit