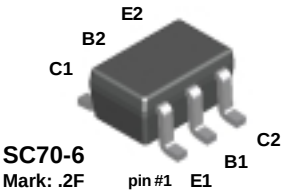
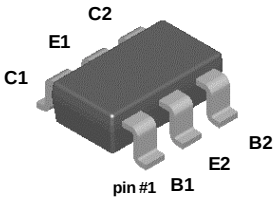
FAIRCHILD SEMICONDUCTOR™

FFB2907A FMB2907A MMPQ2907A

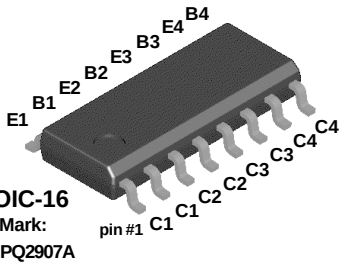


SC70-6
Mark: .2F

NOTE: The pinouts are symmetrical; pin 1 and pin 4 are interchangeable. Units inside the carrier can be of either orientation and will not affect the functionality of the device.



SuperSOT™-6
Mark: .2F
Dot denotes pin #1



SOIC-16
Mark: 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
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

T_A = 25°C unless otherwise noted

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 °C/W

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PNP Multi-Chip General Purpose Amplifier
(continued)

Electrical Characteristics
T_A = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Typ	Max	Units
OFF CHARACTERISTICS						
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 10 mA, I_B = 0	60			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	60			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	5.0			V
I_B	Base Cutoff Current	V_{CB} = 30 V, V_{EB} = 0.5 V			50	nA
I_{CEX}	Collector Cutoff Current	V_{CE} = 30 V, V_{BE} = 0.5 V			50	nA
I_{CBO}	Collector Cutoff Current	V_{CB} = 50 V, I_E = 0 V_{CB} = 50 V, I_E = 0, T_A = 125°C			0.02 20	µA µA
ON CHARACTERISTICS						
h_{FE}	DC Current Gain	I_C = 0.1 mA, V_{CE} = 10 V I_C = 1.0 mA, V_{CE} = 10 V I_C = 10 mA, V_{CE} = 10 V I_C = 150 mA, V_{CE} = 10 V* I_C = 500 mA, V_{CE} = 10 V*	75 100 100 100 50		 300 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage*	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA			0.4 1.6	V V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	I_C = 150 mA, I_B = 15 mA* I_C = 500 mA, I_B = 50 mA			1.3 2.6	V V
SMALL SIGNAL CHARACTERISTICS						
f_T	Current Gain - Bandwidth Product	I_C = 50 mA, V_{CE} = 20 V, f = 100 MHz		250		MHz
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 100 kHz		6.0		pF
C_{ibo}	Input Capacitance	V_{EB} = 2.0 V, I_C = 0, f = 100 kHz		12		pF
SWITCHING CHARACTERISTICS						
t_{on}	Turn-on Time	V_{CC} = 30 V, I_C = 150 mA, I_{B1} = 15 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 V, I_C = 150 mA, I_{B1} = I_{B2} = 15 mA		80		ns
t_s	Storage Time			60		ns
t_f	Fall Time			20		ns

*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%

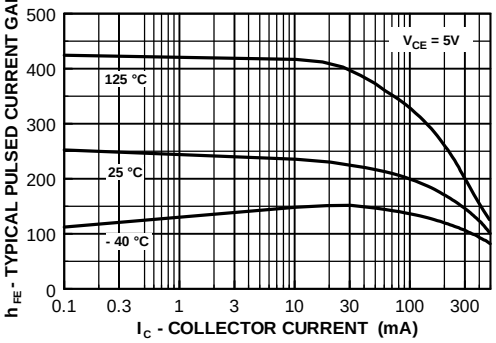
Spice Model

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)

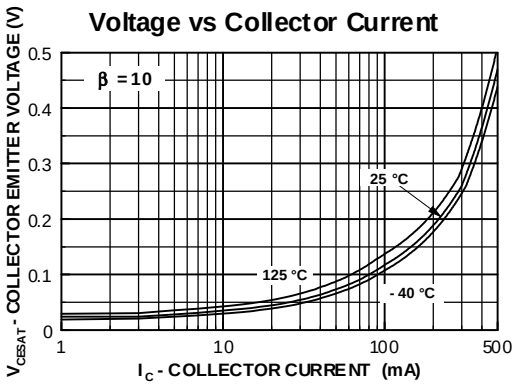
PNP Multi-Chip General Purpose Amplifier
(continued)

Typical Characteristics

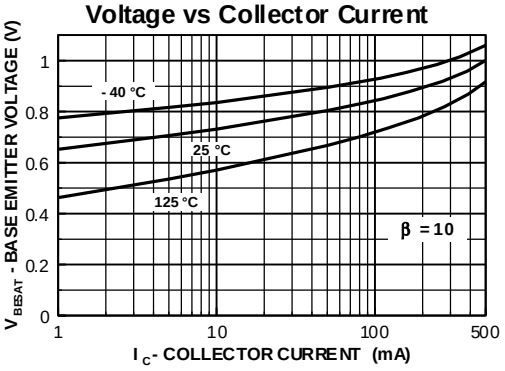
Typical Pulsed Current Gain vs Collector Current



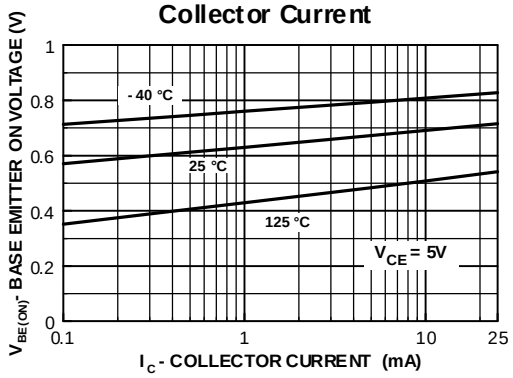
Collector-Emitter Saturation Voltage vs Collector Current



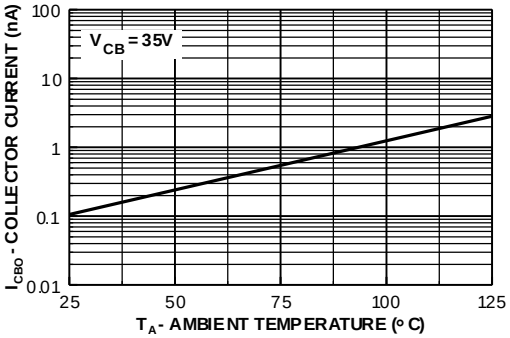
Base-Emitter Saturation Voltage vs Collector Current



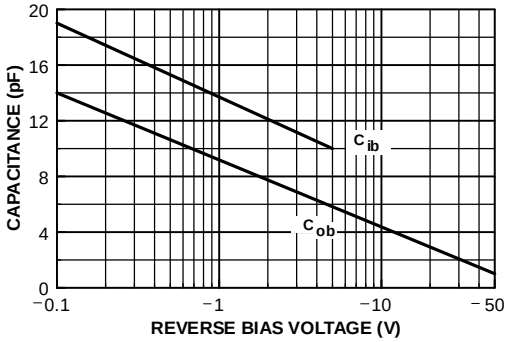
Base Emitter ON Voltage vs Collector Current



Collector-Cutoff Current vs Ambient Temperature

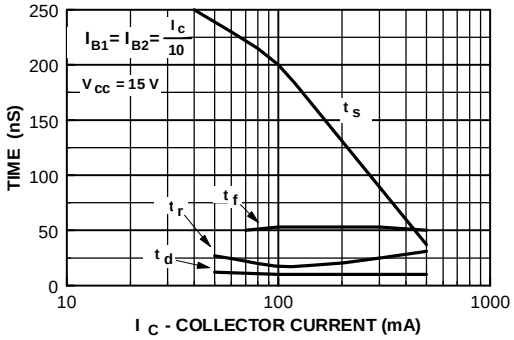


Input and Output Capacitance vs Reverse Bias Voltage

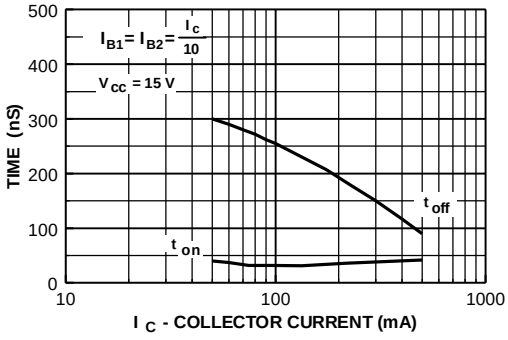


Typical Characteristics (continued)

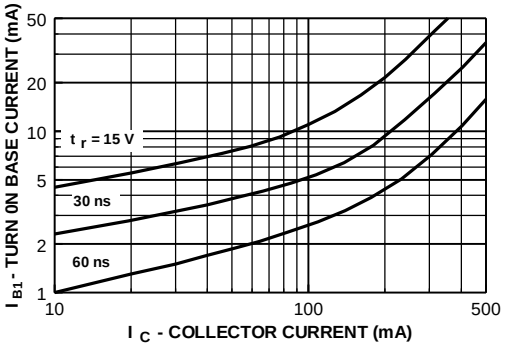
Switching Times vs Collector Current



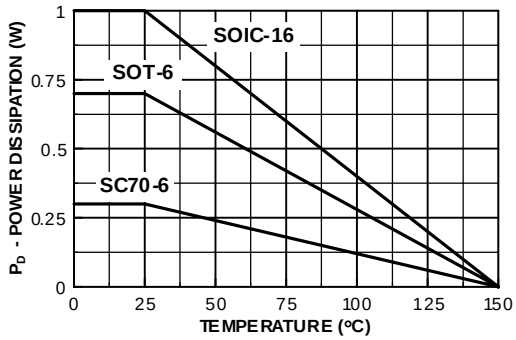
Turn On and Turn Off Times vs Collector Current



Rise Time vs Collector and Turn On Base Currents

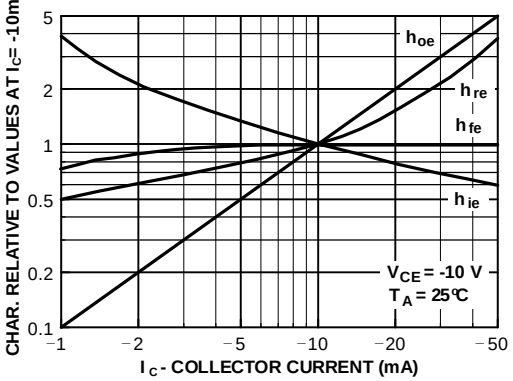


Power Dissipation vs Ambient Temperature

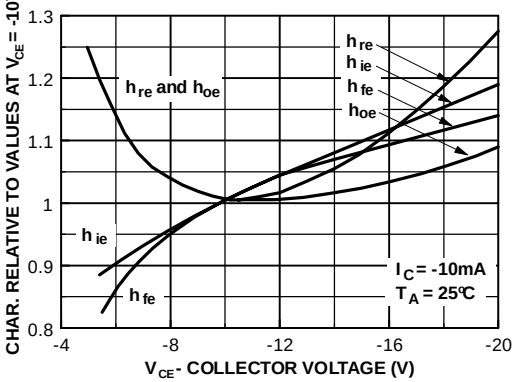


Typical Common Emitter Characteristics (f = 1.0kHz)

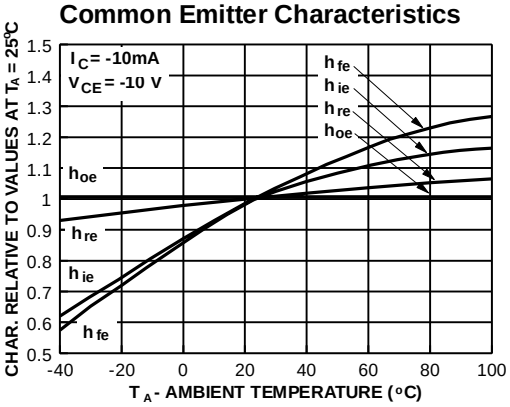
Common Emitter Characteristics



Common Emitter Characteristics



Common Emitter Characteristics



Test Circuits

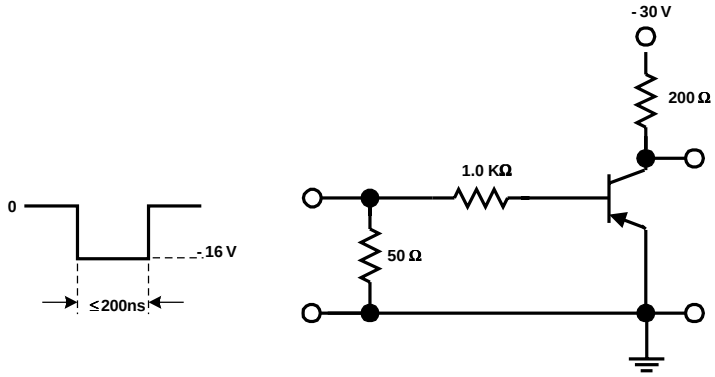


FIGURE 1: Saturated Turn-On Switching Time Test Circuit

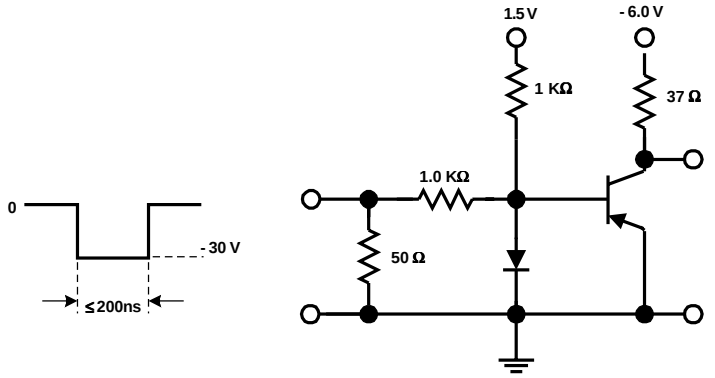


FIGURE 2: Saturated Turn-Off Switching Time Test Circuit

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