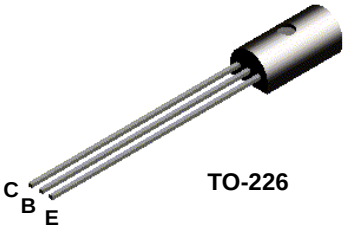
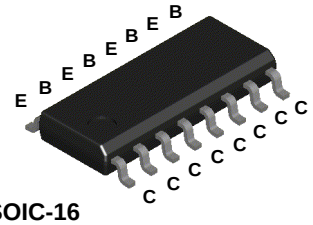
FAIRCHILD SEMICONDUCTOR™

Discrete POWER & Signal Technologies

TN3467A MMPQ3467



TO-226



SOIC-16

PNP Switching Transistor

This device is designed for high speed saturated switching applications at currents to 800 mA. Sourced from Process 70.

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	40	V
V_{EBO}	Emitter-Base Voltage	5.0	V
I_C	Collector Current - Continuous	1.2	A
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
		TN3467A	MMPQ3467	
P_D	Total Device Dissipation Derate above 25°C	1.0 8.0	1.0 8.0	W mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	50		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient Effective 4 Die Each Die	125	 125 240	°C/W °C/W °C/W

PNP Switching Transistor
(continued)

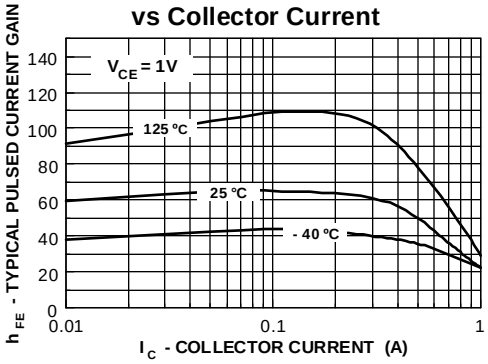
Electrical Characteristics
TA = 25°C unless otherwise noted

Symbol	Parameter	Test Conditions	Min	Max	Units
OFF CHARACTERISTICS					
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	I_C = 10 mA, I_B = 0	40		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	40		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	5.0		V
I_{BEV}	Base-Cutoff Current	V_{CE} = 30 V, V_{BE} = 3.0 V		120	nA
I_{CEX}	Collector-Cutoff Current	V_{CE} = 30 V, V_{BE} = 3.0 V		100	nA
I_{CBO}	Collector-Cutoff Current	V_{CB} = 30 V, I_E = 0 V_{CB} = 30 V, I_E = 0, T_A = 150°C		0.01 15	µA µA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	I_C = 150 mA, V_{CE} = 1.0 V I_C = 500 mA, V_{CE} = 1.0 V I_C = 1.0 A, V_{CE} = 5.0 V	40 40 40	 120 	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 150 mA, I_B = 15 mA I_C = 500 mA, I_B = 50 mA I_C = 1.0 A, I_B = 100 mA		0.3 0.5 1.0	V 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 I_C = 1.0 A, I_B = 100 mA	 0.8	1.0 1.2 1.6	V V V
SMALL SIGNAL CHARACTERISTICS					
f_T	Current Gain-Bandwidth Product	I_C = 50 mA, V_{CE} = 10 V, f = 100 MHz	175		MHz
C_{obo}	Output Capacitance	V_{CB} = 10 V, I_E = 0, f = 1.0 KHz		25	pF
C_{ibo}	Input Capacitance	V_{BE} = 0.5 V, I_C = 0, f = 1.0 KHz		100	pF
SWITCHING CHARACTERISTICS (except for MMPQ3467)					
t_d	Delay Time	V_{CC} = 30 V, V_{BE} = 2.0 V,		10	ns
t_r	Rise Time	I_C = 500 mA, I_{B1} = 50 mA		30	ns
t_s	Storage Time	V_{CC} = 30 V, I_C = 500 mA,		60	ns
t_f	Fall Time	I_{B1} = I_{B2} = 50 mA		30	ns

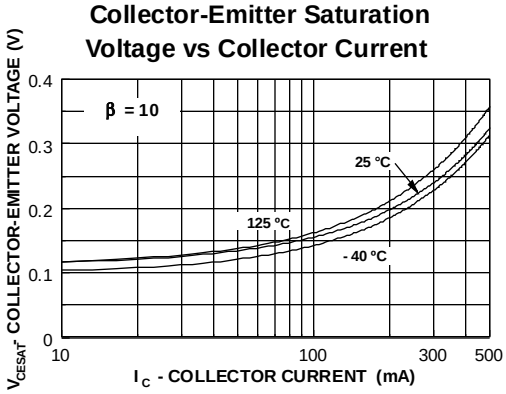
*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 1.0%

DC Typical Characteristics

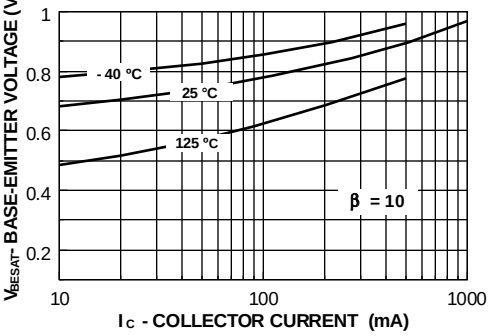
Typical Pulsed Current Gain vs Collector Current



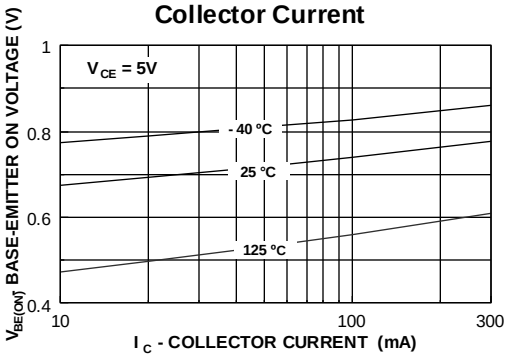
Collector-Emitter Saturation Voltage vs Collector Current



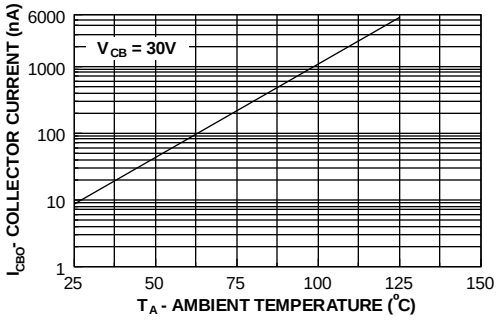
Base-Emitter Saturation Voltage vs Collector Current



Base-Emitter ON Voltage vs Collector Current

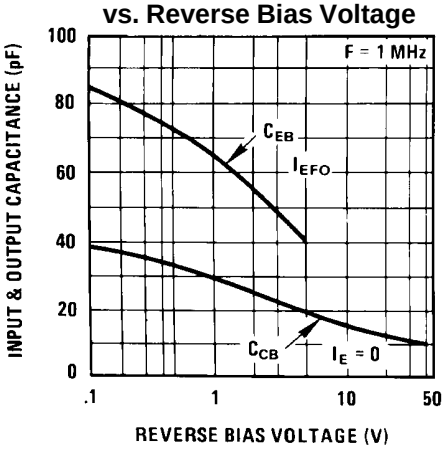


Collector-Cutoff Current vs Ambient Temperature

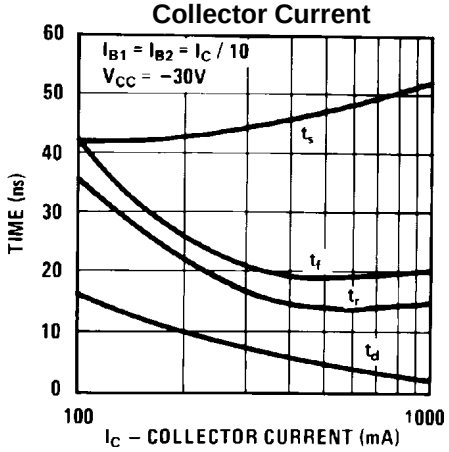


AC Typical Characteristics

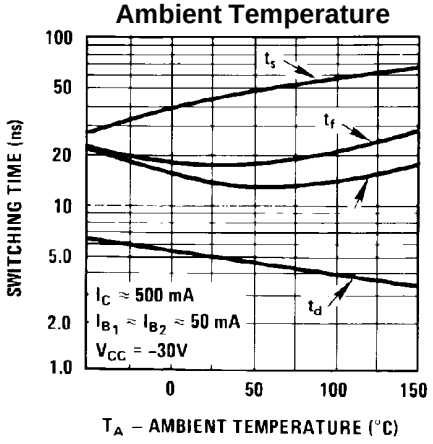
Input / Output Capacitance vs. Reverse Bias Voltage



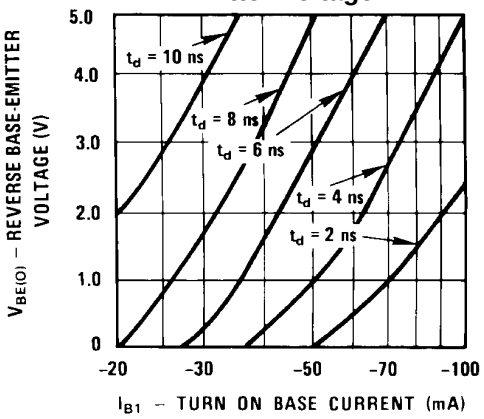
Switching Times vs. Collector Current



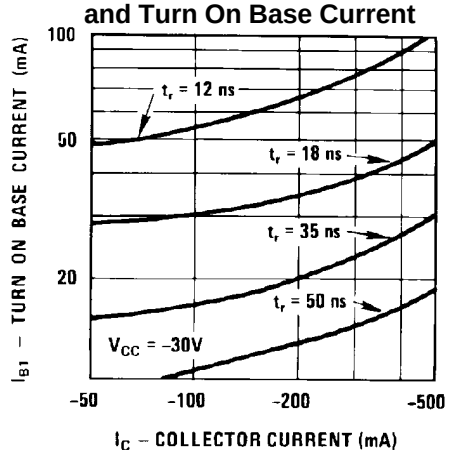
Switching Times vs. Ambient Temperature



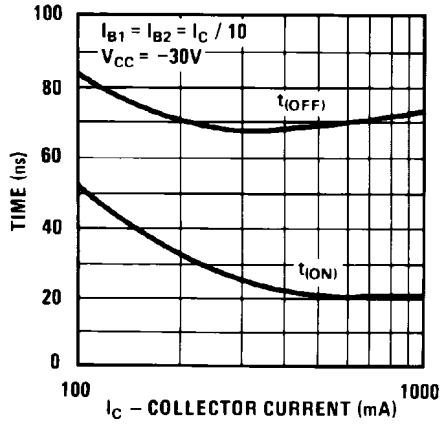
Delay Time vs. Turn On Base Current and Reverse Bias Emitter Voltage



Rise Time vs. Collector Current and Turn On Base Current

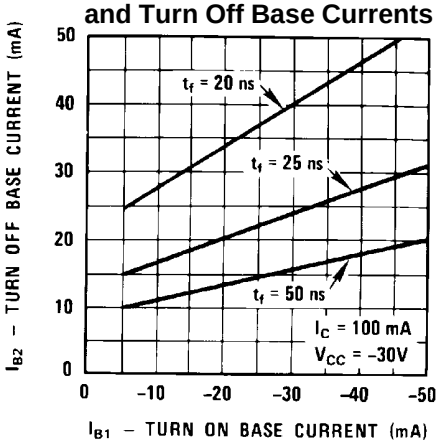


Turn On / Turn Off Times vs. Collector Current

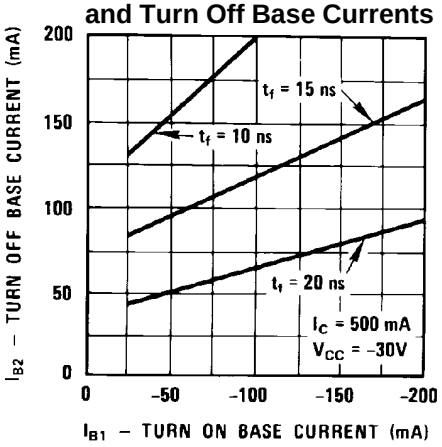


AC Typical Characteristics (continued)

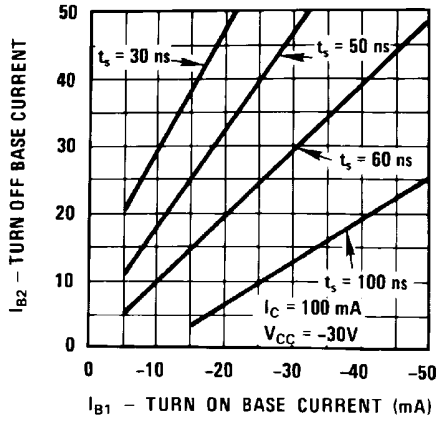
Fall Time vs. Turn On and Turn Off Base Currents



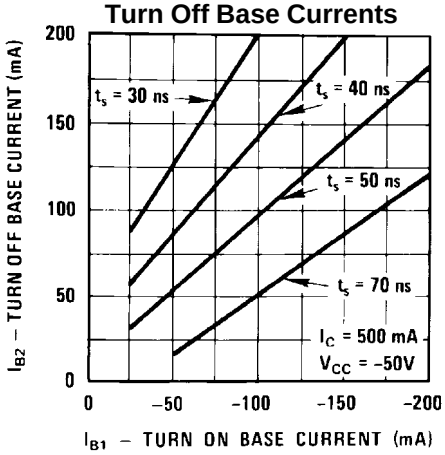
Fall Time vs. Turn On and Turn Off Base Currents



Storage Time vs. Turn On and Turn Off Base Currents

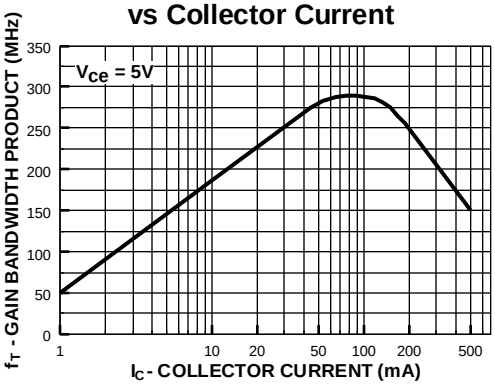


Storage Time vs. Turn On and Turn Off Base Currents

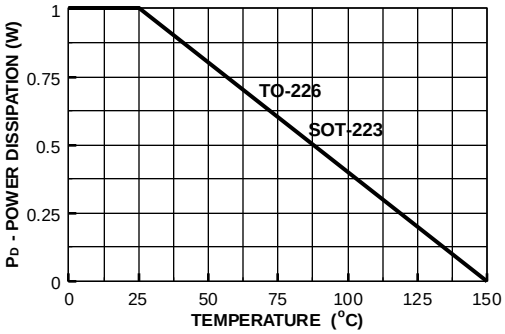


AC Typical Characteristics (continued)

Gain Bandwidth Product vs Collector Current



POWER DISSIPATION vs AMBIENT TEMPERATURE



Test Circuits

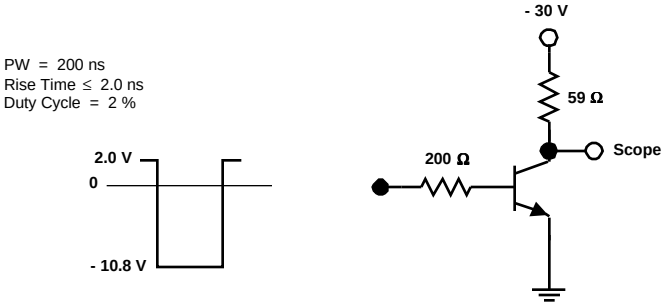


FIGURE 1: t_{ON} Equivalent Test Circuit

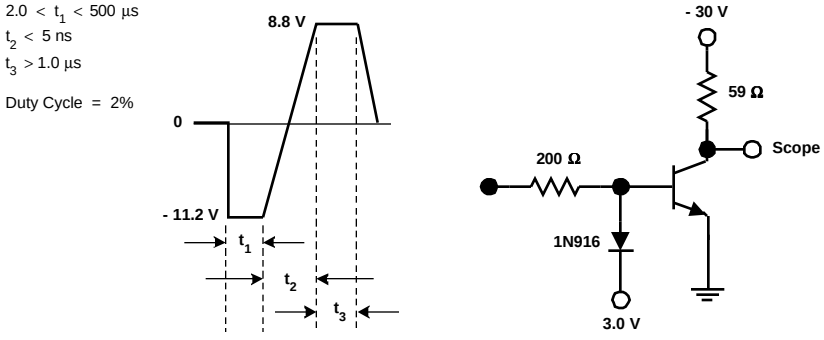


FIGURE 2: t_{OFF} Equivalent Test Circuit