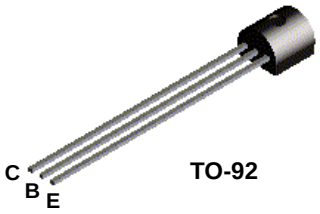
FAIRCHILD SEMICONDUCTOR TM

Discrete POWER & Signal Technologies

2N5962 MMBT5962



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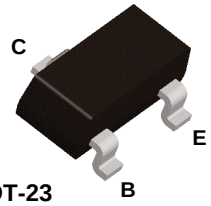

SOT-23
Mark: 117

NPN General Purpose Amplifier

This device is designed for use as low noise, high gain, general purpose amplifiers requiring collector currents to 50 mA. Sourced from Process 07. See 2N5088 for characteristics.

Absolute Maximum Ratings*

TA = 25°C unless otherwise noted

Symbol	Parameter	Value	Units
V_{CEO}	Collector-Emitter Voltage	45	V
V_{CBO}	Collector-Base Voltage	45	V
V_{EBO}	Emitter-Base Voltage	8.0	V
I_C	Collector Current - Continuous	100	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
		2N5962	*MMBT5962	
P_D	Total Device Dissipation Derate above 25°C	625 5.0	350 2.8	mW mW/°C
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3		°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	357	°C/W

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

NPN General Purpose Amplifier
(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 = 5.0 mA, I_B = 0	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	I_C = 10 µA, I_E = 0	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	I_E = 10 µA, I_C = 0	8.0		V
I_{CBO}	Collector Cutoff Current	V_{CB} = 30 V, I_E = 0 V_{CB} = 30 V, I_E = 0, T_A = 65 °C		2.0 50	nA nA
I_{EBO}	Emitter Cutoff Current	V_{EB} = 5.0 V, I_C = 0		1.0	nA
ON CHARACTERISTICS*					
h_{FE}	DC Current Gain	V_{CE} = 5.0 V, I_C = 10 µA V_{CE} = 5.0 V, I_C = 100 µA V_{CE} = 5.0 V, I_C = 1.0 mA V_{CE} = 5.0 V, I_C = 10 mA	450 500 550 600	 1400	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 0.5 mA		0.2	V
$V_{BE(on)}$	Base-Emitter On Voltage	V_{CE} = 5.0 V, I_C = 1.0 mA	0.5	0.7	V
SMALL SIGNAL CHARACTERISTICS					
C_{cb}	Collector-Base Capacitance	V_{CB} = 5.0 V		4.0	pF
C_{eb}	Emitter-Base Capacitance	V_{EB} = 0.5 V		6.0	pF
h_{fe}	Small-Signal Current Gain	I_C = 10 mA, V_{CE} = 5.0 V, f = 1.0 kHz I_C = 10 mA, V_{CE} = 5.0 V, f = 100 MHz	600 1.0	200	
NF	Noise Figure	V_{CE} = 5.0 V, I_C = 10 µA, R_S = 10 kΩ, f = 1.0 kHz, B_W = 400 Hz		3.0	dB
		V_{CE} = 5.0 V, I_C = 100 µA, R_S = 1.0 kΩ, f = 1.0 kHz, B_W = 400 Hz		6.0	dB
		V_{CE} = 5.0 V, I_C = 100 µA, R_S = 10 kΩ, f = 1.0 kHz, B_W = 400 Hz		4.0	dB
		V_{CE} = 5.0 V, I_C = 100 µA, R_S = 100 kΩ, f = 1.0 kHz, B_W = 400 Hz		8.0	dB
		V_{CE} = 5.0 V, I_C = 10 µA, R_S = 10 kΩ, f = 10 Hz -10 kHz B_W = 15.7 kHz		3.0	dB

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