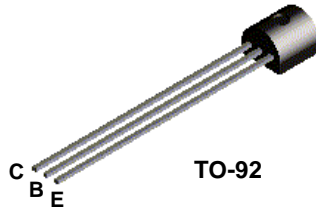


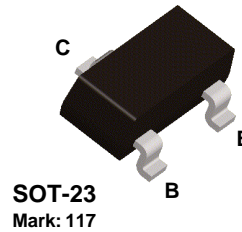


Discrete POWER & Signal Technologies

## 2N5962



## MMBT5962



### 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 <sub>CEO</sub>	Collector-Emitter Voltage	45	V
V <sub>CB0</sub>	Collector-Base Voltage	45	V
V <sub>EBO</sub>	Emitter-Base Voltage	8.0	V
I <sub>C</sub>	Collector Current - Continuous	100	mA
T <sub>J</sub> , T <sub>stg</sub>	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 <sub>D</sub>	Total Device Dissipation	625	350	mW
	Derate above 25°C	5.0	2.8	mW/°C
R <sub>θJC</sub>	Thermal Resistance, Junction to Case	83.3		°C/W
R <sub>θJA</sub>	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
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### OFF CHARACTERISTICS

$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage*	$I_C = 5.0 \text{ mA}, I_B = 0$	45		V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \text{ } \mu\text{A}, I_E = 0$	45		V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \text{ } \mu\text{A}, I_C = 0$	8.0		V
$I_{CBO}$	Collector Cutoff Current	$V_{CB} = 30 \text{ V}, I_E = 0$ $V_{CB} = 30 \text{ V}, I_E = 0, T_A = 65 \text{ }^\circ\text{C}$		2.0 50	nA nA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 5.0 \text{ V}, I_C = 0$		1.0	nA

### ON CHARACTERISTICS\*

$h_{FE}$	DC Current Gain	$V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ } \mu\text{A}$ $V_{CE} = 5.0 \text{ V}, I_C = 100 \text{ } \mu\text{A}$ $V_{CE} = 5.0 \text{ V}, I_C = 1.0 \text{ mA}$ $V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ mA}$	450 500 550 600	1400	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 10 \text{ mA}, I_B = 0.5 \text{ mA}$		0.2	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 5.0 \text{ V}, I_C = 1.0 \text{ mA}$	0.5	0.7	V

### SMALL SIGNAL CHARACTERISTICS

$C_{cb}$	Collector-Base Capacitance	$V_{CB} = 5.0 \text{ V}$		4.0	pF
$C_{eb}$	Emitter-Base Capacitance	$V_{EB} = 0.5 \text{ V}$		6.0	pF
$h_{fe}$	Small-Signal Current Gain	$I_C = 10 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 1.0 \text{ kHz}$ $I_C = 10 \text{ mA}, V_{CE} = 5.0 \text{ V},$ $f = 100 \text{ MHz}$	600 1.0	200	
NF	Noise Figure	$V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ } \mu\text{A},$ $R_S = 10 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $B_W = 400 \text{ Hz}$ $V_{CE} = 5.0 \text{ V}, I_C = 100 \text{ } \mu\text{A},$ $R_S = 1.0 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $B_W = 400 \text{ Hz}$ $V_{CE} = 5.0 \text{ V}, I_C = 100 \text{ } \mu\text{A},$ $R_S = 10 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $B_W = 400 \text{ Hz}$ $V_{CE} = 5.0 \text{ V}, I_C = 100 \text{ } \mu\text{A},$ $R_S = 100 \text{ k}\Omega, f = 1.0 \text{ kHz},$ $B_W = 400 \text{ Hz}$ $V_{CE} = 5.0 \text{ V}, I_C = 10 \text{ } \mu\text{A},$ $R_S = 10 \text{ k}\Omega, f = 10 \text{ Hz} - 10 \text{ kHz}$ $B_W = 15.7 \text{ kHz}$		3.0 6.0 4.0 8.0 3.0	dB dB dB dB dB

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

2N5962/ MMBT5962

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