

## 2N5830 • 2N5831 • 2N5832 • 2N5833

### NPN SMALL SIGNAL HIGH VOLTAGE GENERAL PURPOSE AMPLIFIERS

#### ABSOLUTE MAXIMUM RATINGS

##### Maximum Temperatures

Storage Temperature	-55°C to +150°C
Operating Junction Temperature	150°C
Lead Temperature (10 seconds)	260°C

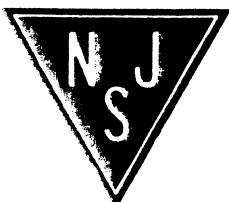
##### Maximum Power Dissipation (Notes 2 & 3)

Total Dissipation at 25°C Ambient Temperature	0.625 W
at 25°C Case Temperature	1.0 W

##### Maximum Voltages and Current

	2N5830	2N5831, 2N5832	2N5833
V <sub>EB0</sub> Emitter to Base Voltage	5.0 V	5.0 V	6.0 V
V <sub>CB0</sub> Collector to Base Voltage	120 V	160 V	200 V
V <sub>CEO</sub> Collector to Emitter Voltage	100 V	140 V	180 V
I <sub>C</sub> Collector Current	600 mA	600 mA	600 mA

#### TO92-1 Package



ELECTRICAL CHARACTERISTICS (25°C Ambient Temperature unless otherwise noted)

SYMBOL	CHARACTERISTIC	2N5830		2N5831		UNITS	TEST CONDITIONS
		MIN.	MAX.	MIN.	MAX.		
I <sub>CBO</sub>	Collector Cutoff Current		50			nA	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0
				50		nA	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0
			25			μA	V <sub>CB</sub> = 100 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
I <sub>EBO</sub>	Emitter Cutoff Current		50		50	μA	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
BV <sub>CB0</sub>	Collector to Base Breakdown Voltage	120		160		V	V <sub>EB</sub> = 4.0 V, I <sub>C</sub> = 0 I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0
BV <sub>EBO</sub>	Emitter to Base Breakdown Voltage	5.0		5.0		V	I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0
BV <sub>CEO</sub>	Collector to Emitter Breakdown Voltage	100		140		V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0
h <sub>FE</sub>	DC Current Gain (Note 4)	60		60			V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 1.0 mA
		80	500	80	250		V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 10 mA
		80		80			V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 50 mA
V <sub>BE(ON)</sub>	Base to Emitter "On" Voltage		0.8		0.8	V	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 5.0 V
V <sub>BE(sat)</sub>	Base to Emitter Saturation Voltage (Note 4)		0.8		0.8	V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0.1 mA
			1.0		1.0	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
			1.0		1.0	V	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5.0 mA
V <sub>CE(sat)</sub>	Collector to Emitter Saturation Voltage (Note 4)		0.15		0.15	V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0.1 mA
			0.20		0.20	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
			0.25		0.25	V	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5.0 mA
h <sub>ie</sub>	Input Resistance		6.0		6.0	kΩ	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
h <sub>oe</sub>	Output Conductance		40		40	μmho	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
h <sub>fe</sub>	Small Signal Current Gain	60		60			I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
C <sub>cb</sub>	Collector to Base Capacitance		4.0		4.0	pF	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0 MHz
h <sub>fe</sub>	Magnitude of Common Emitter High Frequency Current Gain	1.0	5.0	1.0	5.0		I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 10 V, f = 100 MHz
I <sub>CBO</sub>	Collector Cutoff Current		50			nA	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0
				10		nA	V <sub>CB</sub> = 160 V, I <sub>E</sub> = 0
			25			μA	V <sub>CB</sub> = 120 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
I <sub>EBO</sub>	Emitter Cutoff Current		50		25	μA	V <sub>CB</sub> = 160 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
BV <sub>CB0</sub>	Collector to Base Breakdown Voltage	160		200		V	V <sub>EB</sub> = 4.0 V, I <sub>C</sub> = 0 I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0
BV <sub>EBO</sub>	Emitter to Base Breakdown Voltage	5.0		6.0		V	I <sub>E</sub> = 10 μA, I <sub>C</sub> = 0
BV <sub>CEO</sub>	Collector to Emitter Breakdown Voltage	140		180		V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0
h <sub>FE</sub>	DC Current Gain (Note 4)	125		50			V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 1.0 mA
		175	500	50	250		V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 10 mA
		150		50			V <sub>CE</sub> = 5.0 V, I <sub>C</sub> = 50 mA
V <sub>BE(ON)</sub>	Base to Emitter "On" Voltage		0.8		0.8	V	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 5.0 V
V <sub>BE(sat)</sub>	Base to Emitter Saturation Voltage (Note 4)		0.8		0.8	V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0.1 mA
			1.0		1.0	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
			1.0		1.0	V	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5.0 mA
V <sub>CE(sat)</sub>	Collector to Emitter Saturation Voltage (Note 4)		0.15		0.15	V	I <sub>C</sub> = 1.0 mA, I <sub>B</sub> = 0.1 mA
			0.20		0.20	V	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA
			0.25		0.25	V	I <sub>C</sub> = 50 mA, I <sub>B</sub> = 5.0 mA
h <sub>ie</sub>	Input Resistance		6.0		6.0	kΩ	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
h <sub>oe</sub>	Output Conductance		40		40	μmho	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
h <sub>fe</sub>	Small Signal Current Gain	125		50			I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 10 V, f = 1.0 kHz
C <sub>cb</sub>	Collector to Base Capacitance		4.0		4.0	pF	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0 MHz
h <sub>fe</sub>	Magnitude of Common Emitter High Frequency Current Gain	1.0	5.0	1.0	5.0		I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 10 V, f = 100 MHz