

DESCRIPTION The 2SD1020 is designed for use in output stage of portable RADIO and cassette type tape recorder, general purpose applications.

- FEATURES**
- High total power dissipation.
 $P_T = 350 \text{ mW}$
 - High h_{FE} and low $V_{CE(sat)}$
 $h_{FE} (I_C = 100 \text{ mA}) : 200 \text{ TYP.}$
 $V_{CE(sat)} (700 \text{ mA}) : 0.20 \text{ V TYP.}$
 - Complementary to the NEC 2SB810 PNP transistor.

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures

Storage Temperature $-55 \text{ to } +150^\circ\text{C}$

Junction Temperature $+150^\circ\text{C}$ Maximum

Maximum Power Dissipation ($T_a = 25^\circ\text{C}$)

Total Power Dissipation 350 mW

Maximum Voltages and Currents ($T_a = 25^\circ\text{C}$)

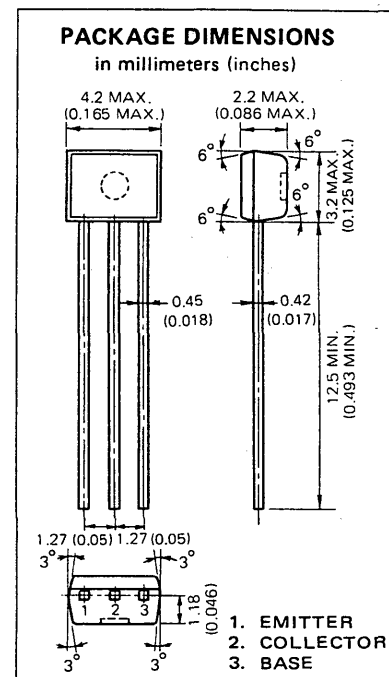
V_{CBO} Collector to Base Voltage 30 V

V_{CEO} Collector to Emitter Voltage 25 V

V_{EBO} Emitter to Base Voltage 5.0 V

I_C Collector Current 700 mA

I_B Base Current 150 mA



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}^*	DC Current Gain	110	200	400	—	$V_{CE}=1.0 \text{ V}, I_C=100 \text{ mA}$
h_{FE2}^*	DC Current Gain	50	140		—	$V_{CE}=1.0 \text{ V}, I_C=700 \text{ mA}$
C_{ob}	Collector to Base Capacitance		13	25	pF	$V_{CB}=6.0 \text{ V}, I_E=0, f=1.0 \text{ MHz}$
f_T	Gain Bandwidth Product	50	170		MHz	$V_{CE}=6.0 \text{ V}, I_E=10 \text{ mA}$
V_{BE}^*	Base to Emitter Voltage	600	640	700	mV	$V_{CE}=6.0 \text{ V}, I_C=10 \text{ mA}$
$V_{CE(sat)}^*$	Collector Saturation Voltage		0.2	0.4	V	$I_C=700 \text{ mA}, I_B=70 \text{ mA}$
$V_{BE(sat)}^*$	Base Saturation Voltage		0.95	1.2	V	$I_C=700 \text{ mA}, I_B=70 \text{ mA}$
I_{CBO}	Collector Cutoff Current			100	nA	$V_{CB}=30 \text{ V}, I_E=0$
I_{EBO}	Emitter Cutoff Current			100	nA	$V_{EB}=5.0 \text{ V}, I_C=0$

*Pulsed PW $\leq 350 \mu\text{s}$, duty cycle $\leq 2.0 \%$

Classification of h_{FE1}

Rank	M	J	H	F	E
Range	110 — 180	135 — 220	170 — 270	200 — 320	250 — 400

h_{FE1} Test Conditions : $V_{CE} = 1.0 \text{ V}, I_C = 100 \text{ mA}$

TYPICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$ unless otherwise noted)