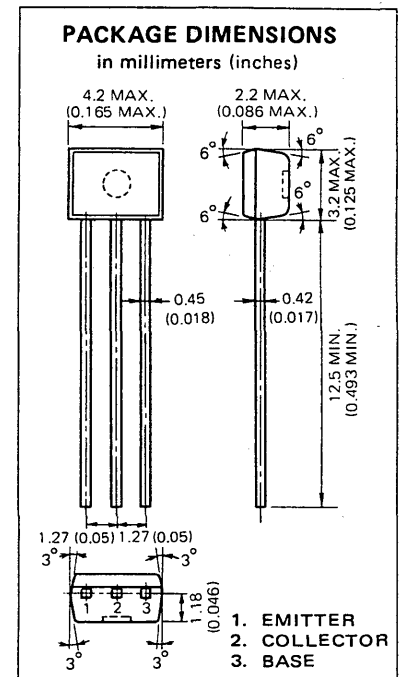


**DESCRIPTION** The 2SD1020 is designed for use in output stage of portable RADIO and cassette type tape recorder, general purpose applications.

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

**ABSOLUTE MAXIMUM RATINGS**

Maximum Temperatures	
Storage Temperature	..... -55 to + 150 °C
Junction Temperature	..... +150 °C Maximum
Maximum Power Dissipation ( $T_a = 25$ °C)	
Total Power Dissipation	..... 350 mW
Maximum Voltages and Currents ( $T_a = 25$ °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 ( $T_a = 25$  °C)**

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

\*Pulsed PW  $\leq 350$   $\mu$ 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 :  $V_{CE} = 1.0$  V,  $I_C = 100$  mA

TYPICAL CHARACTERISTICS (Ta = 25 °C unless otherwise noted)

