

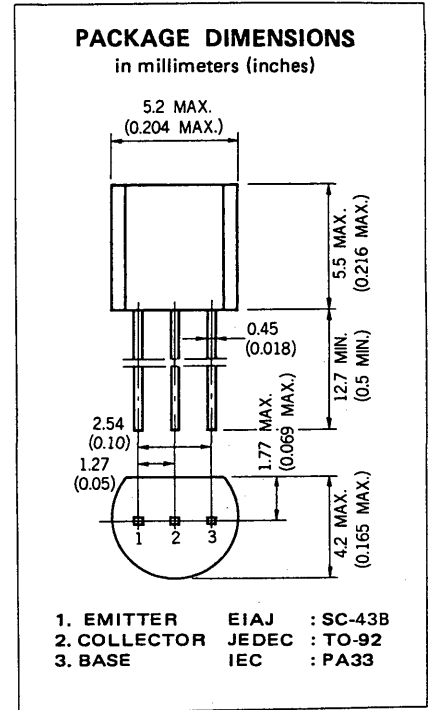
DESCRIPTION The 2SD1513 is designed for use in driver and output stages of audio frequency amplifiers.

- FEATURES**
- Low Collector Saturation Voltage
 $V_{CE(sat)} : 0.20 \text{ V TYP. } (I_C = 1.0 \text{ A, } I_B = 10 \text{ mA})$
 - High DC Current Gain
 $h_{FE} : 350 \text{ TYP. } (V_{CE} = 2.0 \text{ V, } I_C = 100 \text{ mA})$
 - High Total Power Dissipation $P_T : 0.75 \text{ W } (T_a = 25 \text{ }^\circ\text{C})$
 - Complementary to The NEC 2SB1068 PNP Transistor

ABSOLUTE MAXIMUM RATINGS

Maximum Temperatures	
Storage Temperature -55 to +150 °C
Junction Temperature 150 °C Maximum
Maximum Power Dissipation ($T_a = 25 \text{ }^\circ\text{C}$)	
Total Power Dissipation 0.75 W
Maximum Voltages and Currents ($T_a = 25 \text{ }^\circ\text{C}$)	
V_{CBO} Collector to Base Voltage 20 V
V_{CEO} Collector to Emitter Voltage 16 V
V_{EBO} Emitter to Base Voltage 6.0 V
$I_{C(DC)}$ Collector Current 2.0 A
$I_{C(pulse)}$ * Collector Current 3.0 A

* $PW \leq 10 \text{ ms, Duty Cycle } \leq 50 \%$



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

SYMBOL	CHARACTERISTIC	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
h_{FE1}	DC Current Gain	135	350	650	—	$V_{CE} = 2.0 \text{ V, } I_C = 100 \text{ mA}$
h_{FE2}	DC Current Gain	100			—	$V_{CE} = 2.0 \text{ V, } I_C = 1.5 \text{ A}$
f_T	Gain Bandwidth Product	100	200		MHz	$V_{CE} = 10 \text{ V, } I_E = 50 \text{ mA}$
C_{ob}	Output Capacitance		28		pF	$V_{CB} = 10 \text{ V, } I_E = 0, f = 1.0 \text{ MHz}$
I_{CBO}	Collector Cutoff Current			100	nA	$V_{CB} = 16 \text{ V, } I_E = 0$
I_{EBO}	Emitter Cutoff Current			100	nA	$V_{EB} = 6.0 \text{ V, } I_C = 0$
V_{BE}	Base to Emitter Voltage	550	600	650	mV	$V_{CE} = 6.0 \text{ V, } I_C = 5.0 \text{ mA}$
$V_{CE(sat)1}$	Collector Saturation Voltage		0.20	0.40	V	$I_C = 1.0 \text{ A, } I_B = 10 \text{ mA}$
$V_{CE(sat)2}$	Collector Saturation Voltage		0.23	0.50	V	$I_C = 1.5 \text{ A, } I_B = 75 \text{ mA}$
$V_{CE(sat)3}$	Collector Saturation Voltage		0.26	0.50	V	$I_C = 1.5 \text{ A, } I_B = 20 \text{ mA}$
$V_{BE(sat)}$	Base Saturation Voltage		0.95	1.2	V	$I_C = 1.5 \text{ A, } I_B = 75 \text{ mA}$

Classification of h_{FE}

Rank	L	K	U
Range	135 - 270	200 - 400	300 - 650

Test Conditions : $V_{CE} = 2.0 \text{ V, } I_C = 100 \text{ mA}$