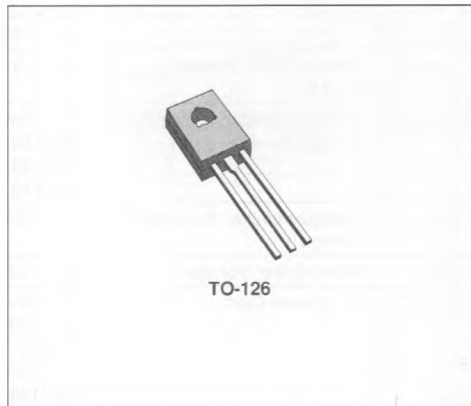


## MEDIUM POWER GENERAL PURPOSE TRANSISTORS

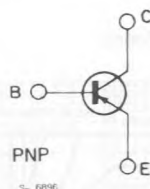
### DESCRIPTION

The BD136, BD138, BD140 are silicon epitaxial planar PNP transistors in Jedec TO-126 plastic package, designed for audio amplifiers and drivers utilizing complementary or quasi-complementary circuits.

The complementary NPN types are respectively the BD135, bd137 and BD139.



### INTERNAL SCHEMATIC DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	BD136	BD138	BD140	Unit
$V_{CBO}$	Collector-base Voltage ( $I_E = 0$ )	- 45	- 60	- 80	V
$V_{CEO}$	Collector-emitter Voltage ( $I_B = 0$ )	- 45	- 60	- 80	V
$V_{EBO}$	Emitter-base Voltage ( $I_C = 0$ )		- 5		V
$I_C$	Collector Current		- 1.5		A
$I_{CM}$	Collector Peak Current		- 3		A
$I_B$	Base Current		- 0.5		A
$P_{Tot}$	Total Power Dissipation at $T_{case} \leq 25^\circ C$ $T_{amb} \leq 25^\circ C$		12.5 1.25		W W
$T_{sig}$	Storage Temperature		- 55 to 150		$^\circ C$
$T_j$	Junction Temperature		150		$^\circ C$

**THERMAL DATA**

$R_{th(j-case)}$	Thermal Resistance Junction-case	Max	10	$^{\circ}C/W$
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**ELECTRICAL CHARACTERISTICS** ( $T_{case} = 25^{\circ}C$  unless otherwise specified)

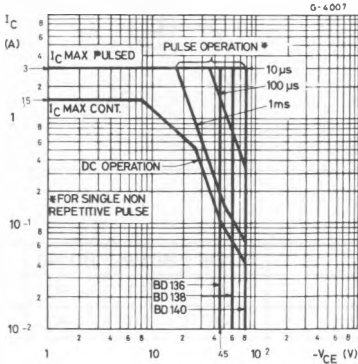
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector Cutoff Current ( $I_E = 0$ )	$V_{CB} = -30V$ $T_{case} = 125^{\circ}C$ $V_{CB} = -30V$			- 0.1 - 10	$\mu A$ $\mu A$
$I_{EBO}$	Emitter Cutoff Current ( $I_C = 0$ )	$V_{EB} = -5V$			- 10	$\mu A$
$V_{CEO(sus)}^*$	Collector-emitter Sustaining Voltage ( $I_B = 0$ )	$I_C = -30mA$ for <b>BD136</b> for <b>BD138</b> for <b>BD140</b>	- 45 - 60 - 80			V V V
$V_{CE(sat)}^*$	Collector-emitter Saturation Voltage	$I_C = -0.5A$ $I_B = -0.05A$			- 0.5	V
$V_{BE}^*$	Base-emitter Voltage	$I_C = -0.5A$ $V_{CE} = -2V$			- 1	V
$h_{FE}^*$	DC current Gain	$I_C = -5mA$ $V_{CE} = -2V$ $I_C = -0.5A$ $V_{CE} = -2V$ All Types $I_C = -150mA$ $V_{CE} = -2V$ for <b>BD136</b> for <b>BD138, BD140</b>	25 25		40 250 40 160	

\* Pulsed : pulse duration = 300 $\mu s$ , duty cycle  $\leq 2\%$ .

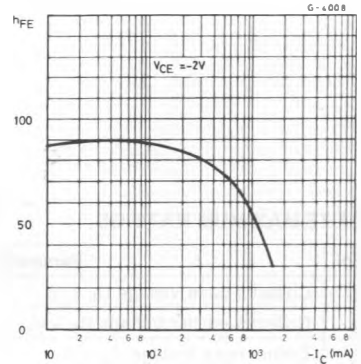
Available in  $h_{FE}$  groups  
( $I_C = -0.15A$   $V_{CE} = -2V$ )

$h_{FE}$ group	Min.	Max.
6	40	100
10	63	160
16	100	250

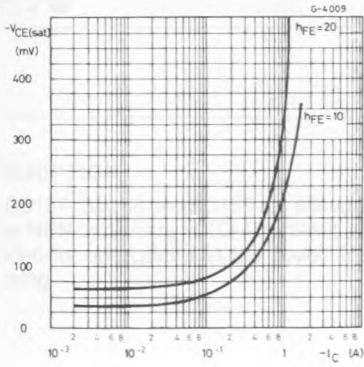
**Safe Operating Areas.**



**DC Current Gain.**



Collector-emitter Saturation Voltage.



Base-emitter Voltage.

