

BDW93, BDW94 Series

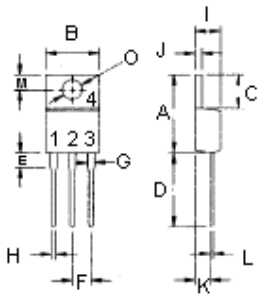
Darlington Transistors



Features:

Designed for general-purpose amplifier and low speed switching applications.

- Collector-emitter sustaining voltage- $V_{CEO(sus)} = 80V$ (Minimum) - BDW93B, BDW94B
100V (Minimum) - BDW93C, BDW94C
- Collector-emitter saturation voltage- $V_{CE(sat)} = 2.0V$ (Maximum) at $I_C = 5.0A$.
- Monolithic construction with built-in-base-emitter shunt resistor.



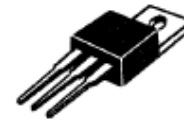
- Pin 1. Base
2. Collector
3. Emitter
4. Collector (Case)

Dimension	Minimum	Maximum
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

Dimensions : Millimetres

NPN	PNP
BDW93B	BDW94B
BDW93C	BDW94C

12 Ampere
Darlington
Complementary Silicon
Power Transistors
45 - 100 Volts
80 Watts



TO-220

Maximum Ratings

Characteristic	Symbol	BDW93B BDW94B	BDW93C BDW94C	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	V
Collector-Base Voltage	V_{CBO}			
Emitter-Base Voltage	V_{EBO}	5.0		
Collector Current-Continuous Peak	I_C I_{CM}	12 15		A
Base Current	I_B	0.2		A
Total Power Dissipation at $T_C = 25^\circ C$ Derate Above $25^\circ C$	P_D	80 0.64		W W/ $^\circ C$
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150		$^\circ C$

Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal Resistance Junction to Case	$R_{\theta jc}$	1.56	$^\circ C/W$

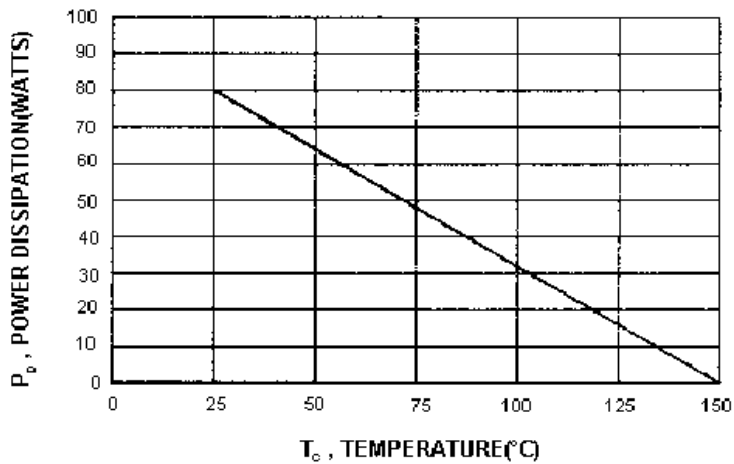


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Figure1 Power Derating



Electrical Characteristics ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) ($I_C = 100\text{mA}$, $I_B = 0$)	BDW93B,BDW94B BDW93C,BDW94C	$V_{CEO(sus)}$	80 100	- V
Collector Cut off Current ($V_{CE} = 80\text{V}$, $I_B = 0$)	BDW93B,BDW94B BDW93C,BDW94C	I_{CEO}	-	1.0 mA
Collector-Base Cut off Current ($V_{CB} = \text{Rated } V_{CB}$, $I_E = 0$)		I_{CBO}	-	100 μA
Emitter-Base Cut off Current ($V_{EB} = 5.0\text{V}$, $I_C = 0$)		I_{EBO}	-	2.0 mA
ON Characteristics (1)				
DC Current Gain ($I_C = 3.0\text{A}$, $V_{CE} = 3.0\text{V}$) ($I_C = 5.0\text{A}$, $V_{CE} = 3.0\text{V}$) ($I_C = 10\text{A}$, $V_{CE} = 3.0\text{V}$)		h_{FE}	1000 750 100	20,000 -
Collector-Emitter Saturation Voltage ($I_C = 5.0\text{A}$, $I_B = 20\text{mA}$) ($I_C = 10\text{A}$, $I_B = 100\text{mA}$)		$V_{CE(sat)}$	-	2.0 3.0 V
Base-Emitter Saturation Voltage ($I_C = 5.0\text{A}$, $I_B = 20\text{mA}$) ($I_C = 10\text{A}$, $I_B = 100\text{mA}$)		$V_{BE(sat)}$	-	2.5 4.0

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

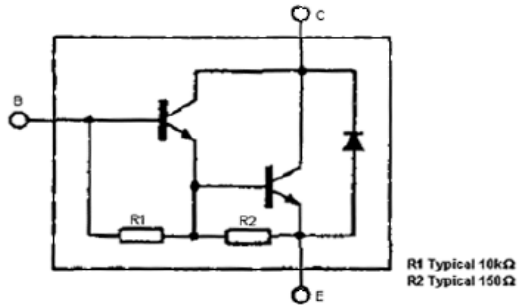


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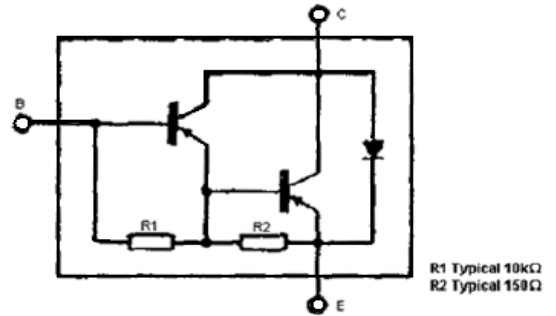
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multicomp

BDW93 Series NPN

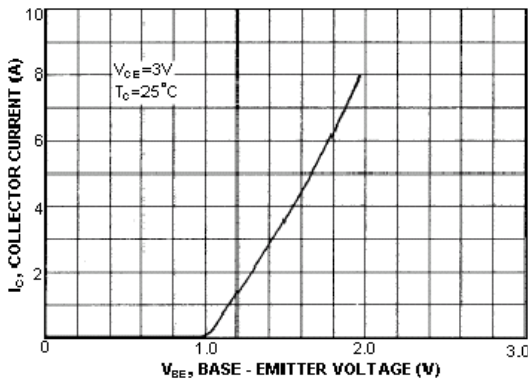


BDW94 Series PNP



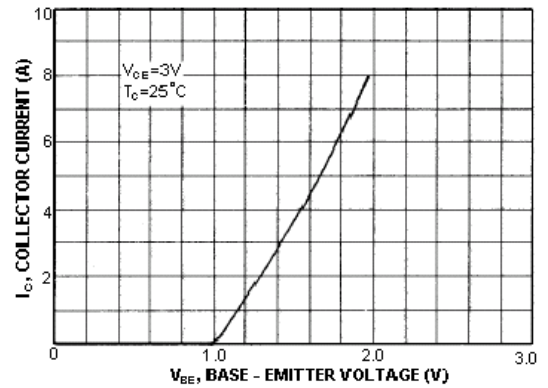
NPN BDW93B and C

$I_C - V_{be}$

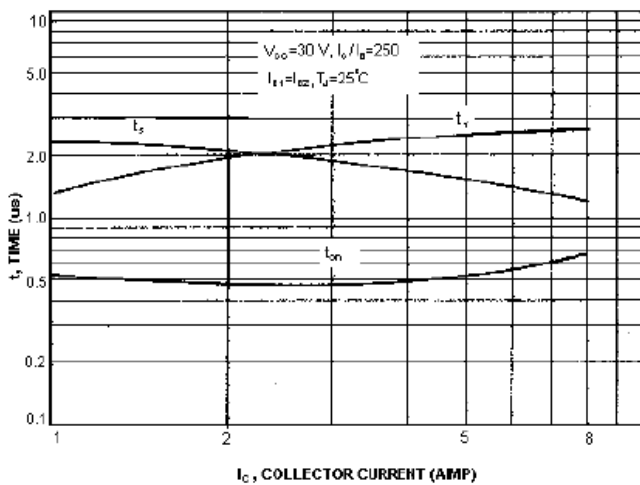


PNP BDW94B and C

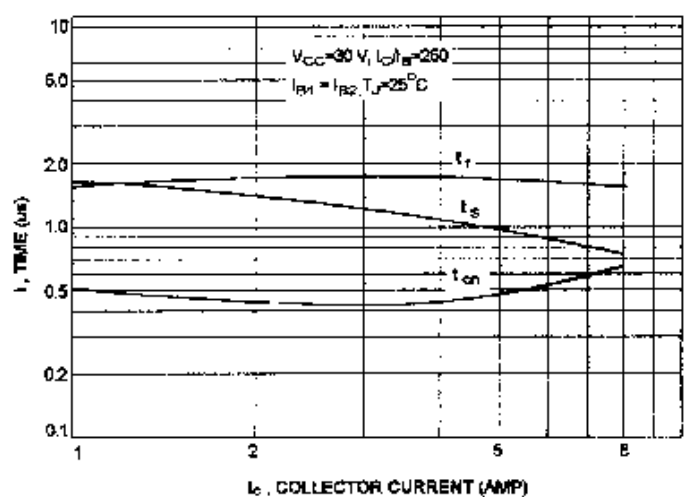
$I_C - V_{be}$



Switching Time



Switching Time



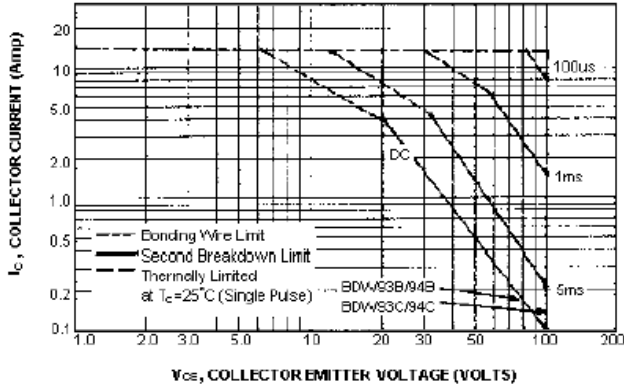
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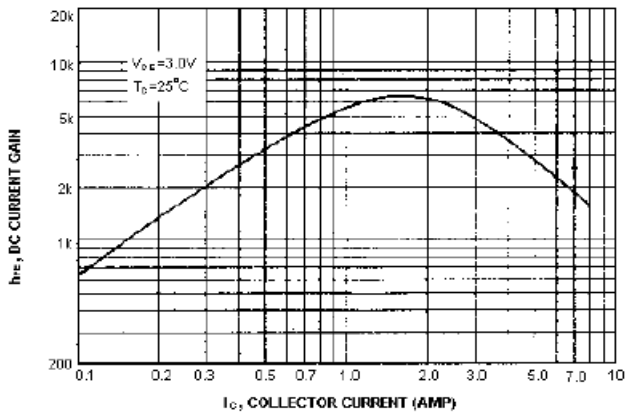
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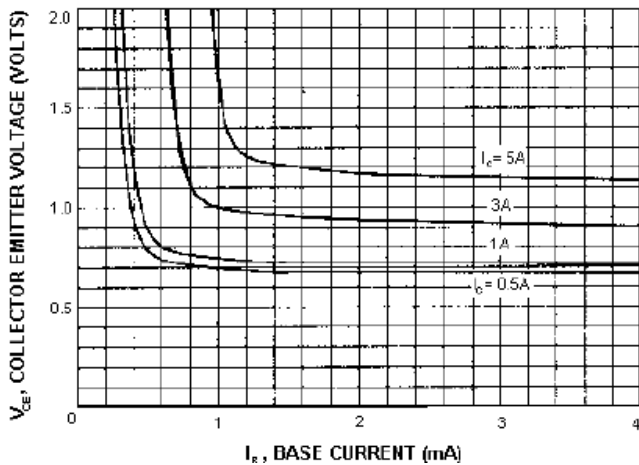
NPN BDW93B and C/PNP BDW94B and C
Active-Region Safe Operating Area (SOA)



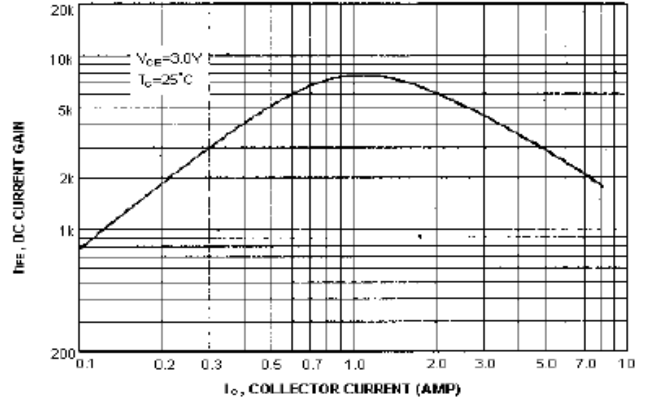
PNP BDW94B and C
DC Current Gain



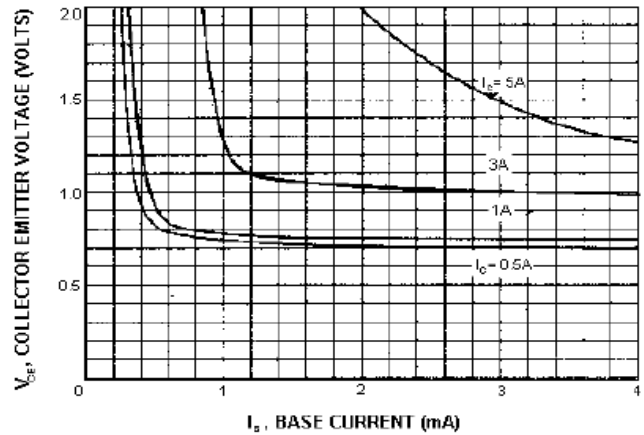
PNP BDW94B and C
Collector Saturation Region



NPN BDW93B and C
DC Current Gain



NPN BDW93B and C
Collector Saturation Region



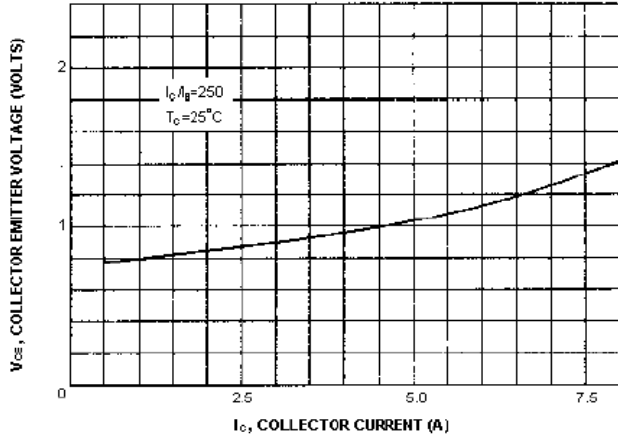
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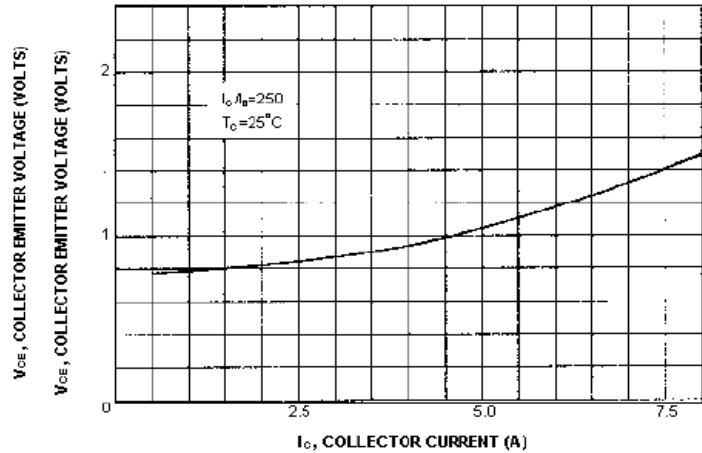
NPN BDW93B and C

$V_{CE}(\text{Sat}) - I_C$



PNP BDW94B and C

$V_{CE}(\text{Sat}) - I_C$



Specifications

I_C (av) maximum (A)	V_{CE0} maximum V	h_{FE} minimum at $I_C = 5A$	P_{tot} at 25°C (W)	Package	Type	Part Number
12	80	750	80	TO-220	NPN	BDW94B
						BDW93B
	100				PNP	BDW93C
						BDW94C



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Notes:

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