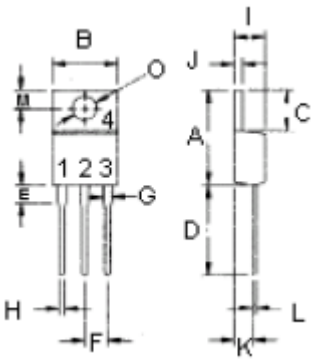
BDW93C, BDW94C Series

Darlington Transistors



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

Features

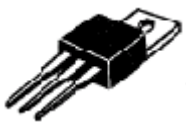
Designed for general-purpose amplifier and low speed switching applications

- Collector-emitter sustaining voltage-$V_{CEO\ (sus)}$ = 100 V (Minimum)
- Collector-emitter saturation voltage-$V_{CE\ (sat)}$ = 2 V (Maximum) at I_C = 5 A
- Monolithic construction with built-in-base-emitter shunt resistor

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	2.2	2.97
L	0.33	0.55
M	2.48	2.98
O	3.7	3.9

Dimensions : Millimetres

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



TO-220

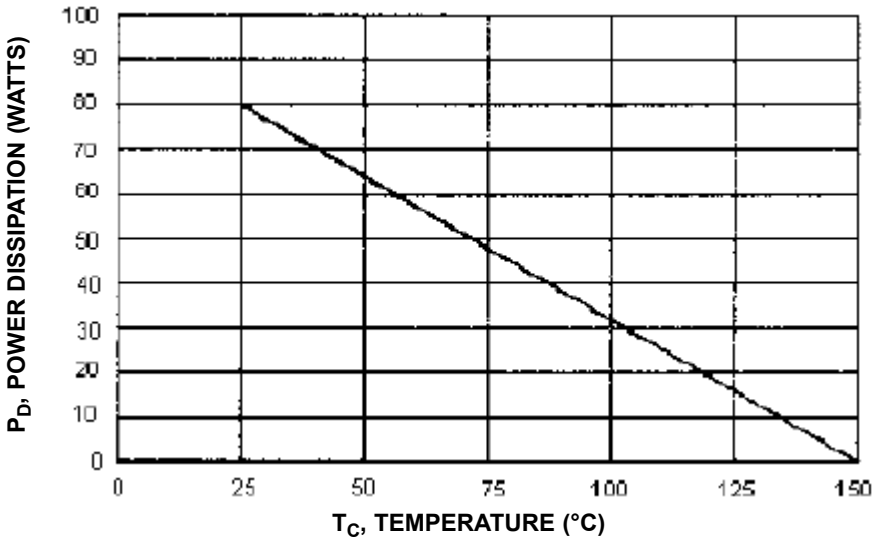
Maximum Ratings

Characteristic	Symbol	BDW93C / BDW94C	Unit
Collector-Emitter Voltage	V_{CEO}	100	V
Collector-Base Voltage	V_{CBO}		
Emitter-Base Voltage	V_{EBO}	5	
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°C Derate Above 25°C	P_D	80 0.64	W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{STG}	-65 to +150	°C

Thermal Characteristics

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

Figure1 Power Derating



Electrical Characteristics (T_C = 25°C unless otherwise noted)

Characteristic	Symbol	Minimum	Maximum	Unit
OFF Characteristics				
Collector-Emitter Sustaining Voltage (1) (I_C = 100 mA, I_B = 0	$V_{CEO\ (sus)}$	80 100	-	V
Collector Cut off Current (V_{CE} = 80 V, I_B = 0)	I_{CEO}	-	1	mA
Collector-Base Cut off Current (V_{CB} = Rated V_{CB}, I_E = 0)	I_{CBO}	-	100	µA
Emitter-Base Cut off Current (V_{EB} =5 V, I_C = 0)	I_{EBO}	-	2	mA
ON Characteristics (1)				
DC Current Gain (I_C = 3 A, V_{CE} = 3 V) (I_C = 5 A, V_{CE} = 3 V) (I_C = 10 A, V_{CE} = 3 V)	h_{FE}	1,000 750 100	20,000	-
Collector-Emitter Saturation Voltage (I_C = 5 A, I_B = 20 mA) (I_C = 10 A, I_B = 100 mA)	$V_{CE\ (sat)}$	-	2 3	V
Base-Emitter Saturation Voltage (I_C = 5 A, I_B = 20 mA) (I_C = 10 A, I_B = 100 mA)	$V_{BE\ (sat)}$	-	2.5 4	

(1) Pulse Test: Pulse Width = 300 µs, Duty Cycle ≤2.0%

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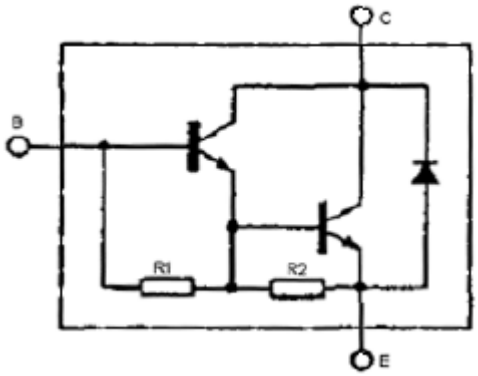
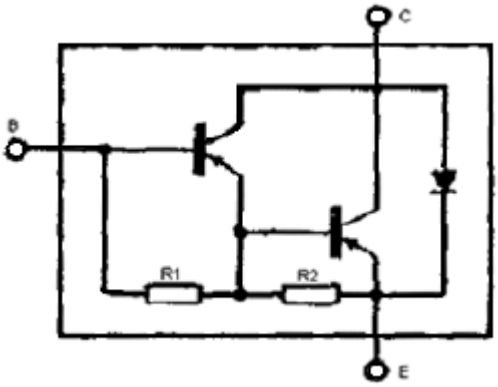
BDW93C NPN



R1 Typical 10 kΩ
R2 Typical 150 Ω

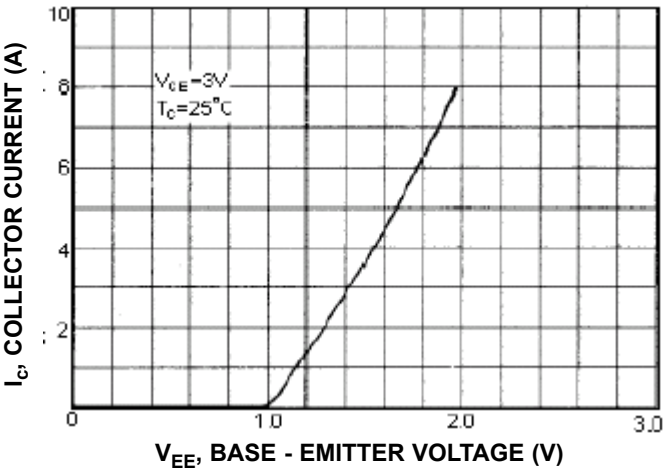
BDW94C PNP



R1 Typical 10 kΩ
R2 Typical 150 Ω

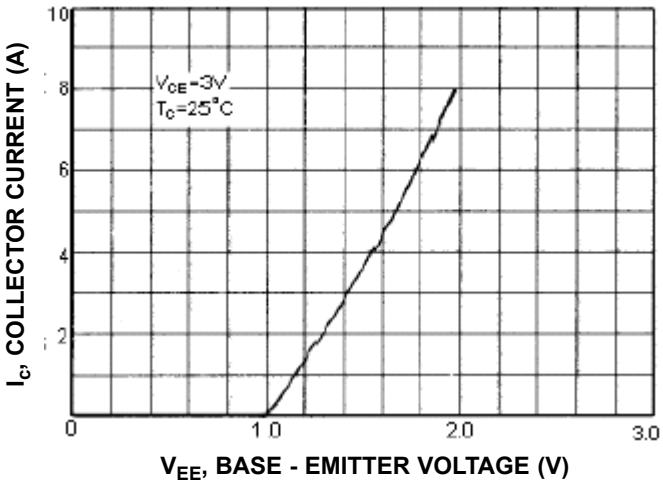
NPN BDW93C

I_C - V_{be}

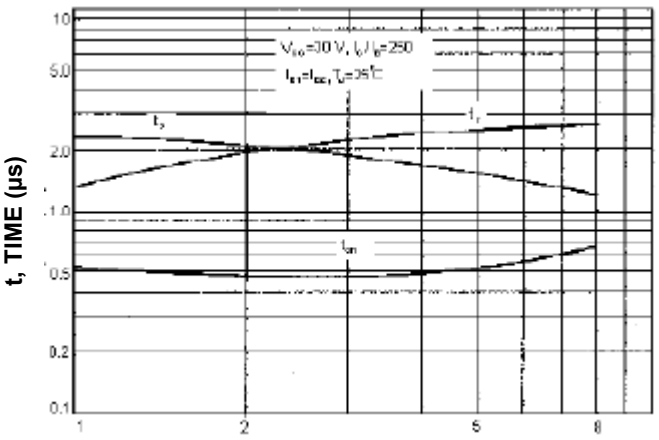


PNP BDW94C

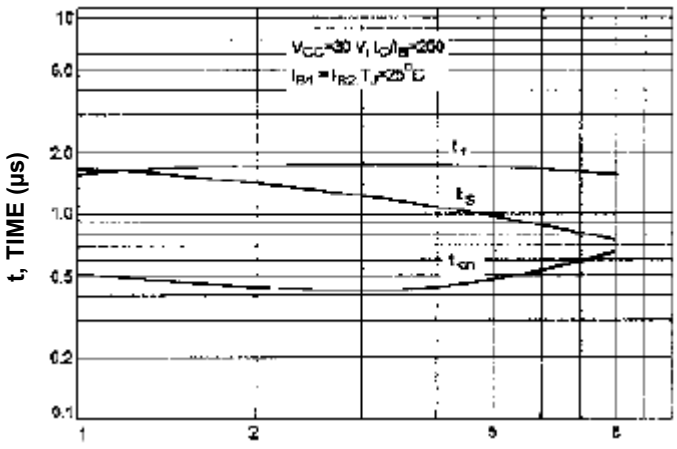
I_C - V_{be}



Switching Time

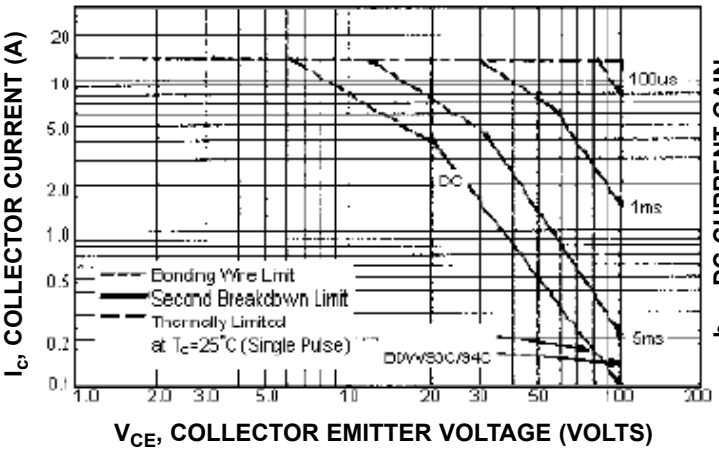


Switching Time



NPN BDW93C / PNP BDW94C

Active-Region Safe Operating Area (SOA)

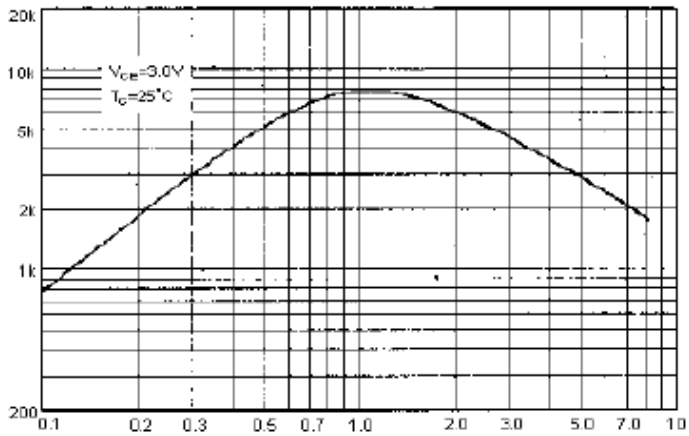


I_C, COLLECTOR CURRENT (A)

V_{CE}, COLLECTOR EMITTER VOLTAGE (VOLTS)

NPN BDW93C

DC Current Gain

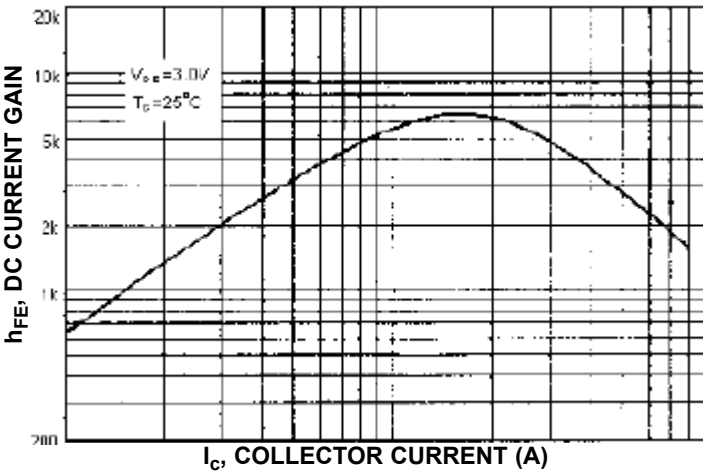


h_{FE}, DC CURRENT GAIN

I_C, COLLECTOR CURRENT (A)

PNP BDW94C

DC Current Gain

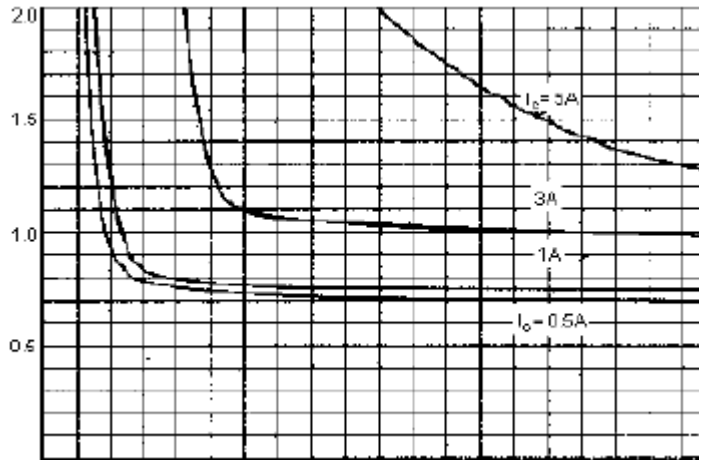


h_{FE}, DC CURRENT GAIN

I_C, COLLECTOR CURRENT (A)

NPN BDW93C

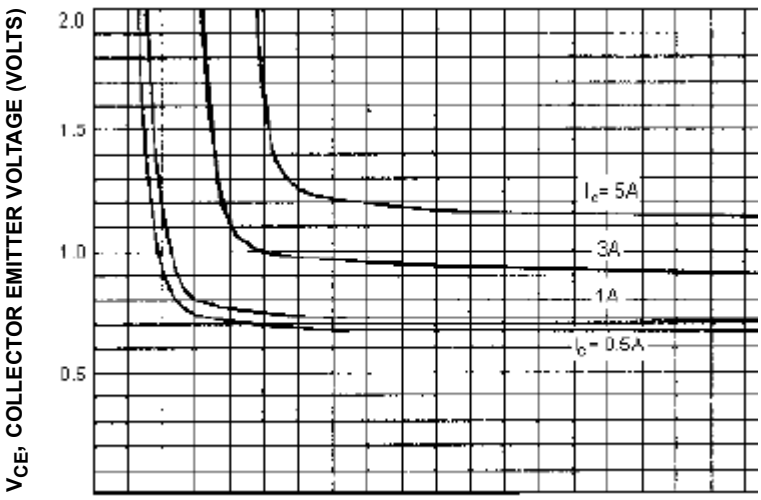
Collector Saturation Region



V_{CE}, COLLECTOR EMITTER VOLTAGE (VOLTS)

I_B, BASE CURRENT (mA)

PNP BDW94C - Collector Saturation Region

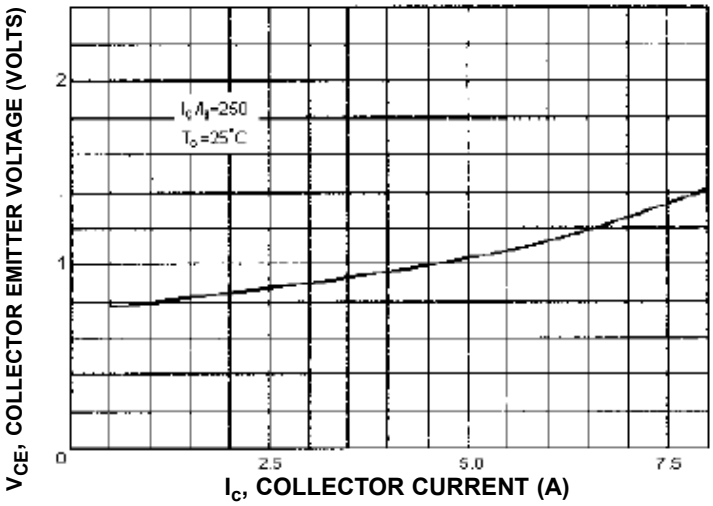


V_{CE}, COLLECTOR EMITTER VOLTAGE (VOLTS)

I_B, BASE CURRENT (mA)

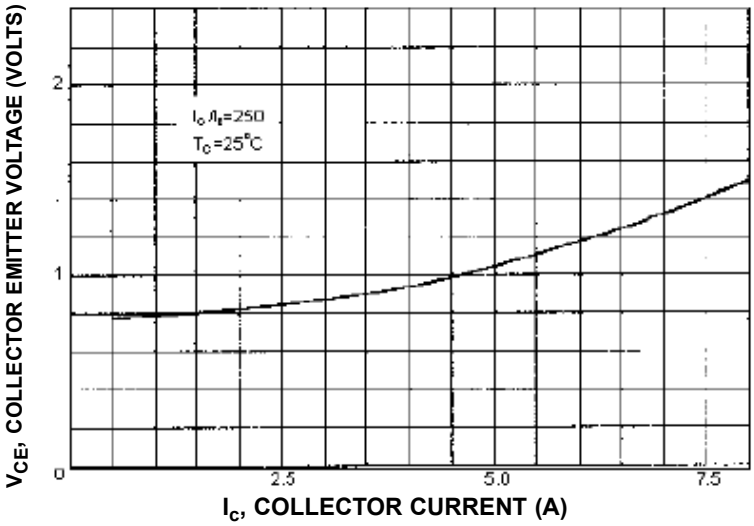
NPN BDW93C

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



PNP BDW94C

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



Specification Table

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