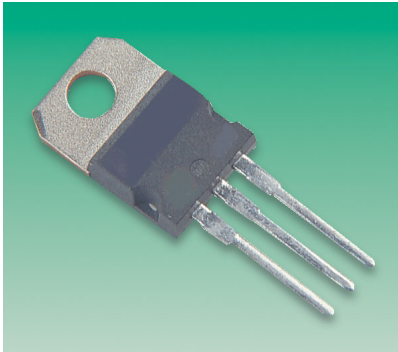


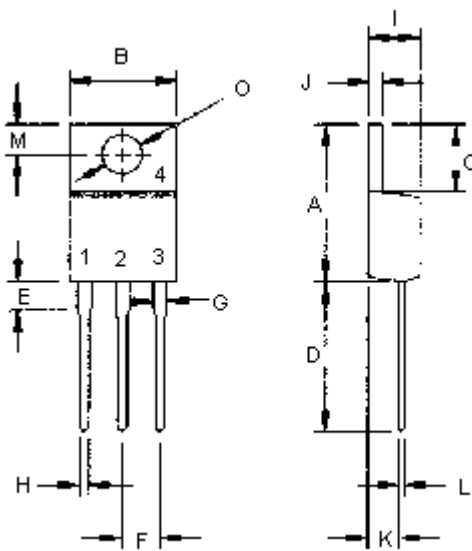
# BDW93, BDW94

## Darlington Transistors



### Features:

- 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.

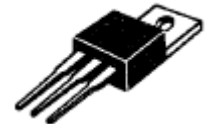


Dimensions	Minimum	Maximum
A	14.68	15.31
B	9.78	10.42
C	5.01	6.52
D	13.06	14.62
E	3.57	4.07
F	2.42	3.66
G	1.12	1.36
H	0.72	0.96
I	4.22	4.98
J	1.14	1.38
K	2.20	2.97
L	0.33	0.55
M	2.48	2.98
O	3.70	3.90

NPN  
BDW93B  
BDW93C

PNP  
BDW94B  
BDW94C

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



TO-220

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

Dimensions : Millimetres



# BDW93, BDW94

## Darlington Transistors



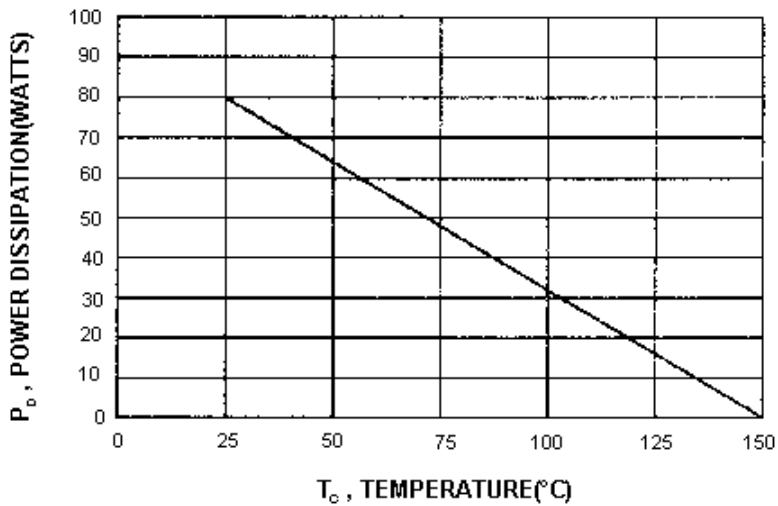
### MAXIMUM RATINGS

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		
Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	80 0.64		W W/ $^\circ\text{C}$
Operation and Storage Junction Temperature Range	$T_J, T_{STG}$	-65 to +150		$^\circ\text{C}$

### THERMAL CHARACTERISTICS

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

Figure-1 Power Derating



# BDW93, BDW94

## Darlington Transistors



### ELECTRICAL CHARACTERISTICS ( $T_C = 25^\circ\text{C}$ unless otherwise noted)

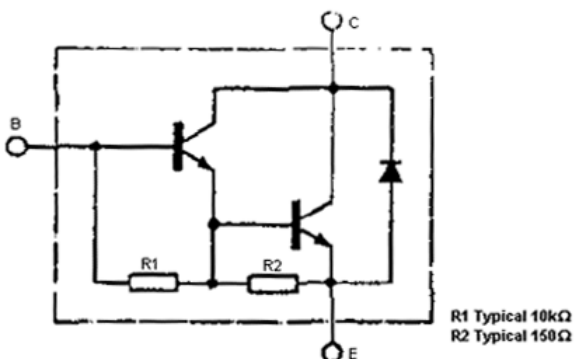
Characteristic	Symbol	Minimum	Maximum	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Sustaining Voltage (1) ( $I_C = 100\text{mA}$ , $I_B = 0$ ) BDW93B, BDW94B BDW93C, BDW94C	$V_{CEO(sus)}$	80 100	-	V
Collector Cut off Current ( $V_{CE} = 80\text{V}$ , $I_B = 0$ ) BDW93B, BDW94B ( $V_{CE} = 80\text{V}$ , $I_B = 0$ ) BDW93C, BDW94C	$I_{CEO}$	-	1.0	mA
Collector Base Cut off Current ( $V_{CB} = \text{Rated } V_{CB}$ , $I_E = 0$ )	$I_{CBO}$	-	100	$\mu\text{A}$
Emitter Base Cut off Current ( $V_{EB} = 5.0\text{V}$ , $I_C = 0$ )	$I_{EBO}$	-	2.0	mA

### ON CHARACTERISTICS (1)

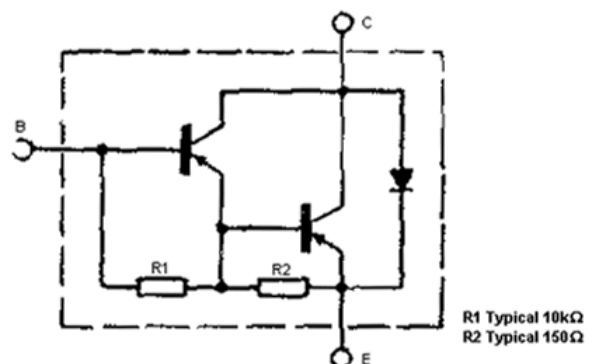
DC Current Gain ( $I_C = 5.0\text{A}$ , $V_{CE} = 3.0\text{V}$ ) ( $I_C = 3.0\text{A}$ , $V_{CE} = 3.0\text{V}$ ) ( $I_C = 10\text{A}$ , $V_{CE} = 3.0\text{V}$ )	$h_{FE}$	1000 750 100	20,000	-
Collector-Emitter Saturation Voltage ( $I_C = 5.0\text{A}$ , $I_B = 20\text{mA}$ ) ( $I_C = 10\text{A}$ , $I_B = 100\text{mA}$ )	$V_{CE(sat)}$	-	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 =  $300\mu\text{s}$ , Duty cycle  $\leq 2.0\%$

BDW93 Series NPN



BDW94 Series PNP



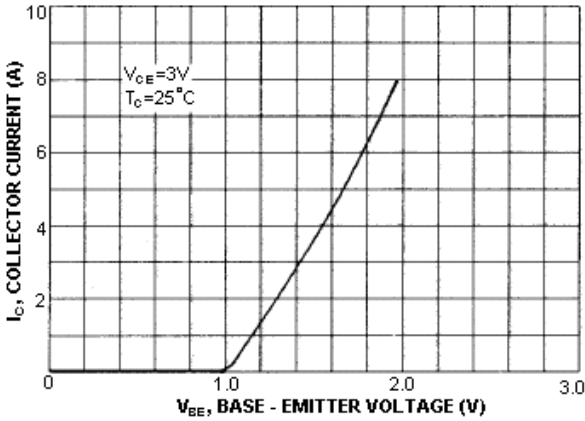
# BDW93, BDW94

## Darlington Transistors



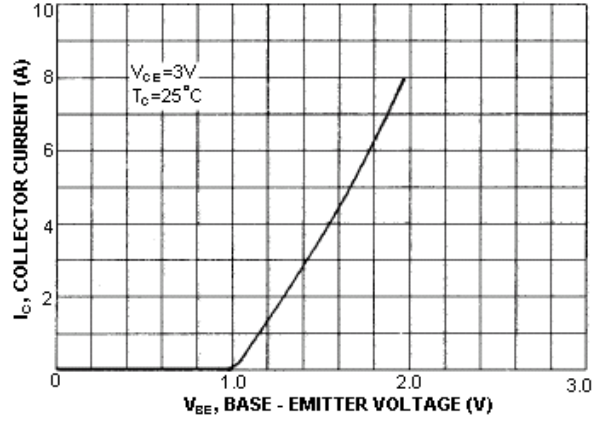
NPN BDW93B and C

$I_C - V_{be}$

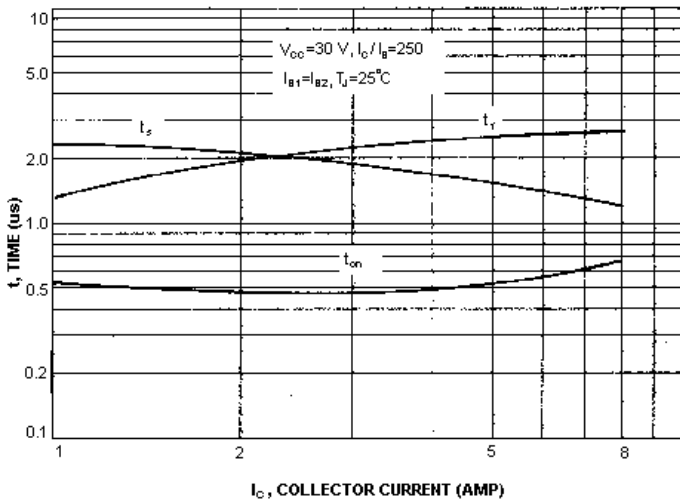


PNP BDW94B and C

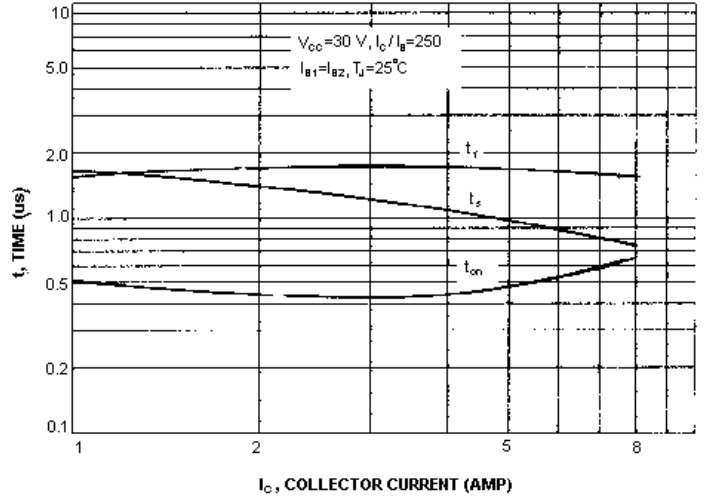
$I_C - V_{be}$



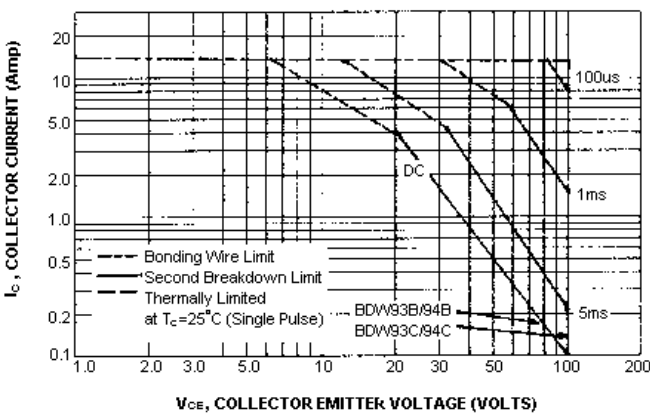
Switching Time



Switching Time



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

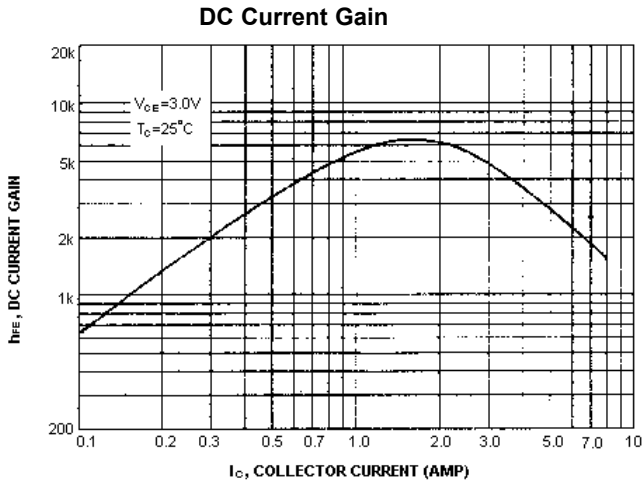


# BDW93, BDW94

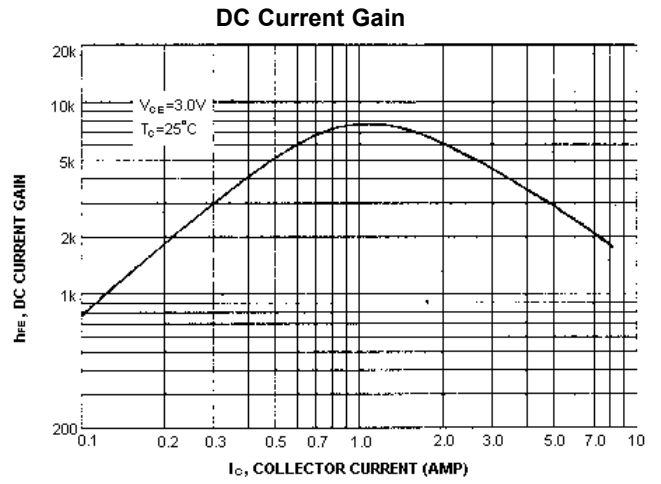
## Darlington Transistors



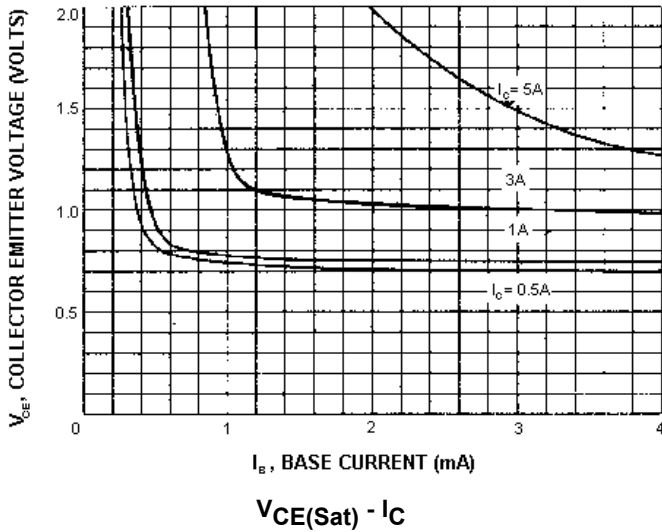
NPN BDW93B and C



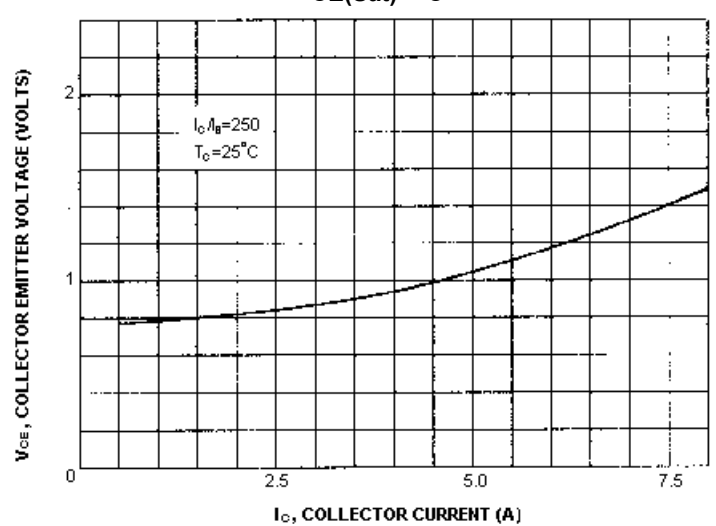
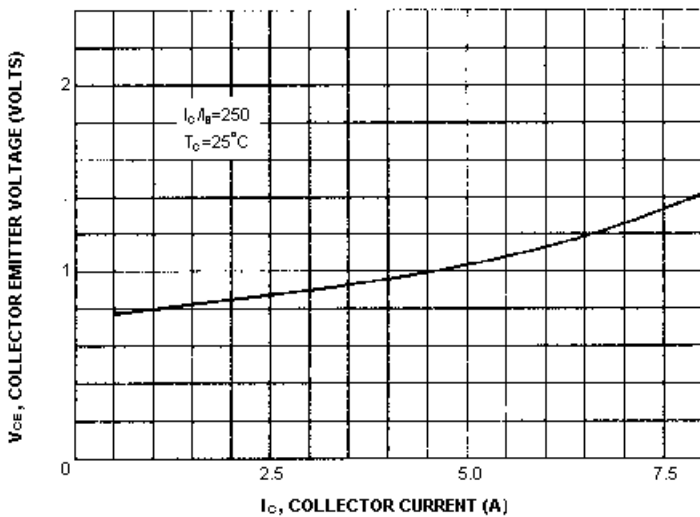
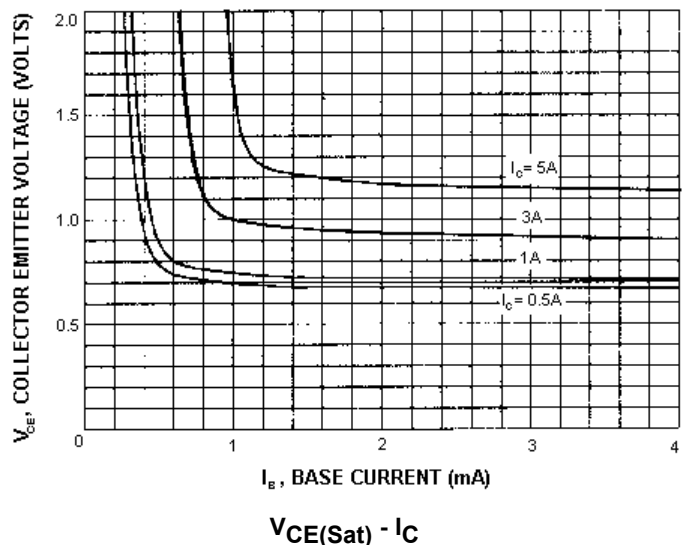
PNP BDW94B and C



Collector Saturation Region



Collector Saturation Region



# BDW93, BDW94

## Darlington Transistors



### Specifications

TYPE	Part Number
NPN	BDW93B
	BDW93C
PNP	BDW94B
	BDW94C

# BDW93, BDW94

## Darlington Transistors



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