

# Silicon PNP Darlington Transistor

## **BDW24C**

Medium Power Linear and Switching

100V / 6A

# DATASHEET

OEM –SGS Ates

Source: SGS Ates Databook 1977

## EPITAXIAL-BASE PNP

**BDW 24**  
**BDW 24A**  
**BDW 24B**  
**BDW 24C**

### POWER DARLINGTONS

The BDW 24, BDW 24A, BDW 24B, BDW 24C are silicon epitaxial-base PNP transistors in monolithic Darlington configuration and are mounted in Jedec TO-220 plastic package. They are intended for use in hammer drivers, audio amplifiers and other medium power linear and switching applications.

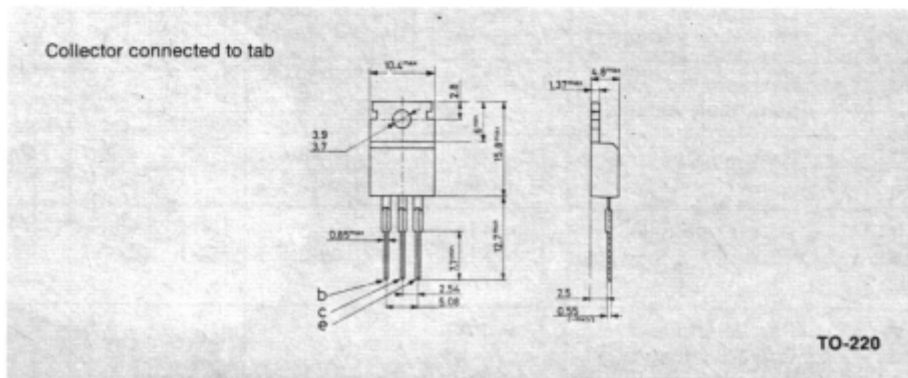
The complementary NPN types are the BDW 23, BDW 23A, BDW 23B and BDW 23C respectively.

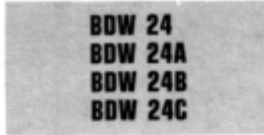
### ABSOLUTE MAXIMUM RATINGS

		BDW24	BDW24A	BDW24B	BDW24C
$V_{CBO}$	Collector-base voltage ( $I_E = 0$ )	-45V	-60V	-80V	-100V
$V_{CEO}$	Collector-emitter voltage ( $I_B = 0$ )	-45V	-60V	-80V	-100V
$V_{EBO}$	Emitter-base voltage ( $I_C = 0$ )			-5V	
$I_C$	Collector current			-6A	
$I_{CM}$	Collector peak current (repetitive)			-8A	
$I_B$	Base current			-0.2A	
$P_{tot}$	Total power dissipation at $T_{case} \leq 25^\circ\text{C}$			50W	
$T_{stg}$	Storage temperature			-65 to $150^\circ\text{C}$	
$T_J$	Junction temperature			$150^\circ\text{C}$	

### MECHANICAL DATA

Dimensions in mm





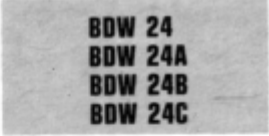
### THERMAL DATA

$R_{th\ j-case}$	Thermal resistance junction-case	max	2.5	°C/W
$R_{th\ j-amb}$	Thermal resistance junction-ambient	max	70	°C/W

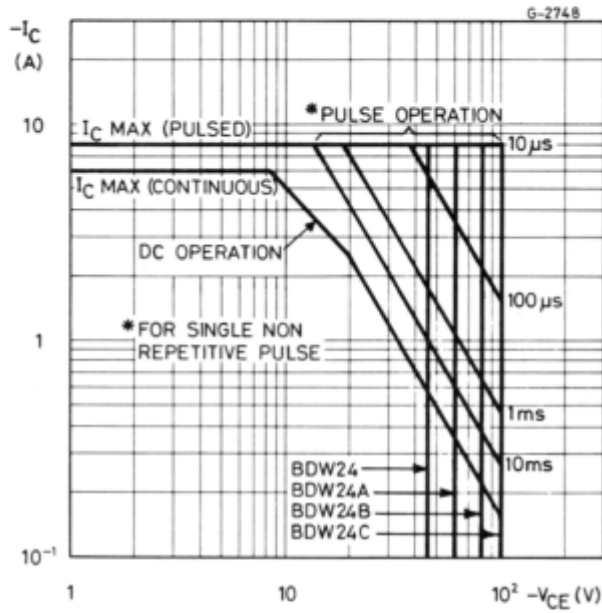
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}C$ unless otherwise specified)

Parameter	Test conditions	Min.	Typ.	Max.	Unit
$I_{CBO}$	Collector cutoff current ( $I_E = 0$ )	for <b>BDW24</b> for <b>BDW24A</b> for <b>BDW24B</b> for <b>BDW24C</b>	$V_{CB} = -45V$ $V_{CB} = -60V$ $V_{CB} = -80V$ $V_{CB} = -100V$	-200 -200 -200 -200	$\mu A$ $\mu A$ $\mu A$ $\mu A$
$I_{CEO}$	Collector cutoff current ( $I_B = 0$ )	for <b>BDW24</b> for <b>BDW24A</b> for <b>BDW24B</b> for <b>BDW24C</b>	$V_{CE} = -22V$ $V_{CE} = -30V$ $V_{CE} = -40V$ $V_{CE} = -50V$	-500 -500 -500 -500	$\mu A$ $\mu A$ $\mu A$ $\mu A$
$I_{EBO}$	Emitter cutoff current ( $I_C = 0$ )	$V_{EB} = -5 V$		-2	mA
$V_{CEO(sus)}^*$	Collector-emitter sustaining voltage ( $I_B = 0$ )	$I_C = -100 mA$		-45 -60 -80 -100	V V V V
$V_{CE(sat)}^*$	Collector-emitter saturation voltage	$I_C = -2A$ $I_C = -6A$	$I_B = -8mA$ $I_B = -60mA$	-2 -3	V V
$V_{BE(sat)}^*$	Base-emitter saturation voltage	$I_C = -2A$	$I_B = -8mA$	-2.5	V
$V_{BE}^*$	Base-emitter voltage	$I_C = -1A$ $I_C = -6A$	$V_{CE} = -3V$ $V_{CE} = -3V$	-2.5 -3.0	V V
$h_{FE}^*$	DC current gain	$I_C = -1A$ $I_C = -2A$ $I_C = -6A$	$V_{CE} = -3V$ $V_{CE} = -3V$ $V_{CE} = -3V$	1000 750 100	20000 — —
$V_F^*$	Parallel-diode forward voltage	$I_F = 2A$		1.8	V

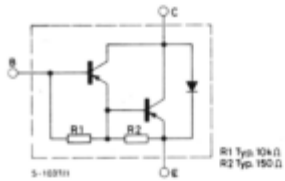
\* Pulsed: pulse duration = 300 $\mu s$ , duty cycle = 1.5%



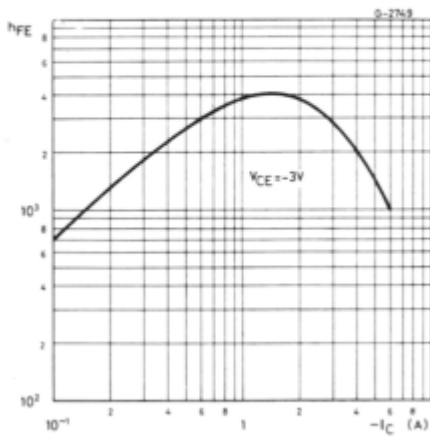
Safe operating areas



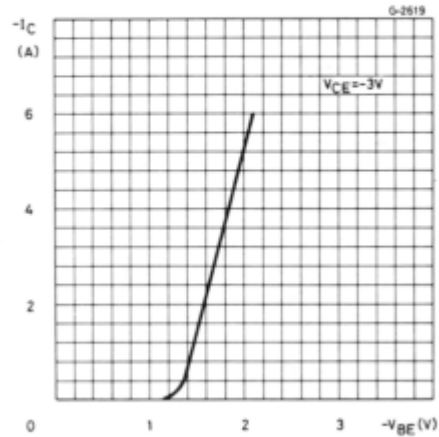
Internal circuit diagram



DC current gain

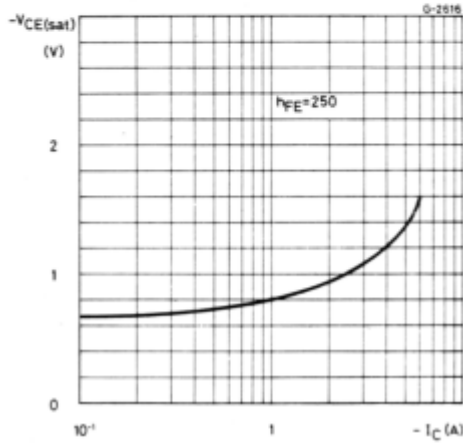


DC transconductance

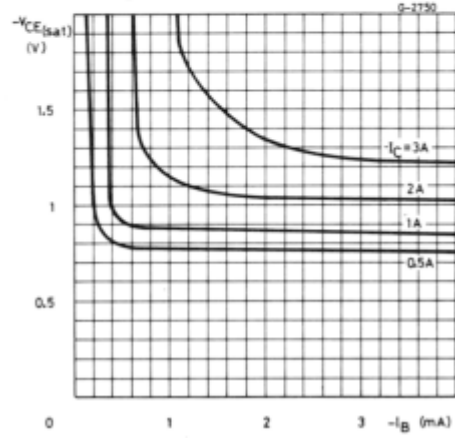




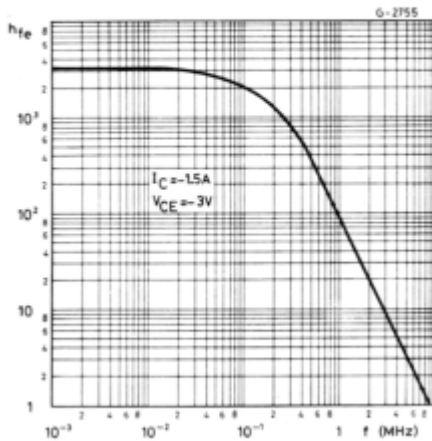
Collector-emitter saturation voltage



Collector-emitter saturation voltage



Small signal current gain



Saturated switching characteristics

