

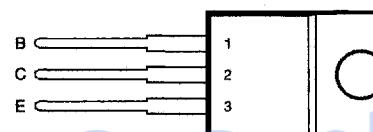
**BD243, BD243A, BD243B, BD243C**  
NPN SILICON POWER TRANSISTORS

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JUNE 1973 - REVISED MARCH 1997

- Designed for Complementary Use with the BD244 Series
- 65 W at 25°C Case Temperature
- 6 A Continuous Collector Current
- 10 A Peak Collector Current
- Customer-Specified Selections Available

TO-220 PACKAGE  
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.  
MOTRAC4

absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-emitter voltage ( $R_{BE} = 100 \Omega$ )	BD243		55	
	BD243A	$V_{CEP}$	70	
	BD243B		90	
	BD243C		115	
Collector-emitter voltage ( $I_C = 30 \text{ mA}$ )	BD243		45	
	BD243A	$V_{CEO}$	60	
	BD243B		80	
	BD243C		100	
Emitter-base voltage		$V_{EBO}$	5	V
Continuous collector current		$I_C$	6	A
Peak collector current (see Note 1)		$I_{CM}$	10	A
Continuous base current		$I_B$	3	A
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)		$P_{tot}$	65	W
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)		$P_{tot}$	2	W
Unclamped inductive load energy (see Note 4)		$\frac{1}{2}L I_C^2$	62.5	mJ
Operating junction temperature range		$T_j$	-65 to +150	°C
Storage temperature range		$T_{stg}$	-65 to +150	°C
Lead temperature 3.2 mm from case for 10 seconds		$T_L$	250	°C

- NOTES:
1. This value applies for  $t_p \leq 0.3 \text{ ms}$ , duty cycle  $\leq 10\%$ .
  2. Derate linearly to 150°C case temperature at the rate of 0.52 W/°C.
  3. Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
  4. This rating is based on the capability of the transistor to operate safely in a circuit of:  $L = 20 \text{ mH}$ ,  $I_{B(on)} = 0.4 \text{ A}$ ,  $R_{BE} = 100 \Omega$ ,  $V_{BE(off)} = 0$ ,  $R_S = 0.1 \Omega$ ,  $V_{CC} = 20 \text{ V}$ .

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**electrical characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS			MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$ Collector-emitter breakdown voltage	$I_C = 30 \text{ mA}$	$I_B = 0$	BD243	45			
	(see Note 5)		BD243A	60			V
			BD243B	80			
			BD243C	100			
$I_{CES}$ Collector-emitter cut-off current	$V_{CE} = 55 \text{ V}$	$V_{BE} = 0$	BD243		0.4		
	$V_{CE} = 70 \text{ V}$	$V_{BE} = 0$	BD243A		0.4		
	$V_{CE} = 90 \text{ V}$	$V_{BE} = 0$	BD243B		0.4		
	$V_{CE} = 115 \text{ V}$	$V_{BE} = 0$	BD243C		0.4		
$I_{CEO}$ Collector cut-off current	$V_{CE} = 30 \text{ V}$	$I_B = 0$	BD243/243A		0.7		
	$V_{CE} = 60 \text{ V}$	$I_B = 0$	BD243B/243C		0.7		
$I_{EBO}$ Emitter cut-off current	$V_{EB} = 5 \text{ V}$	$I_C = 0$			1		mA
$h_{FE}$ Forward current transfer ratio	$V_{CE} = 4 \text{ V}$	$I_C = 0.3 \text{ A}$		30			
	$V_{CE} = 4 \text{ V}$	$I_C = 3 \text{ A}$	(see Notes 5 and 6)	15			
$V_{CE(sat)}$ Collector-emitter saturation voltage	$I_B = 1 \text{ A}$	$I_C = 6 \text{ A}$	(see Notes 5 and 6)		1.5		V
$V_{BE}$ Base-emitter voltage	$V_{CE} = 4 \text{ V}$	$I_C = 6 \text{ A}$	(see Notes 5 and 6)		2		V
$h_{fe}$ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ kHz}$	20			
$ h_{fe} $ Small signal forward current transfer ratio	$V_{CE} = 10 \text{ V}$	$I_C = 0.5 \text{ A}$	$f = 1 \text{ MHz}$	3			

NOTES: 5. These parameters must be measured using pulse techniques,  $t_p = 300 \mu\text{s}$ , duty cycle  $\leq 2\%$ .

6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

**thermal characteristics**

PARAMETER	MIN	TYP	MAX	UNIT
$R_{8JC}$ Junction to case thermal resistance			1.92	°C/W
$R_{8JA}$ Junction to free air thermal resistance			62.5	°C/W

**resistive-load-switching characteristics at 25°C case temperature**

PARAMETER	TEST CONDITIONS <sup>†</sup>			MIN	TYP	MAX	UNIT
$t_{on}$ Turn-on time	$I_C = 1 \text{ A}$	$I_{B(on)} = 0.1 \text{ A}$	$I_{B(off)} = -0.1 \text{ A}$		0.3		μs
$t_{off}$ Turn-off time	$V_{BE(off)} = -3.7 \text{ V}$	$R_L = 20 \Omega$	$t_p = 20 \mu\text{s}, dc \leq 2\%$		1		μs

<sup>†</sup> Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

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**TYPICAL CHARACTERISTICS**

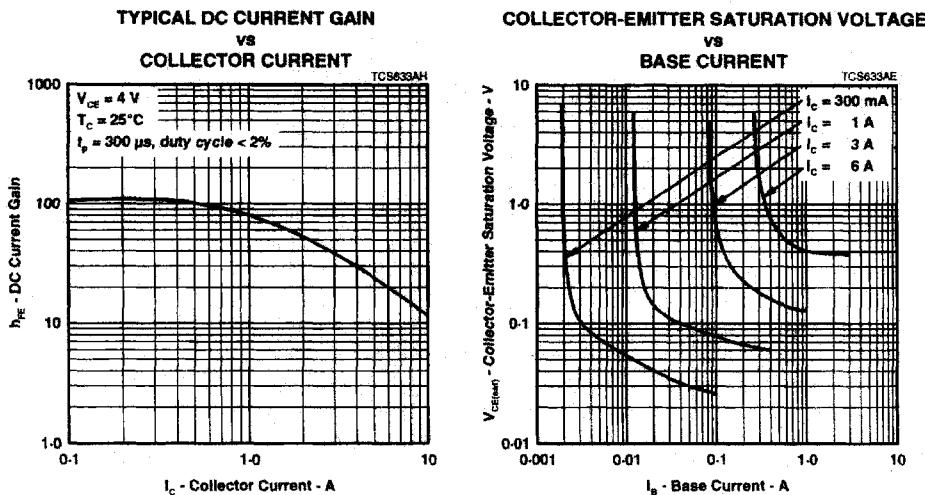


Figure 1.

Figure 2.

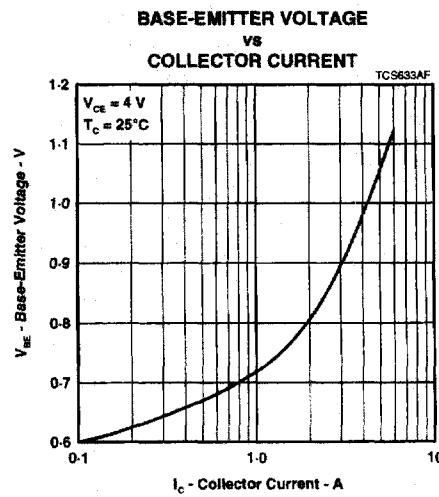


Figure 3.

**BD243, BD243A, BD243B, BD243C**  
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**MAXIMUM SAFE OPERATING REGIONS**

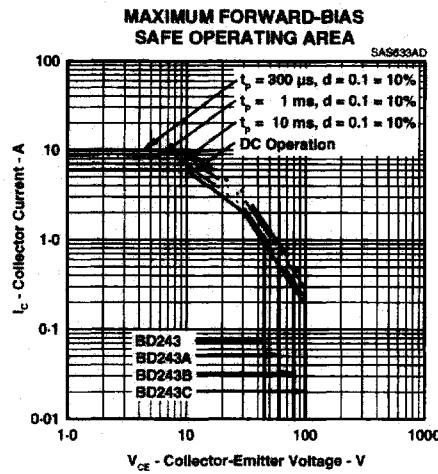


Figure 4.

**THERMAL INFORMATION**

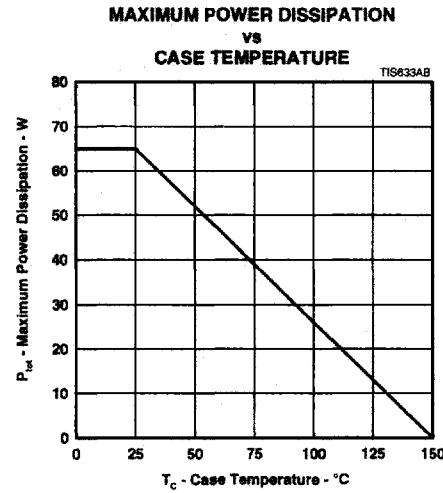


Figure 5.