

Epitaxial-Base Silicon N-P-N VERSAWATT Transistors

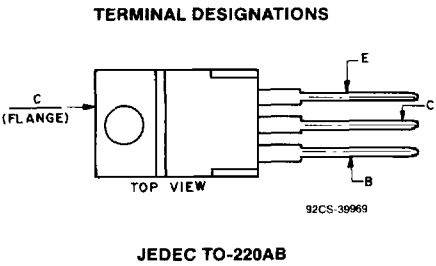
For Power-Amplifier and
High-Speed-Switching Applications

Features:

- 65 W at 25°C case temperature
- 7-A rated collector current
- Min. f_T of 3 MHz at 10 V, 500 mA
- Complements of p-n-p types BD244, BD244A, BD244B, and BD244C

Types BD243, BD243A, BD243B, and BD243C are epitaxial-base silicon n-p-n transistors; they differ only in their voltage ratings. These devices are intended for a wide variety of switching and amplifier applications such as series and shunt regulators, and driver and output stages of high-fidelity amplifiers. The BD243-series power transistors are complements of the devices in the BD244 series. (The BD244-series devices are described in File No. 674.)

All types utilize the JEDEC TO-220AB (VERSAWATT) plastic package.



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**POWER
TRANSISTORS**

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	BD243	BD243A	BD243B	BD243C	
COLLECTOR-TO-EMITTER VOLTAGE:					
With external base-to-emitter resistance (R_{BE}) = 100 Ω	V_{CER}	55	70	90	115 V
With base open	V_{CEO}	45	60	80	100 V
EMITTER-TO-BASE VOLTAGE	V_{EBO}	5	5	5	5 V
CONTINUOUS COLLECTOR CURRENT	I_C	7	7	7	7 A
PEAK COLLECTOR CURRENT	I_C (PEAK)	10	10	10	10 A
CONTINUOUS BASE CURRENT	I_B	3	3	3	3 A
TRANSISTOR DISSIPATION: P_T					
At case temperatures up to 25°C		65	65	65	65 W
At ambient temperatures up to 25°C		2	2	2	2 W
At case temperatures above 25°C		← See Fig. 2 →			
TEMPERATURE RANGE:					
Storage & Operating (Junction)		← -65 to 150 → °C			
LEAD TEMPERATURE (During Soldering):					
At distance 1/8 in. (3.17 mm) from case for 10 s max.		← 235 → °C			

BD243, BD243A, BD243B, BD243C

ELECTRICAL CHARACTERISTICS at Case Temperature (T_C) = 25°C

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS								UNITS
		VOLTAGE V dc		CURRENT A dc		BD243		BD243A		BD243B		BD243C		
		V _{CE}	V _{BE}	I _C	I _B	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	
Collector Cutoff Current: With base open	I _{CEO}	30 60			0 0	—	0.7 —	—	0.7 —	—	—	—	0.7 —	mA
With base-to-emitter junction short-circuited	I _{CES}	45	0			—	0.4	—	—	—	—	—	—	
		60	0			—	—	—	0.4	—	—	—	—	
		80	0			—	—	—	—	—	0.4	—	—	
		100	0			—	—	—	—	—	—	—	0.4	
Emitter Cutoff Current	I _{EBO}		—5	0		—	1	—	1	—	1	—	1	mA
Collector-to-Emitter Breakdown Voltage: With base open	V _{BR(CEO)}			0.03 ^a	0	45	—	60	—	80	—	100	—	V
DC Forward-Current Transfer Ratio	h _{FE}	4 4		0.3 ^a 3 ^a		30 15	— —	30 15	— —	30 15	— —	30 15	— —	
Base-to-Emitter Voltage	V _{BE}	4		6 ^a		—	2	—	2	—	2	—	2	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}			6 ^a	1	—	1.5	—	1.5	—	1.5	—	1.5	V
Common-Emitter Small-Signal Short- Circuit Forward- Current Transfer Ratio (f = 1 kHz)	h _{fe}	10		0.5		20	—	20	—	20	—	20	—	
Magnitude of Common Emitter Small-Signal Short-Circuit Forward- Current Transfer Ratio (f = 1 MHz)	h _{fe}	10		0.5		3	—	3	—	3	—	3	—	
Thermal Resistance: Junction-to-Case	R _{θJC}					—	1.92	—	1.92	—	1.92	—	1.92	°C/W
Junction-to-Ambient	R _{θJA}					—	62.5	—	62.5	—	62.5	—	62.5	

^aPulsed: Pulse duration = 300 μs, duty factor = 2%.

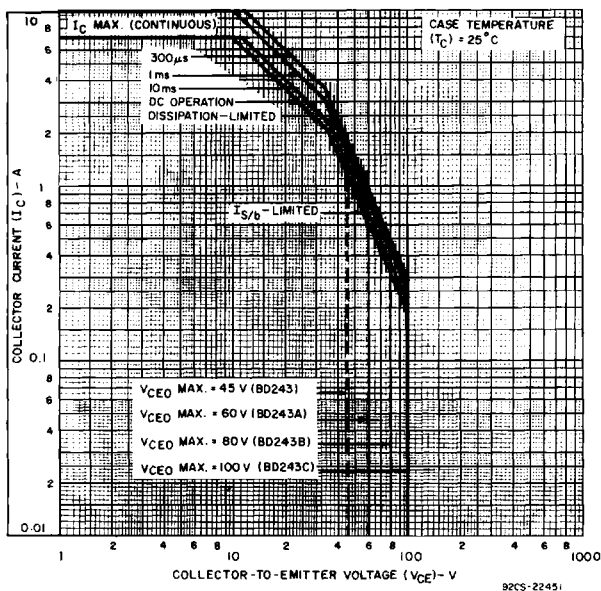


Fig. 1— Maximum safe operating areas for all types.

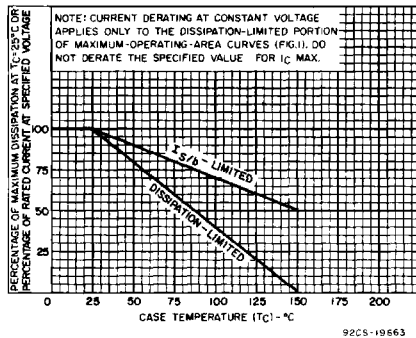


Fig. 2— Derating curves for all types.

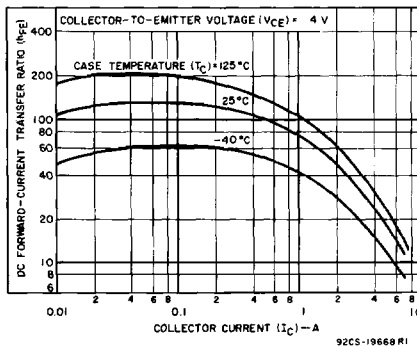


Fig. 3 — Typical dc beta characteristics for all types.