BD242, BD242A, BD242B, BD242C

File Number **672**

Epitaxial-Base Silicon P-N-P VERSAWATT Transistors

For Power-Amplifier and
High-Speed-Switching Applications

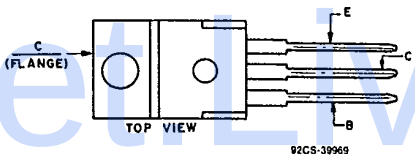
Features:

- 40 W at 25°C case temperature
- 5-A rated collector current
- Min. f_T of 3 MHz at 10 V, 500 mA
- Complements of n-p-n types BD241, BD241A, BD241B, and BD241C

Types BD242, BD242A, BD242B, and BD242C are epitaxial-base silicon p-n-p 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 BD242-series power transistors are complements of the devices in the BD241 series. (The BD241-series devices are described in File No. 671.)

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

TERMINAL DESIGNATIONS



JEDEC TO-220AB

MAXIMUM RATINGS, *Absolute-Maximum Values:*

		BD242	BD242A	BD242B	BD242C	
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	−5	−5	−5	−5	A
CONTINUOUS BASE CURRENT	I_B	−1	−1	−1	−1	A
TRANSISTOR DISSIPATION:	P_T					
At case temperatures up to 25°C		40	40	40	40	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

BD242, BD242A, BD242B, BD242C

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS								UNITS
		VOLTAGE V dc		CURRENT A dc		BD242		BD242A		BD242B		BD242C		
		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			0	–	−0.3	–	−0.3	–	–	–	–	mA
		−60			0	–	–	–	–	–	−0.3	–	−0.3	
With base-to-emitter junction short-circuited	I_{CES}	−45	0			–	−0.2	–	–	–	–	–	–	
		−60	0			–	–	–	−0.2	–	–	–	–	
		−80	0			–	–	–	–	–	−0.2	–	–	
		−100	0			–	–	–	–	–	–	–	−0.2	
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		−1[a]		25	–	25	–	25	–	25	–	
		− 4		−3[a]		10	–	10	–	10	–	10	–	
Base-to-Emitter Voltage	V_{BE}	− 4		−3[a]		–	−1.8	–	−1.8	–	−1.8	–	−1.8	V
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$			−3[a]	-0.6	–	−1.2	–	−1.2	–	−1.2	–	−1.2	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)	$\lvert h_{fe} \rvert$	−10		-0.5		3	–	3	–	3	–	3	–	
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$					–	3.125	–	3.125	–	3.125	–	3.125	°C/W
Junction-to-Ambient	$R_{\theta JA}$					–	62.5	–	62.5	–	62.5	–	62.5	

[a]Pulsed: Pulse duration = 300 μs, duty factor = 2%.

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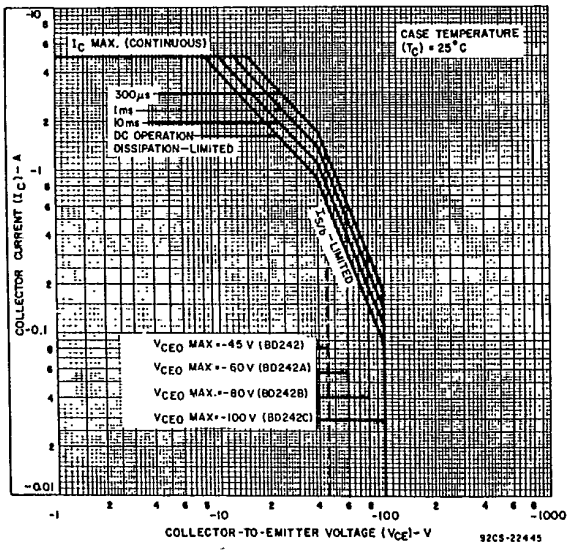

Fig. 1— Maximum safe operating areas for all types.

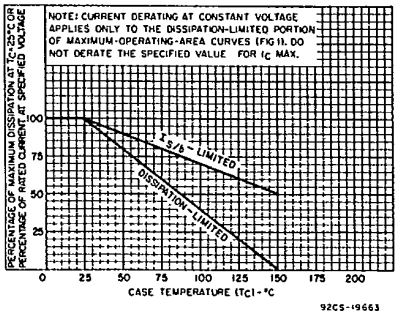

Fig. 2— Derating curves for all types.

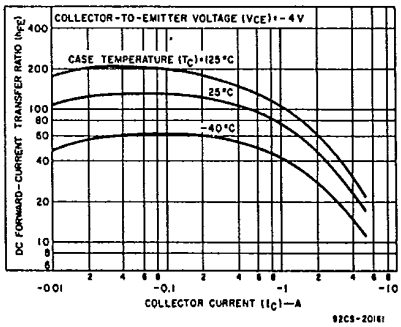

Fig. 3 — Typical dc beta characteristics for all types.