

File Number 667

BD277

## 7-A, 70-W, Epitaxial-Base, Silicon P-N-P VERSAWATT Transistors

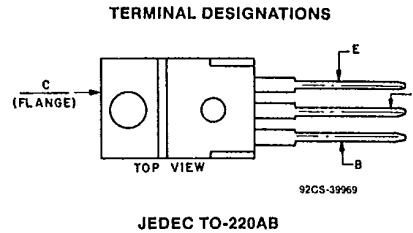
For Applications in Series and Shunt Regulators

**Features:**

- Maximum safe-area-of-operation curves
- Low saturation voltage
- How power-dissipation capability

Type BD277 is an epitaxial-base silicon p-n-p transistor supplied in the JEDEC TO-220AB (VERSAWATT) plastic package.

The BD277 is useful in series regulators and shunt regulators because of its low saturation voltage and high power-dissipation capability.



**MAXIMUM RATINGS, Absolute-Maximum Values:**

<b>COLLECTOR-TO-BASE VOLTAGE:</b>			
With emitter open . . . . .	$V_{CBO}$	-45	V
<b>COLLECTOR-TO-EMITTER VOLTAGE:</b>			
With base open . . . . .	$V_{CEO}$	-45	V
<b>EMITTER-TO-BASE VOLTAGE:</b>			
With collector open . . . . .	$V_{EBO}$	-4	V
COLLECTOR CURRENT (Continuous) . . . . .	$I_C$	-7	A
BASE CURRENT (Continuous) . . . . .	$I_B$	-3	A
<b>TRANSISTOR DISSIPATION:</b>			
At case temperatures up to 25°C . . . . .	$P_T$	70	W
At case temperatures above 25°C . . . . .		Derate linearly at 0.56 W/°C (see Fig. 2.)	
<b>TEMPERATURE RANGE:</b>			
Storage & Operating (Junction) . . . . .		-65 to 150	°C
<b>LEAD TEMPERATURE (During Soldering):</b>			
At distance $\geq$ 1/8 in. (3.17 mm) from case for 10 s max. . . . .		235	°C

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Pro Electron Power Transistors

**BD277**

ELECTRICAL CHARACTERISTICS, At Case Temperature ( $T_C$ ) = 25°C unless specified otherwise

CHARACTERISTIC	SYMBOL	TEST CONDITIONS						LIMITS		UNITS
		VOLTAGE V dc			CURRENT A dc			MIN.	MAX.	
		V <sub>CE</sub>	V <sub>CB</sub>	V <sub>EB</sub>	I <sub>C</sub>	I <sub>B</sub>	I <sub>E</sub>			
Collector Cutoff Current: With emitter open	I <sub>CBO</sub>		-45				0	-	-0.1	mA
With emitter open and $T_C = 150^\circ\text{C}$			-40				0	-	-2.0	
With base open	I <sub>CEO</sub>	-30				0		-	-1.0	
Emitter Cutoff Current: With collector open	I <sub>EBO</sub>			-4	0			-	-1.0	mA
Collector-to-Emitter Breakdown Voltage: With base open	V <sub>(BR)CEO</sub>				-0.1*	0		-45	-	V
Base-to-Emitter Voltage	V <sub>BE</sub>	-2			-1.75*			-	1.2	V
DC Forward-Current Transfer Ratio	h <sub>FE</sub>	-2			-1.75*			30	150	
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>				-1.75*	-0.1		-	-0.5	V
Gain-Bandwidth Product	f <sub>T</sub>	-4			-0.5			10	-	MHz
Thermal Resistance: Junction-to-Case	R <sub>θJC</sub>							-	1.78	°C/W
Junction-to-Ambient	R <sub>θJA</sub>							-	70	

\* Pulsed: Pulse duration = 300 μs, duty factor ≤ 2%.

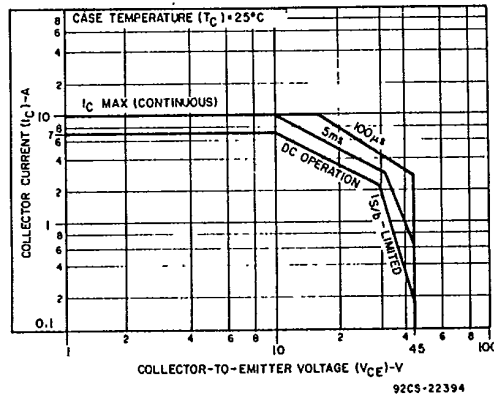


Fig.1 - Maximum operating area.

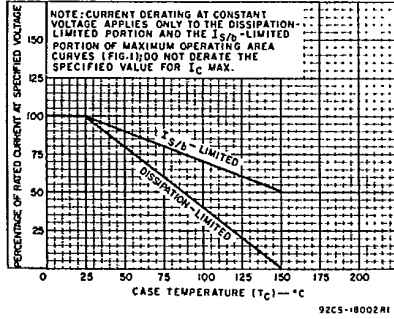


Fig. 2 — Derating curves.

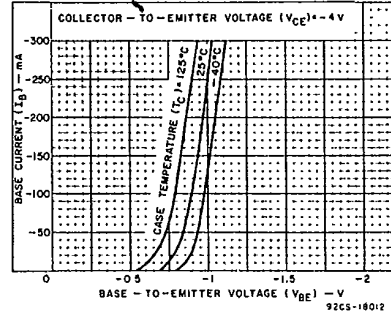


Fig. 3 — Typical input characteristics.

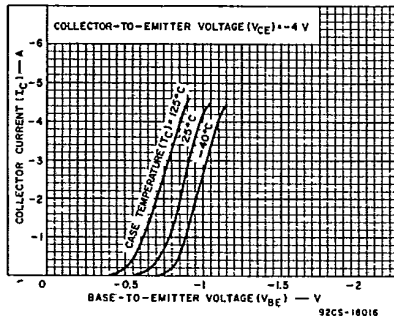


Fig. 4 — Typical transfer characteristics.

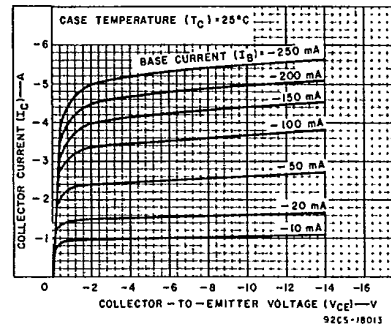


Fig. 5 — Typical output characteristics.

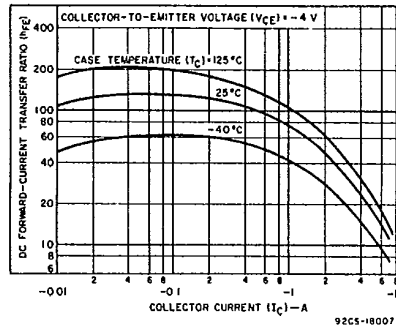


Fig. 6 — Typical dc beta characteristics.