

File Number 819

BDY29

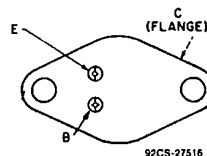
## High-Power High-Current Transistor

Silicon N-P-N Devices for Applications in Industrial and Commercial Equipment

**Features:**

- High dissipation capability
- High  $V_{CEX}$  ratings
- 15-A specification for  $h_{FE}$  and  $V_{CE(sat)}$
- Low saturation voltage with high beta

**TERMINAL DESIGNATIONS**



JEDEC TO-204AA

The RCA-BDY29 is a silicon n-p-n transistor intended for a wide variety of high-power high-current applications. Typical applications for the BDY29 include power-switching circuits, audio amplifiers, series and shunt-regulators, driver and output stages, dc-to-dc converters, inverters, and solenoid (hammer)/relay driver service.

The device is supplied in the popular JEDEC TO-204AA package.

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

COLLECTOR-TO-BASE VOLTAGE .....	$V_{CBO}$	100	V
COLLECTOR-TO-EMITTER VOLTAGE:			
With $-1.5\text{ V}$ ( $V_{BE}$ ) & $R_{BE} = 100\ \Omega$ .....	$V_{CEX}$	90	V
With base open .....	$V_{CEO}$	75	V
EMITTER-TO-BASE VOLTAGE .....	$V_{EBO}$	7	V
CONTINUOUS COLLECTOR CURRENT .....	$I_C$	30	A
PEAK COLLECTOR CURRENT .....	$I_{CM}$	30	A
CONTINUOUS BASE CURRENT .....	$I_B$	7.5	A
TRANSISTOR DISSIPATION:	$P_T$		
At case temperatures up to $25^\circ\text{C}$ .....		220	W
At case temperatures above $25^\circ\text{C}$ .....		See Figs. 1 and 2	
TEMPERATURE RANGE:			
Storage & Operating (Junction) .....		$-65$ to $200$	$^\circ\text{C}$
PIN TEMPERATURE (During soldering):			
At distance $\geq 1/32$ in. (0.8 mm) from seating plane for 10 s max. ....		230	$^\circ\text{C}$

3875081 G E SOLID STATE

01E 17561 D T-33-15

Pro Electron Power Transistors

## BDY29

ELECTRICAL CHARACTERISTICS, At Case Temperature ( $T_C$ ) = 25°C Unless Otherwise Specified

CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS		UNITS
		VOLTAGE V dc			CURRENT A dc		BDY29		
		V <sub>CB</sub>	V <sub>CE</sub>	V <sub>BE</sub>	I <sub>C</sub>	I <sub>B</sub>	Min.	Max.	
Collector Cutoff Current: With emitter open	I <sub>CBO</sub>	100					–	1	mA
With base-emitter junction reverse-biased	I <sub>CEX</sub>		100	–1.5			–	1	mA
With base-emitter junction reverse-biased & T <sub>C</sub> = 150°C	I <sub>CEX</sub>		100	–1.5			–	10	mA
With base open	I <sub>CEO</sub>		60			0	–	2	mA
Emitter Cutoff Current	I <sub>EBO</sub>			–7	0		–	2	mA
DC Forward Current Transfer Ratio	h <sub>FE</sub>		2		15 <sup>a</sup>		15	60	
Collector-to-Emitter Sustaining Voltage: With base-emitter junction reverse-biased (R <sub>BE</sub> ) = 100 Ω	V <sub>CEX(sus)</sub>			–1.5	0.2		90	–	V
With external base-to-emitter resistance (R <sub>BE</sub> ) = 100 Ω	V <sub>CER(sus)</sub>				0.2		85	–	V
With base open	V <sub>CEO(sus)</sub>				0.2	0	75	–	V
Base-to-Emitter Voltage	V <sub>BE</sub>		4		30 <sup>a</sup>		–	3.5	V
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>				15 <sup>a</sup>	1.5	–	1.2	V
Second-Breakdown Collector Current: With base forward-biased and 1-s, nonrepetitive pulse	I <sub>S/b</sub> <sup>b</sup>		60				3.66	–	A
Magnitude of Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio: f = 0.05 MHz	h <sub>fe</sub>		4		1		4	16 (Typ.)	
Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio: f = 1 kHz	h <sub>fe</sub>		4		1		40	–	
Thermal Resistance: Junction-to-Case	R <sub>θJC</sub>						–	0.8	°C/W

<sup>a</sup>Pulsed; pulse duration = 300 μs, rep. rate = 60 Hz; duty factor ≤ 2%.<sup>b</sup>I<sub>S/b</sub> is defined as the current at which second breakdown occurs at a specified collector voltage with the emitter-base junction forward biased for transistor operation in the active region.

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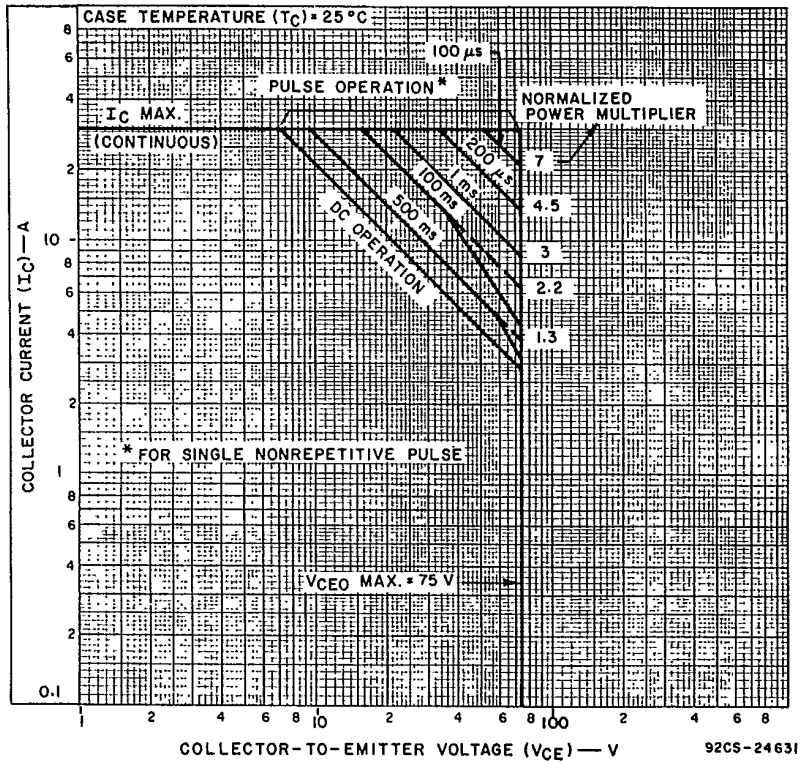


Fig. 1 — Maximum operating areas.

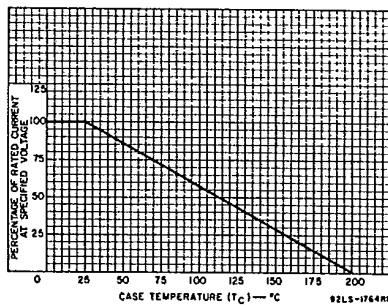


Fig. 2 — Dissipation derating curve.

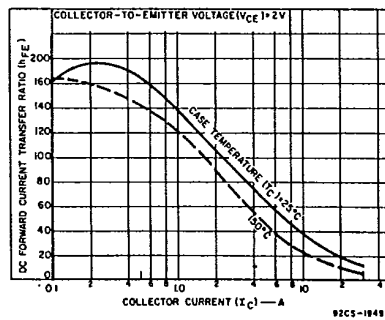


Fig. 3 — Typical dc beta characteristics.

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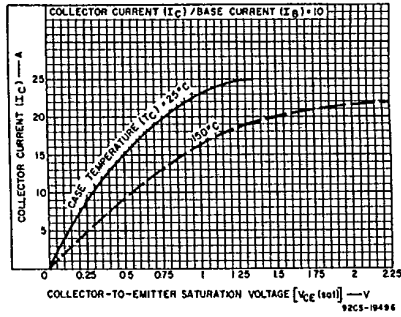


Fig. 4 — Typical saturation-voltage characteristics.

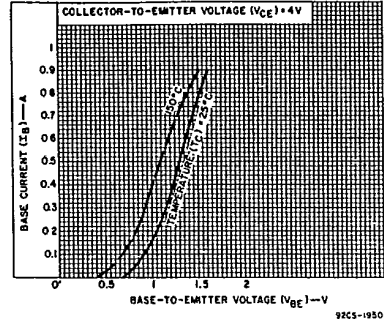


Fig. 5 — Typical input characteristics.

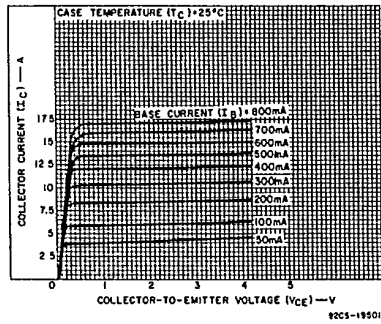


Fig. 6 — Typical output characteristics.

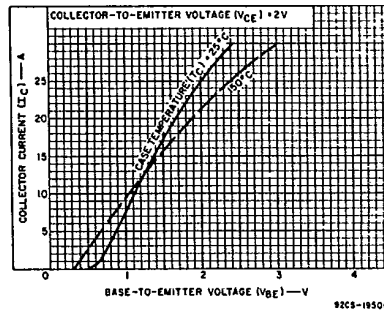


Fig. 7 — Typical transfer characteristics.