File Number **819**

BDY29

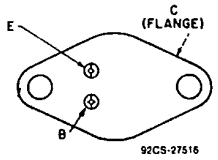
High-Power High-Current Transistor

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 V (V_{BE}) & R_{BE} = 100 Ω	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°C		220	W
At case temperatures above 25°C		See Figs. 1 and 2	
TEMPERATURE RANGE:			
Storage & Operating (Junction)		−65 to 200	°C
PIN TEMPERATURE (During soldering):			
At distance ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max.		230	°C

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_{CB}	V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	
Collector Cutoff Current: With emitter open	I_{CBO}	100					–	1	mA
With base-emitter junction reverse-biased	I_{CEX}		100	−1.5			–	1	mA
With base-emitter junction reverse-biased & T_C = 150°C	I_{CEX}		100	−1.5			–	10	mA
With base open	I_{CEO}		60			0	–	2	mA
Emitter Cutoff Current	I_{EBO}			−7	0		–	2	mA
DC Forward Current Transfer Ratio	h_{FE}		2		15[a]		15	60	
Collector-to-Emitter Sustaining Voltage: With base-emitter junction reverse-biased (R_{BE})= 100 Ω	$V_{CEX}(sus)$			−1.5	0.2		90	–	V
With external base-to-emitter resistance (R_{BE}) = 100 Ω	$V_{CER}(sus)$				0.2		85	–	V
With base open	$V_{CEO}(sus)$				0.2	0	75	–	V
Base-to-Emitter Voltage	V_{BE}		4		30[a]		–	3.5	V
Collector-to-Emitter Saturation Voltage	$V_{CE}(sat)$				15[a]	1.5	–	1.2	V
Second-Breakdown Collector Current: With base forward-biased and 1-s, nonrepetitive pulse	$I_{S/b}$[b]		60				3.66	–	A
Magnitude of Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio: f = 0.05 MHz	$\lvert h_{fe} \rvert$		4		1		4	16 (Typ.)	
Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio: f = 1 kHz	h_{fe}		4		1		40	–	
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$						–	0.8	°C/W

[a] Pulsed; pulse duration = 300 μs, rep. rate = 60 Hz; duty factor ≤ 2%.

[b] $I_{S/b}$ 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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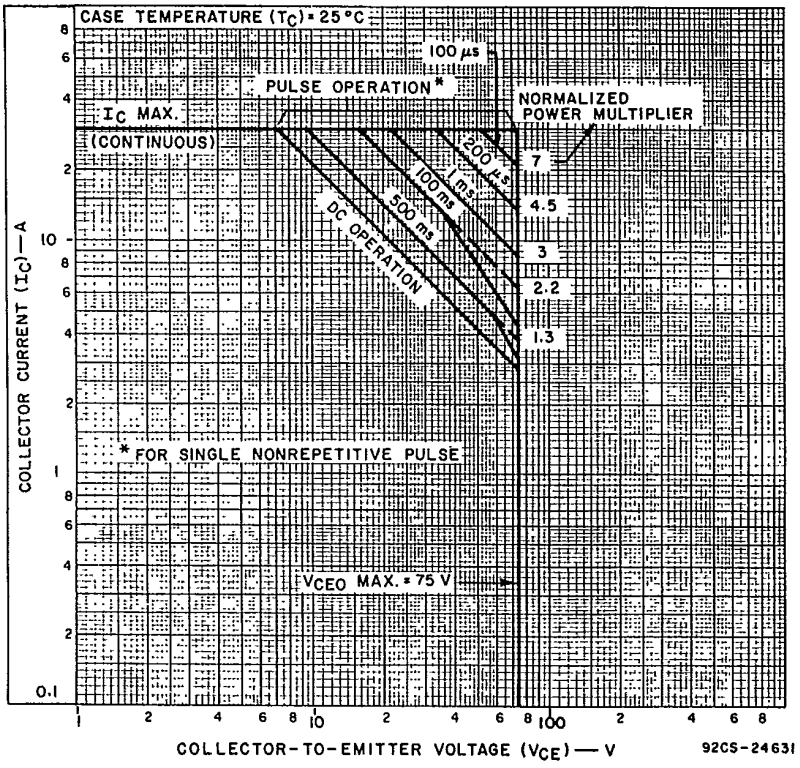

Fig. 1 — Maximum operating areas.

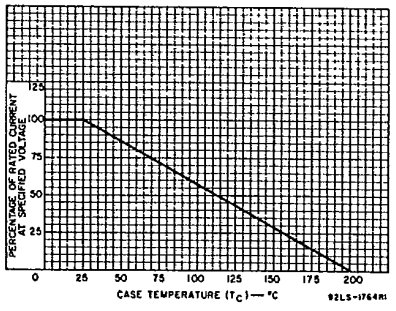

Fig. 2 — Dissipation derating curve.

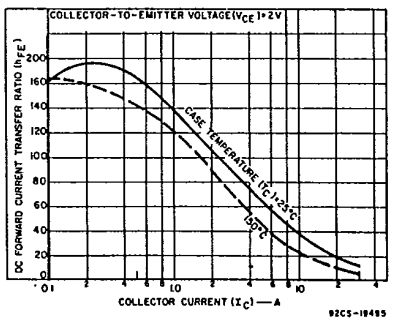

Fig. 3 — Typical dc beta characteristics.

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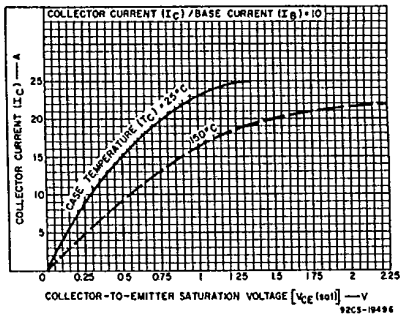

Fig. 4 — Typical saturation-voltage characteristics.

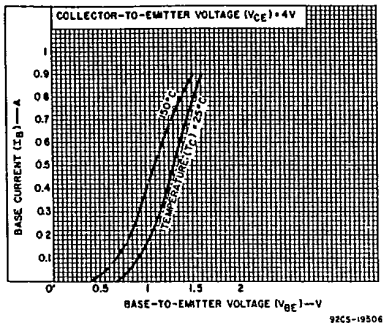

Fig. 5 — Typical input characteristics.

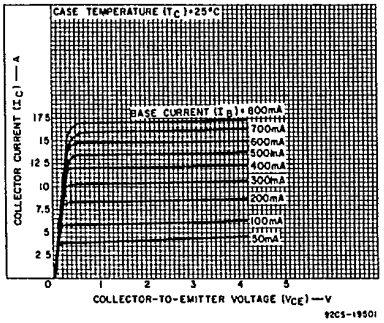

Fig. 6 — Typical output characteristics.

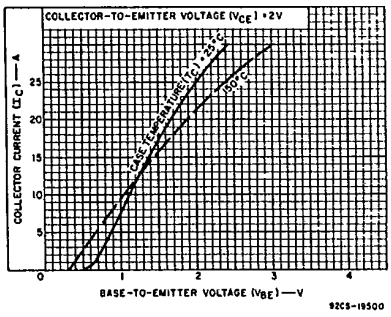

Fig. 7 — Typical transfer characteristics.