File Number **1141**

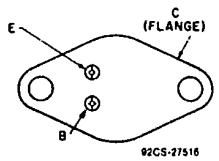
2N5629, 2N5630, 2N5631

Silicon N-P-N Epitaxial-Base High-Power Transistors

Rugged, Broadly Applicable Devices For Industrial and Commercial Use

Features:
- *High dissipation capability*
- *Low saturation voltages*
- *Maximum safe-area-of-operation curves*
- *High gain at high current*

TERMINAL DESIGNATIONS



JEDEC TO-204AA

The RCA-2N5629, 2N5630 and 2N5631 are epitaxial-base silicon n-p-n transistors intended for a wide variety of high-power, high-current applications, such as power-switching circuits, driver and output stages for series and shunt regulators, dc-to-dc converters, inverters, and solenoid (hammer)/relay drivers.

These devices differ in maximum voltage ratings. They are supplied in JEDEC TO-204AA hermetic steel packages.

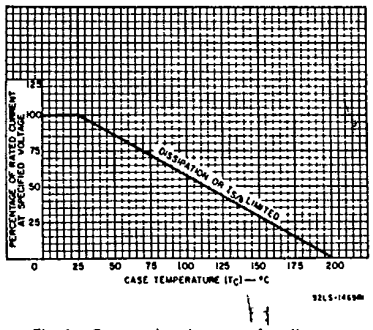


Fig. 1 – Current derating curve for all types.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

	2N5629	2N5630	2N5631	
* V_{CEO}	100	120	140	V
* V_{CBO}	100	120	140	V
* V_{EBO}	———	7	———	V
* I_C	———	16	———	A
* I_{CM}	———	20	———	A
* I_B	———	5	———	A
* P_T				
At $T_C \leq 25°C$	———	200	———	W
At $T_C > 25°C$ ..... derate linearly	———	1.14	———	W/°C
* T_J, T_{stg}	———	-65 to 200	———	°C
* T_L at 1/16 ± 1/32 in. (1.58 ± 0.8 mm) from case for 10 s	———	235	———	°C

* In accordance with JEDEC registration data.

2N5629, 2N5630, 2N5631

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

	CHARACTERISTIC	TEST CONDITIONS				LIMITS						UNITS
		VOLTAGE V dc		CURRENT A dc		2N5629		2N5630		2N5631		
		V_{CE}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.	
*	I_{CEX}	100	−1.5	–	–	–	1	–	–	–	–	mA
		120	−1.5	–	–	–	–	–	1	–	–	
		140	−1.5	–	–	–	–	–	–	–	1	
	$T_C = 150°C$	100	−1.5	–	–	–	5	–	–	–	–	
		120	−1.5	–	–	–	–	–	5	–	–	
		140	−1.5	–	–	–	–	–	–	–	5	
*	I_{CEO}	50	–	–	0	–	1	–	–	–	–	mA
		60	–	–	0	–	–	–	1	–	–	
		70	–	–	0	–	–	–	–	–	1	
	I_{CBO} $I_E = 0$	100[a]	–	–	–	–	1	–	–	–	–	mA
		120[a]	–	–	–	–	–	–	1	–	–	
		140[a]	–	–	–	–	–	–	–	–	1	
*	I_{EBO}	–	7	0	–	–	1	–	1	–	1	mA
*	$V_{CEO(sus)}$[b]	–	–	0.2[c]	0	100	–	120	–	140	–	V
*	h_{FE}[a]	2	–	8[c]	–	25	100	20	80	15	60	
		2	–	16[c]	–	4	–	4	–	4	–	
*	V_{BE}[a]	2	–	8[c]	–	–	1.5	–	1.5	–	1.5	V
*	$V_{BE(sat)}$[a]	–	–	10[c]	1	–	1.8	–	1.8	–	1.8	V
*	C_{obo} f = 0.1 MHz $I_E = 0$	10[a]	–	–	–	–	500	–	500	–	500	pF
*	$V_{CE(sat)}$[a]	–	–	10[c]	1	–	1	–	1	–	1	V
		–	–	16[c]	4	–	2	–	2	–	2	
*	f_T f=0.5 MHz	20	–	1	–	1	–	1	–	1	–	MHz
*	h_{fe} f = 1 kHz	10	–	4	–	15	–	15	–	15	–	
	$I_{S/b}$ t_p = 1 s nonrep.	30	–	–	–	6.67	–	6.67	–	6.67	–	A
	$R_{\theta JC}$	10	–	10	–	–	0.875	–	0.875	–	0.875	°C/W

* In accordance with JEDEC registration data.
[a] V_{CB} value.
[b] CAUTION: Sustaining voltage, $V_{CEO(sus)}$ MUST NOT BE measured on a curve tracer.
[c] Pulsed; pulse duration ≤ 300 μs. Duty factor ≤ 2%.

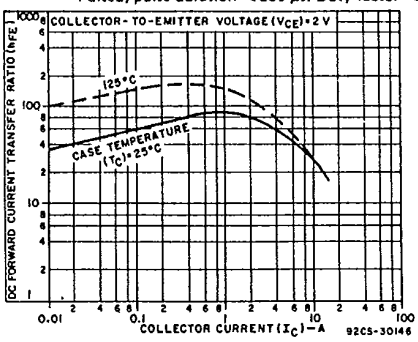


Fig. 2 — Typical dc beta characteristics as a function of collector current for all types.

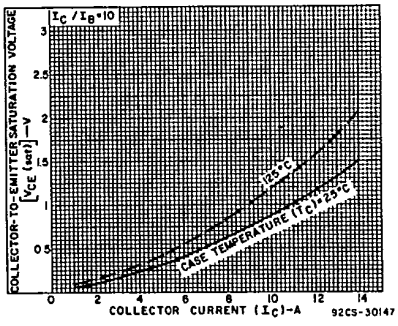


Fig. 3 — Typical saturation voltage characteristics for all types.

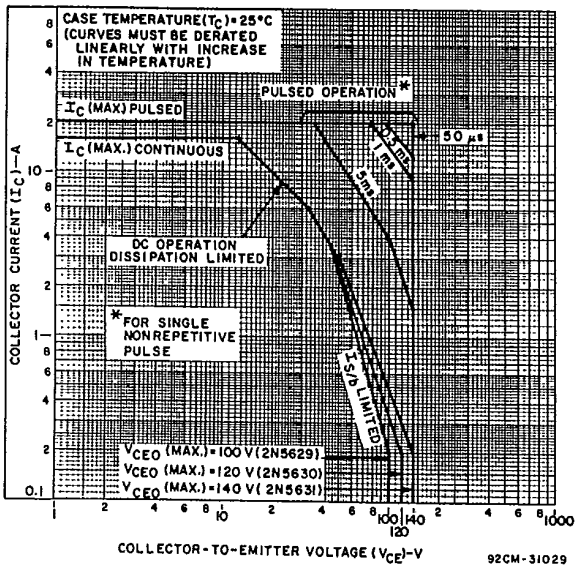


Fig. 4 – Maximum operating areas for all types (T_C = 25°C).

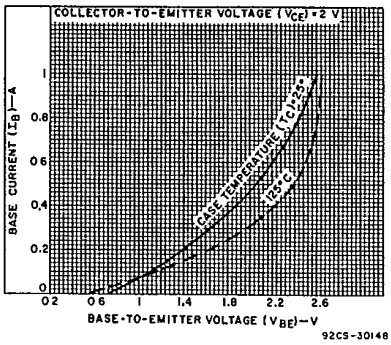


Fig. 5 – Typical input characteristics for all types.

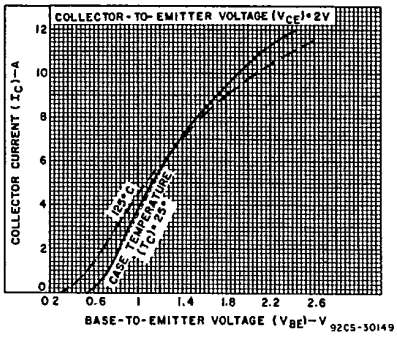


Fig. 6 – Typical transfer characteristics for all types.

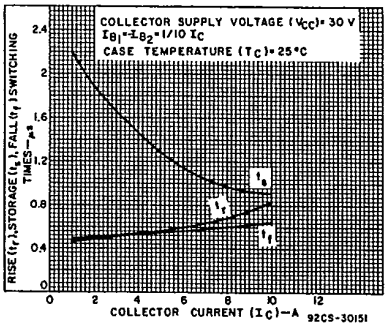


Fig. 7 – Typical saturated-switching times for all types.