File Number **529**

2N3441, 2N6263, 2N6264

Medium-Power Silicon N-P-N Transistors

Rugged Devices for Intermediate, Power Applications in Industrial and Commercial Equipment

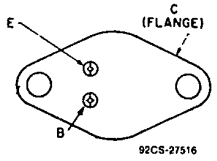
Features:

- *2N6264: premium type from 2N3441 family*
- *Maximum safe-area-of operation curves for dc and pulse operation*
- *High voltage ratings*
- *Low saturation voltages*

Applications:

- *Series and shunt regulators*
- *High-fidelity amplifiers*
- *Power switching circuits*
- *Solenoid drivers*

TERMINAL DESIGNATIONS



JEDEC TO-213AA

RCA 2N3441, 2N6263, and 2N6264 are silicon n-p-n transistors intended for a wide variety of medium-to-high power, high-voltage applications.

These devices employ the JEDEC TO-213AA package; they differ in maximum ratings for voltage, current, and power.

MAXIMUM RATINGS, *Absolute-Maximum Values:*

		2N6263	2N3441	2N6264	
*COLLECTOR-TO-BASE VOLTAGE	V_{CBO}	140	160	170	V
COLLECTOR-TO-EMITTER SUSTAINING VOLTAGE:					
* With base open	$V_{CEO(sus)}$	120	140	150	V
With external base-to-emitter resistance (R_{BE}) = 100Ω	$V_{CER(sus)}$	130	150	160	V
With base reverse-biased (V_{BE} = -1.5 V)	$V_{CEV(sus)}$	140	160	170	V
*EMITTER-TO-BASE VOLTAGE	V_{EBO}	7	7	7	V
*CONTINUOUS COLLECTOR CURRENT	I_C	3	3	3	A
PEAK COLLECTOR CURRENT		4	4	4	A
*CONTINUOUS BASE CURRENT	I_B	2	2	2	A
TRANSISTOR DISSIPATION:	P_T				
* At case temperature up to 25°C		20	25	50	W
* At temperatures above 25°C		See Figs. 2&4			
*TEMPERATURE RANGE:					
Storage & Operating (Junction)		-65 to 200			°C
*PIN TEMPERATURE (During Soldering):					
At distances ≥ 1/32 in. (0.8 mm) from seating plane for 10 s max.		235			°C

*In accordance with JEDEC registration data format JS-6 RDF-2

2N3441, 2N6263, 2N6264

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS					LIMITS						UNITS
		VOLTAGE V dc			CURRENT A dc		2N6263		2N3441		2N6264		
		V_{CE}	V_{EB}	V_{BE}	I_C	I_B	Min.	Max.	Min.	Max.	Min.	Max.	
Collector-Cutoff Current:													
		100				0	–	5	–	–	–	–	
*With base open	I_{CEO}	130				0	–	–	–	–	–	1	mA
		140				0	–	–	–	100	–	–	
Collector-Cutoff Current:													
		120		–1.5			–	2*	–	–	–	–	
		140		–1.5			–	–	–	5*	–	–	
	I_{CEX}	140		–1.5			–	–	–	1	–	–	
With base-emitter junction reversed biased		150		–1.5			–	–	–	–	–	0.05*	mA
		120		–1.5			–	10*	–	–	–	–	
		140		–1.5			–	–	–	6*	–	–	
	I_{CEX} (T_C = 150°C)	140		–1.5			–	–	–	5	–	–	
		150		–1.5			–	–	–	–	–	1*	
*Emitter-Cutoff Current	I_{EBO}		5				–	2	–	–	–	–	mA
			7				–	–	–	1	–	0.2	
Collector-to-Emitter Sustaining Voltage:[a]	$V_{CEO(sus)}$												
*With base open					0.1	0	120	–	140	–	150	–	
With external base-to-emitter resistance (R_{BE}) = 100 Ω	$V_{CER(sus)}$				0.1		130	–	150	–	160	–	V
With base-emitter junction reversed biased	$V_{CEV(sus)}$			–1.5	0.1		140	–	160	–	170	–	
		2			1		–	–	–	–	20	60	
*DC Forward-Current Transfer Ratio	h_{FE}	2			3		3	–	–	–	5	–	
		4			0.5		20	100	25	100	–	–	
		4			2.7		–	–	5	–	–	–	
					0.5	0.05	–	1.2*	–	1	–	–	
Collector-to-Emitter Saturating Voltage	$V_{CE(sat)}$				1	0.1	–	–	–	–	–	0.5*	V
					2.7	0.9	–	–	–	6*	–	–	
		2			1		–	–	–	–	–	1.5*	
Base-to-Emitter Voltage	V_{BE}	4			0.5		–	2*	–	1.7	–	–	V
		4			2.7		–	–	–	6*	–	–	
*Magnitude of Common-Emitter, Small-Signal, Short-Circuit Forward Current Transfer Ratio (f = 40 kHz)	$\lvert h_{fe} \rvert$	4			0.5		5	–	5	–	5	–	
Gain-Bandwidth Product	f_T	4			0.2		200	–	200	–	200	–	kHz
*Common-Emitter, Small-Signal, Short-Circuit Forward Current Transfer Ratio (f = 1 kHz)	h_{fe}	4			0.1		25	–	–	–	25	–	
		4			0.5		–	–	15	75	–	–	
Forward-Bias Second Breakdown Collector Current, Pulse Duration (non-repetitive) = 1 s	$I_{S/b}$	120					0.167	–	–	–	–	–	A
		120					–	–	–	–	0.417	–	
		120					–	–	0.21	–	–	–	
Thermal Resistance: Junction-to-Case	$R_{\theta JC}$						—	8.75	—	7	—	3.5	°C/W

*In accordance with JEDEC registration data format (JS-6 RDF-2).

[a]CAUTION: The sustaining voltage V_{CEO}(sus), V_{CER}(sus), and V_{CEV}(sus) MUST NOT be measured on a curve tracer.

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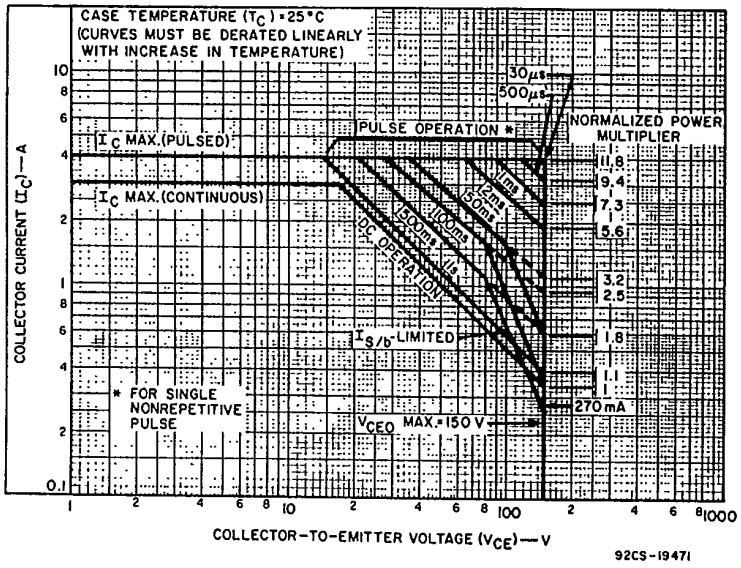

Fig. 1 — Maximum operating areas for type 2N6264.

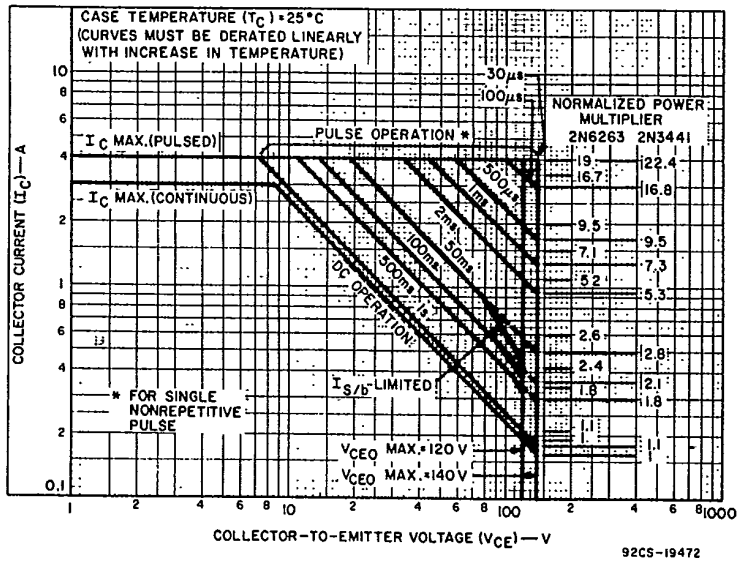

Fig. 2 — Maximum operating areas for types 2N6263 and 2N3441.

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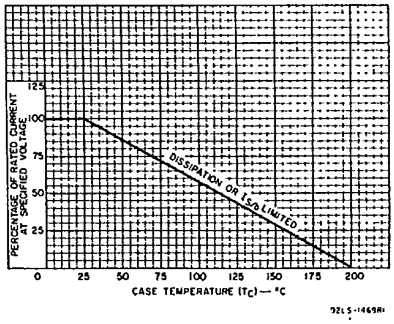

Fig. 3 — Current derating curve for all types.

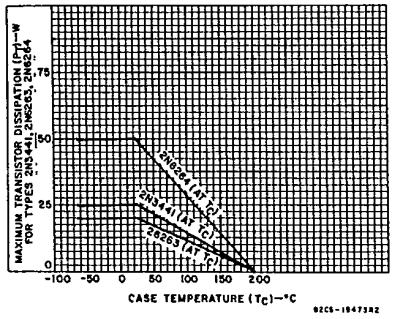

Fig. 4 — Dissipation derating curves for all types.

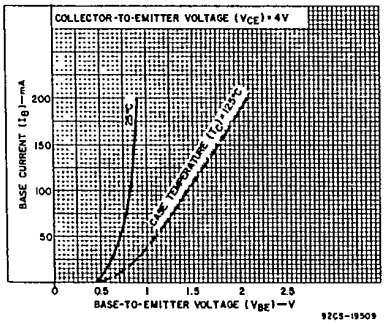

Fig 5 — Typical input characteristics for type 2N6264.

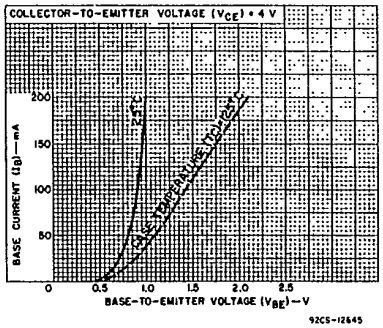

Fig. 6 — Typical input characteristics for type 2N3441.

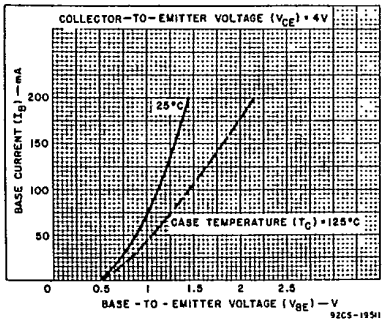

Fig. 7 — Typical input characteristics for type 2N6263.

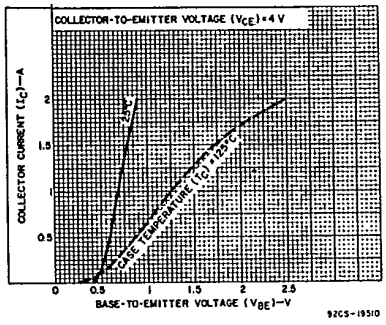

Fig. 8 — Typical transfer characteristics for type 2N6264.

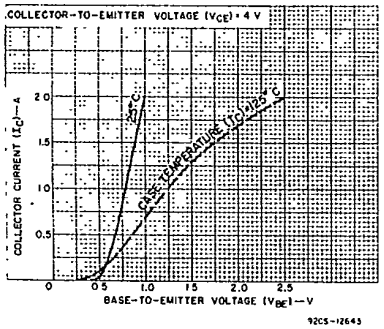

Fig. 9 — Typical transfer characteristics for type 2N3441.

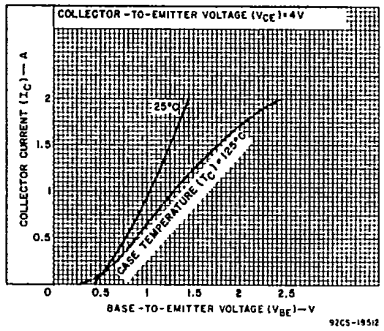

Fig. 10 — Typical transfer characteristics for type 2N6263.

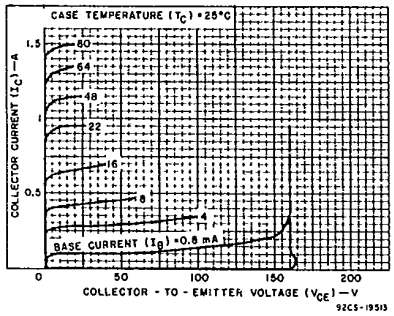

Fig. 11 — Typical output characteristics for type 2N6264.

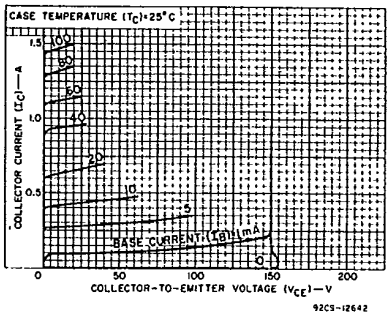

Fig. 12 — Typical output characteristics for type 2N3441.

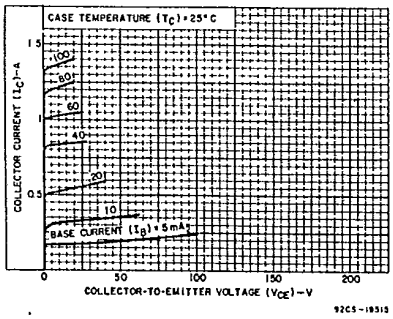

Fig. 13 — Typical output characteristics for type 2N6263.

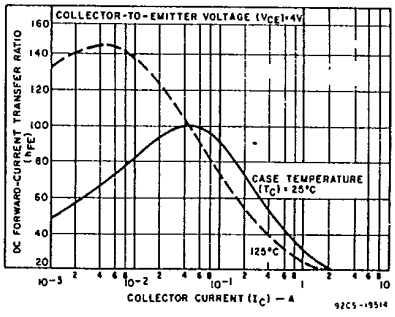

Fig. 14 — Typical dc beta characteristics for type 2N6264.

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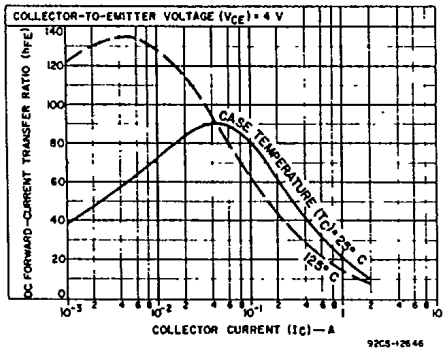

Fig. 15 — Typical dc beta characteristics for type 2N3441.

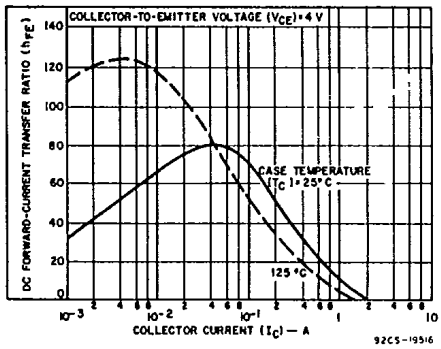

Fig. 16 — Typical dc beta characteristics for type 2N6263.