

File Number 528

2N3442, 2N4347, 2N6262

HARRIS SEMICONDUCTOR

27E D 4302271 0019809 7 HAS

T-33-13

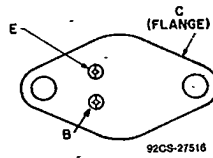
## High-Voltage Silicon N-P-N Transistors

High-Power Devices for Applications in Industrial and Commercial Equipment

**Features:**

- Low saturation voltages
- High dissipation capability — 100 W (2N4347)  
— 117 W (2N3442)  
— 150 W (2N6262)
- Maximum area-of-operation curves for dc and pulse operation

**TERMINAL DESIGNATIONS**



JEDEC TO-204AA



The 2N3442, 2N4347, and 2N6262 are silicon n-p-n transistors intended for a wide variety of high-power, high-voltage applications. Typical applications for these transistors include power-switching circuits, audio amplifiers, series- and shunt-regulator driver and output stages, dc-to-dc converters, and solenoid (hammer)/relay driver service.

These devices employ the popular JEDEC TO-204AA package; they differ in maximum ratings for voltage, current, and power.

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

	2N4347	2N3442	2N6262	
*V <sub>CBO</sub> .....	140	160	170	V
*V <sub>CEO</sub> .....	120	140	150	V
V <sub>CEX</sub> (V <sub>BE</sub> = -1.5 V) .....	140*	160	170	V
*V <sub>EBO</sub> .....	7	7	7	V
*I <sub>C</sub> .....				
Continuous .....	5	10	10	A
Peak .....	10*	15	15	A
*I <sub>B</sub> .....				
Continuous .....	3	7	7	A
Peak .....	8*	—	—	A
*P <sub>T</sub> .....				
At T <sub>C</sub> up to 25°C .....	100	117	150	W
At T <sub>C</sub> above 25°C .....	See Figs. 1, 2, 3, & 4			
*T <sub>J</sub> , T <sub>stg</sub> .....	-65 to +200			°C
*T <sub>L</sub> (During Soldering): .....				
At distances ≥ 1/32 in. (0.8 mm) from case for 10 s max. ....	235			°C

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

2N3442, 2N4347, 2N6262

T-33-13

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

CHARACTERISTIC	TEST CONDITIONS				LIMITS						UNITS
	VOLTAGE V dc		CURRENT A dc		2N4347		2N3442		2N6262		
	$V_{CE}$	$V_{BE}$	$I_C$	$I_B$	Min.	Max.	Min.	Max.	Min.	Max.	
$I_{CBO}$ $I_E = 0$ $V_{CB} = 140$ V					-	-	-	1*	-	1	mA
* $I_{CEX}$	120 140 140 150	-1.5 -1.5 -1.5 -1.5			-	2	-	-	-	-	mA
* $T_C = 150^\circ\text{C}$	125 140 140 150	-1.5 -1.5 -1.5 -1.5			-	10	-	-	-	-	mA
* $I_{CEO}$	100 110 140				-	200	-	-	-	-	mA
* $I_{EBO}$		-7	0		-	5	-	5	-	0.2	mA
* $h_{FE}$	2 2 4 4 4 4		3 <sup>a</sup> 10 <sup>a</sup> 2 <sup>a</sup> 3 <sup>a</sup> 5 <sup>a</sup> 10 <sup>a</sup>		-	-	-	-	20 5	70	
$V_{CEV(sus)}$		-1.5 -1.5	0.1 0.2		140	-	160	-	-	170	V
$V_{CER(sus)}$ ( $R_{BE}$ ) = 100Ω			0.1 0.2		130	-	-	-	-	-	V
* $V_{CEO(sus)}$			0.2 <sup>a</sup> 0.2 <sup>a</sup>	0 0	120	-	140	-	-	-	V
* $V_{BE}$	2 4 4 4 4		3 <sup>a</sup> 3 <sup>a</sup> 2 <sup>a</sup> 5 <sup>a</sup> 10 <sup>a</sup>		-	-	-	1.7	-	-	V
* $V_{CE(sat)}$			0.2 0.3 0.63 2	0.2 0.3 0.63 2	-	1	-	-	1	0.5	V
$t_{sub}$	67 78 100		1.5 1.5 1.5		1	-	-	-	-	-	s
* $ h_{fe} $ f = 50 kHz	4		0.5		4	-	-	-	-	-	
f = 40 kHz	4 4		1 2		-	-	2	-	2	-	
* $h_{fe}$ f = 1 kHz	4 4 4		0.5 1 2		40	-	-	-	-	-	
$R_{\theta JC}$					-	1.75	-	1.5	-	1.17	°C/W

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

<sup>a</sup> Pulse test; pulse duration = 300 μs, rep. rate = 60 Hz

HARRIS SEMICONDUCTOR 27E D 4302271 0019610 3 HAS

2N3442, 2N4347, 2N6262

T-33-13

2

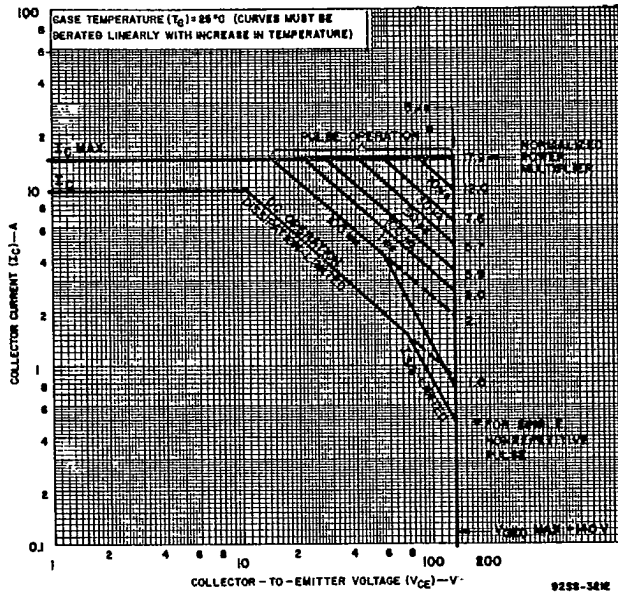


Fig. 1 — Maximum operating areas for type 2N3442.

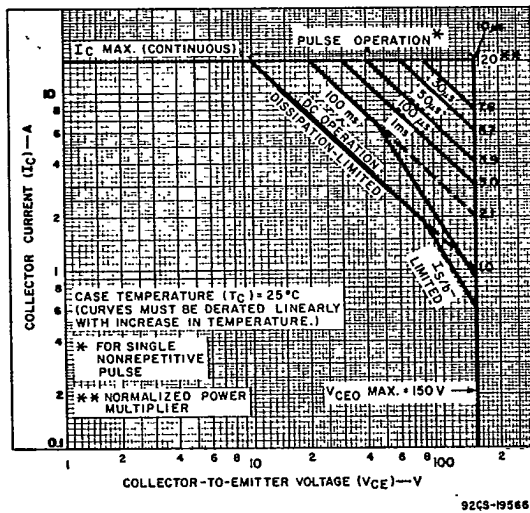


Fig. 2 — Maximum operating areas for type 2N6262.

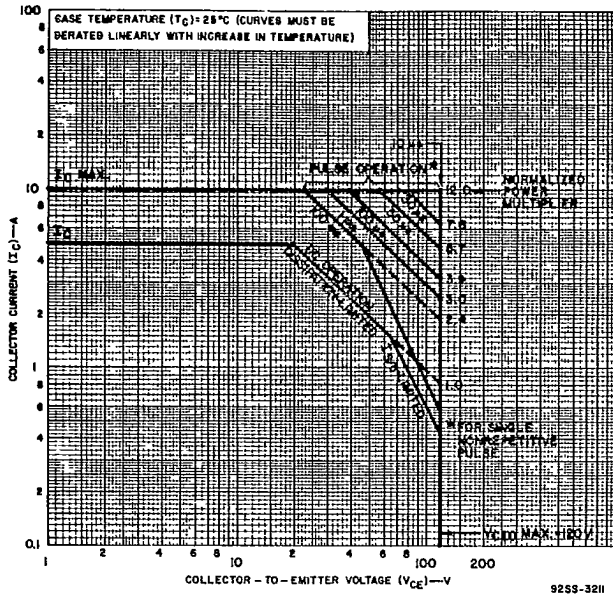


Fig. 3 — Maximum operating areas for type 2N4347.

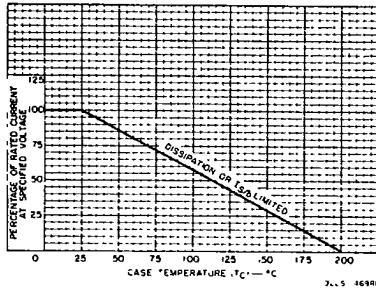


Fig. 4 — Current derating curve for all types

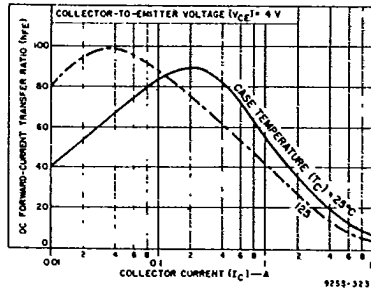


Fig. 5 — Typical dc beta characteristics for type 2N3442.

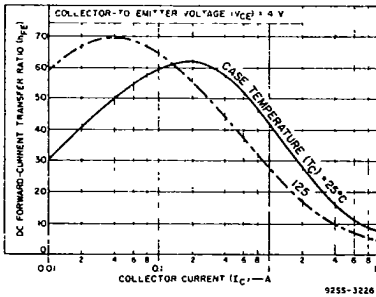


Fig. 6 — Typical dc beta characteristics for type 2N4347

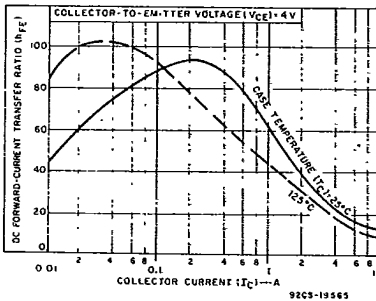


Fig. 7 — Typical dc beta characteristics for type 2N6262.

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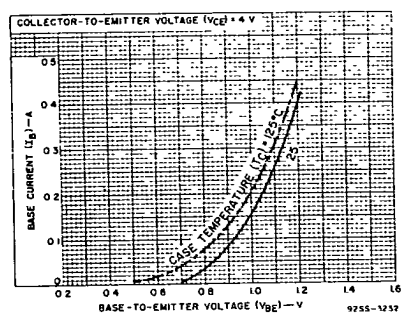


Fig 8 — Typical input characteristics for type 2N3442.

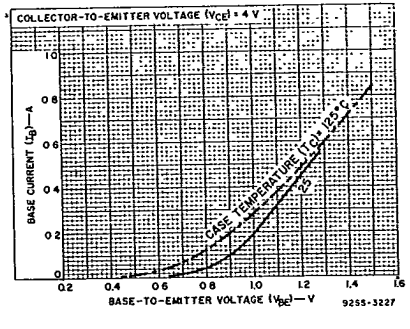


Fig 9 — Typical input characteristics for type 2N4347.

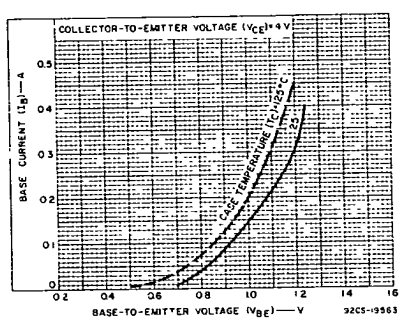


Fig 10 — Typical input characteristics for type 2N6262.

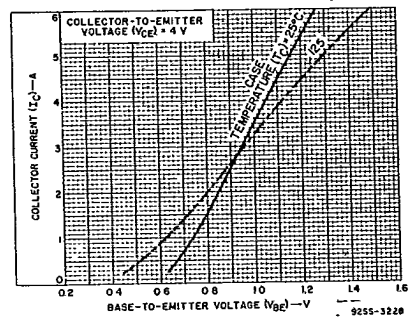


Fig 11 — Typical transfer characteristics for type 2N3442 and 2N4347.

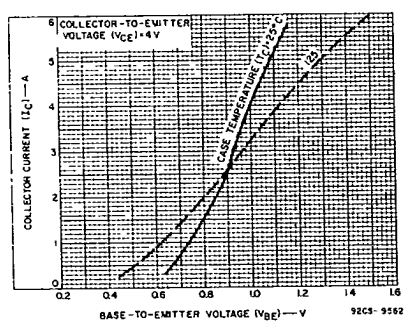


Fig 12 — Typical transfer characteristics for type 2N6262.

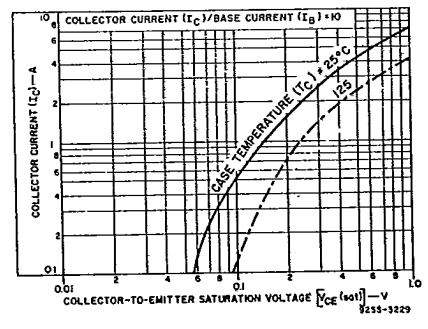


Fig 13 — Typical saturation-voltage characteristics for all types.

