

2N3773, 2N4348, 2N6259

File Number 526

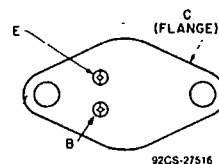
High-Voltage, High-Current Power Transistors

Broadly Applicable Devices for
Industrial and Commercial Use

Features:

- High dissipation capability —
120 W (2N4348), 150 W (2N3773), 250 W (2N6259)
- 5-A specification for h_{FE} , V_{BE} , and $V_{CE(sat)}$ (2N4348)
- 8-A specification for h_{FE} , V_{BE} , and $V_{CE(sat)}$ (2N3773, 2N6259)

TERMINAL DESIGNATIONS



JEDEC TO-204AA/TO-3

The RCA-2N3773, 2N4348, and 2N6259 are silicon n-p-n transistors intended for a wide variety of medium-voltage, high-current applications. Typical applications for these transistors include power-switching circuits, audio amplifiers, series and shunt-regulator driver and output stages, dc-to-dc converters, inverters, and solenoid (hammer)/relay driver service.

This device employs the popular JEDEC TO-204AA/TO-3 package.

MAXIMUM RATINGS, Absolute-Maximum Values:

	2N4348	2N3773	2N6259	
*COLLECTOR-TO-BASE VOLTAGE, V_{CBO}	140	160	170	V
*COLLECTOR-EMITTER VOLTAGE, V_{CEX}	140	160	170	V
*COLLECTOR-EMITTER VOLTAGE, V_{CEO}	120	140	150	V
*EMITTER-BASE VOLTAGE, V_{EBO}	7	7	7	V
*COLLECTOR CURRENT				
DC, I_C	10	16	16	A
Peak, I_{CM}	30	30	30	A
*BASE CURRENT				
DC, I_B	4	4	4	A
Peak, I_{BM}	15	15	15	A
*COLLECTOR POWER DISSIPATION, P_T ($T_c = 25^\circ\text{C}$)	120	150	250	W
Derate Linearly above 25°C	0.686	0.857	1.43	W/ $^\circ\text{C}$
*JUNCTION TEMPERATURE, T_J	200			$^\circ\text{C}$
*STORAGE TEMPERATURE, T_{stg}	-65 to +200			$^\circ\text{C}$

*In accordance with JEDEC registration data.

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

CHARACTERISTIC	SYMBOL	TEST CONDITIONS				LIMITS						UNITS
		VOLTAGE V dc		CURRENT A dc		2N4348		2N3773		2N6259		
		V _{CE}	V _{BE}	I _C	I _B	Min.	Max.	Min.	Max.	Min.	Max.	
Collector-Cutoff Current: With emitter open, V _{CB} = 140 V	I _{CBO}					-	-	-	2	-	-	mA
With base-emitter junction reverse-biased	I _{CEX}	120 140 150	-1.5 -1.5 -1.5			-	2	-	-	2	-	0.2 mA
With base-emitter junction reverse-biased and T _C = 150°C	I _{CEX}	120 140 150	-1.5 -1.5 -1.5			-	10	-	-	10	-	4 mA
With base open	I _{CEO}	100 120				-	200	-	-	10	-	2 mA
Emitter-Cutoff Current	I _{EBO}		-7	0		-	5	-	5	-	2	mA
DC Forward Current Transfer Ratio	h _{FE}	4 4 2 4 4		5 ^a 8 ^a 8 ^a 10 ^a 16 ^a		15 - - 10 -	60 - - - -	- 15 - - 5	- 60 - - -	- - 15 - 10	- - 60 - -	
Collector-to-Emitter Sustaining Voltage:** With base-emitter junction reverse-biased (R _{BE} = 100Ω)	V _{CEX(sus)}		-1.5	0.1		140	-	160	-	170	-	V
With external base-to-emitter resistance (R _{BE}) = 100Ω	V _{CEX(sus)}			0.2 ^a		140	-	150	-	160	-	V
With base open	V _{CEO(sus)}			0.2 ^a	0	120	-	140	-	150	-	V
Base-to-Emitter Voltage	V _{BE}	4 4 2 4		5 ^a 8 ^a 8 ^a 10 ^a		- - - -	2 - - 3	- - - -	- 2.2 - -	- - - -	2 -	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}			5 ^a 8 ^a 10 ^a 16 ^a	0.5 0.8 1.25 3.2	- - 2 -	1 - - -	- - - -	- 1.4 - 4	- - - 2.5	1 -	V
Second-Breakdown Collector Current With base forward-biased and 1-s nonrepetitive pulse	I _{S/b}	80 100				1.5 -	- -	- 1.5	- -	- 2.5	- -	A
Magnitude of Common-Emitter, Small-Signal, Short-Circuit, Forward Current Transfer Ratio (f = 50 kHz)	h _{fe}	4		1		4	-	4	-	4	-	
Common-Emitter, Small- Signal, Short-Circuit, Forward Current Transfer Ratio (f = 1 kHz)	h _{fe}	4		1		40	-	40	-	40	-	
Thermal Resistance Junction-to-Case	R _{θJC}					-	1.46	-	1.17	-	0.7	°C/W

*In accordance with JEDEC registration data.

**The sustaining voltages V_{CEX(sus)} and V_{CEO(sus)} MUST NOT be measured on a curve tracer.

^aPulsed; pulse duration = 300μs, rep. rate = 60 Hz, duty factor ≤ 2%.

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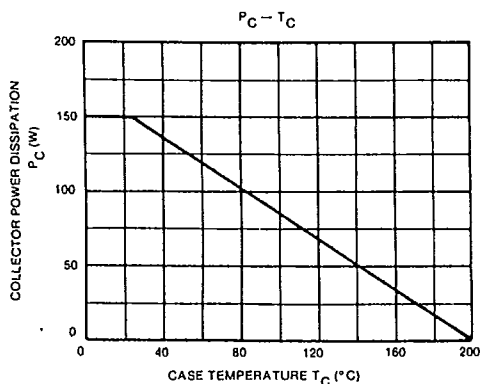


Fig. 1 — Dissipation derating curve for all types.

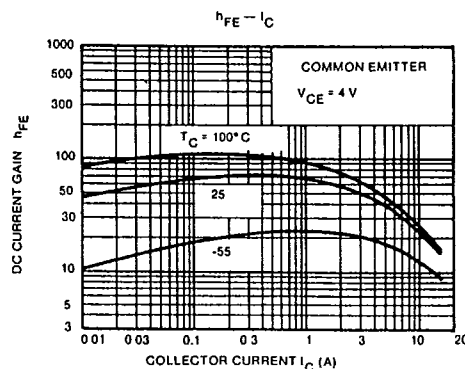


Fig. 2 — Typical dc-beta characteristics for all types.

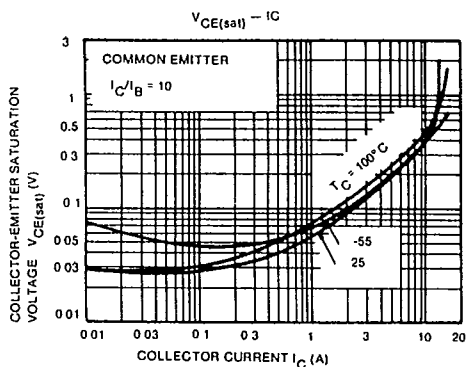


Fig. 3 — Typical collector-to-emitter saturation voltage characteristics for all types.

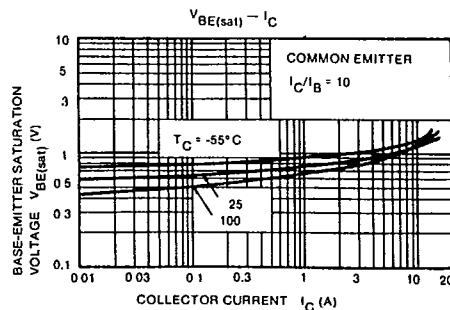


Fig. 4 — Typical base-to-emitter saturation voltage as a function of collector current for all types.

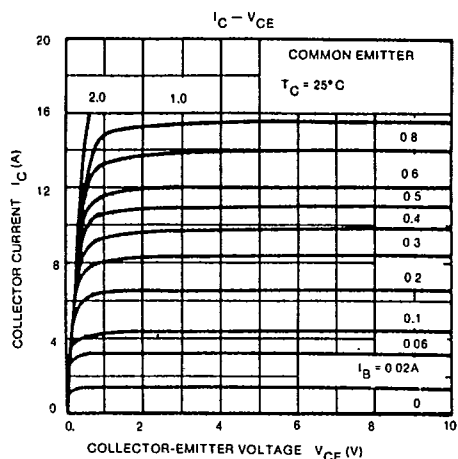


Fig. 5 — Typical output characteristics for all types.

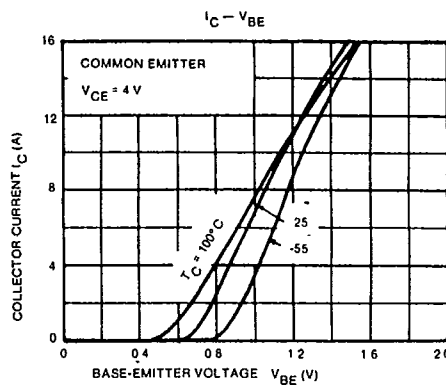


Fig. 6 — Typical transfer characteristics for 2N3773 and 2N4348.