

2N3773, 2N4348, 2N6259

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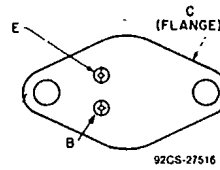
High-Voltage, High-Current Power Transistors

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_{sig}	-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	-1.5			-	2	-	-	-	-	mA
		140	-1.5			-	-	-	2	-	-	mA
		150	-1.5			-	-	-	-	-	0.2	mA
With base-emitter junction reverse-biased and T _C = 150°C	I _{CEX}	120	-1.5			-	10	-	-	-	-	mA
		140	-1.5			-	-	-	10	-	-	mA
		150	-1.5			-	-	-	-	-	4	mA
With base open	I _{CEO}	100				-	200	-	-	-	-	mA
		120				-	-	-	10	-	2	mA
Emitter-Cutoff Current	I _{EBO}		-7	0		-	5	-	5	-	2	mA
DC Forward Current Transfer Ratio	h _{FE}	4		5 ^a		15	60	-	-	-	-	
		4		8 ^a		-	-	15	60	-	-	
		2		8 ^a		-	-	-	-	15	60	
		4		10 ^a		10	-	-	-	-	-	
		4		16 ^a		-	-	5	-	10	-	
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 _{CER(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		5 ^a		-	2	-	-	-	-	V
		4		8 ^a		-	-	-	2.2	-	-	V
		2		8 ^a		-	-	-	-	-	2	V
		4		10 ^a		-	3	-	-	-	-	V
Collector-to-Emitter Saturation Voltage	V _{CE(sat)}			5 ^a	0.5	-	1	-	-	-	-	V
				8 ^a	0.8	-	-	-	1.4	-	1	V
				10 ^a	1.25	-	2	-	-	-	-	V
				16 ^a	3.2	-	-	-	4	-	2.5	V
Second-Breakdown Collector Current With base forward-biased and 1-s nonrepetitive pulse	I _{S/b}	80				1.5	-	-	-	-	-	A
		100				-	-	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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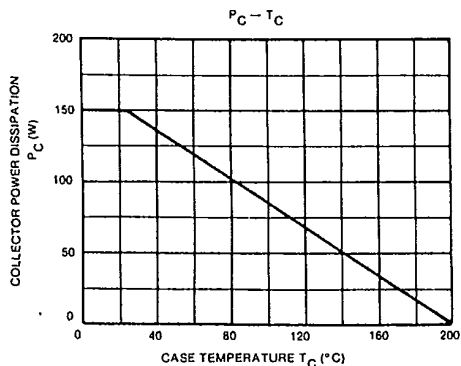


Fig. 1 — Dissipation derating curve for all types.

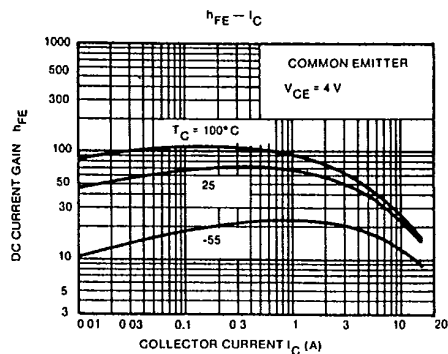


Fig. 2 — Typical dc-beta characteristics for all types.

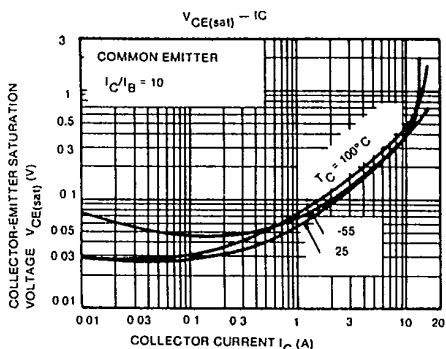


Fig. 3 — Typical collector-to-emitter saturation voltage characteristics for all types.

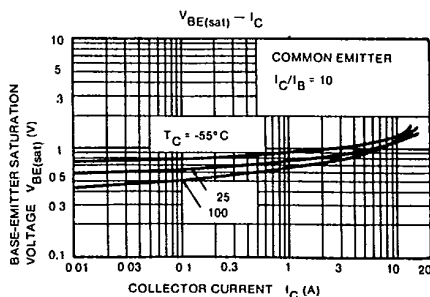


Fig. 4 — Typical base-to-emitter saturation voltage as a function of collector current for all types.

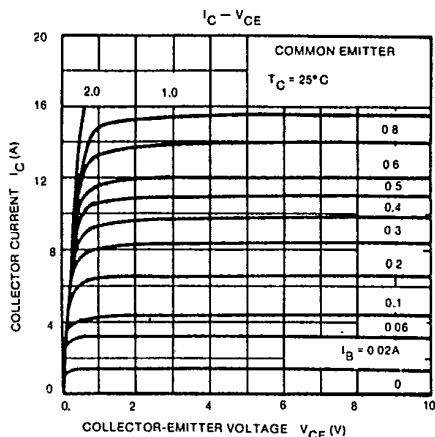


Fig. 5 — Typical output characteristics for all types.

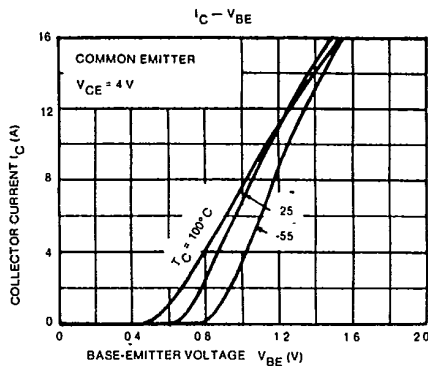


Fig. 6 — Typical transfer characteristics for 2N3773 and 2N4348.