

MAXIMUM RATINGS

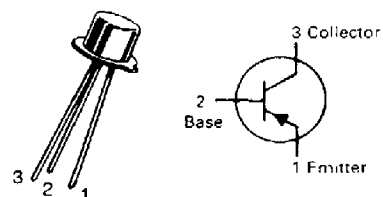
Rating	Symbol	2N3250 2N3251	2N3251A	Unit
Collector-Emitter Voltage	V_{CEO}	-40	-60	Vdc
Collector-Base Voltage	V_{CBO}	-50	-60	Vdc
Emitter-Base Voltage	V_{EBO}	-5.0		Vdc
Collector Current	I_C	-200		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	0.36 2.06		Watt mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	1.2 6.9		Watts mW/ $^\circ\text{C}$
Operating and Storage Temperature Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	486	$^\circ\text{C/W}$
Thermal Resistance, Junction to Case	$R_{\theta JC}$	146	$^\circ\text{C/W}$

2N3250 2N3251, A★

TO-18 (TO-206AA)



**GENERAL PURPOSE
TRANSISTORS**

PNP SILICON

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage(1) ($I_C = -10$ mAdc)	2N3250, 2N3251 2N3251A	$V_{(BR)CEO}$	-40 -60	—	Vdc
Collector-Base Breakdown Voltage ($I_C = -10$ μ Adc)	2N3250, 2N3251 2N3251A	$V_{(BR)CBO}$	-50 -60	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = -10$ μ Adc)		$V_{(BR)EBO}$	-5.0	—	Vdc
Collector Cutoff Current ($V_{CE} = -40$ Vdc, $V_{EB} = -3.0$ Vdc)		I_{CEX}	—	-20	nA
Base Cutoff Current ($V_{CE} = -40$ Vdc, $V_{EB} = -3.0$ Vdc)		I_{BL}	—	-50	nAdc

ON CHARACTERISTICS

DC Forward Current Transfer Ratio ($I_C = -0.1$ mAdc, $V_{CE} = -10$ Vdc)	2N3250 2N3251, 2N3251A	h_{FE}	40 80	—	—
($I_C = -1.0$ mAdc, $V_{CE} = -1.0$ Vdc)	2N3250 2N3251, 2N3251A		45 90	—	—
($I_C = -10$ mAdc, $V_{CE} = -1.0$ Vdc)(1)	2N3250 2N3251, 2N3251A		50 100	150 300	
($I_C = -50$ mAdc, $V_{CE} = -1.0$ Vdc)(1)	2N3250 2N3251, 2N3251A		15 30	—	—
Collector-Emitter Saturation Voltage (1) ($I_C = -10$ mAdc, $I_B = -1.0$ mAdc) ($I_C = -50$ mAdc, $I_B = -5.0$ mAdc)		$V_{CE(sat)}$	— —	-0.25 -0.5	Vdc
Base-Emitter Saturation Voltage (1) ($I_C = -10$ mAdc, $I_B = -1.0$ mAdc) ($I_C = -50$ mAdc, $I_B = -5.0$ mAdc)		$V_{BE(sat)}$	-0.6 —	-0.9 -1.2	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current Gain — Bandwidth Product ($I_C = -10$ mAdc, $V_{CE} = 20$ Vdc, $f = 100$ MHz)	2N3250 2N3251, 2N3251A	f_T	250 300	—	MHz
Output Capacitance ($V_{CB} = -10$ Vdc, $I_E = 0$, $f = 1.0$ MHz)		C_{obo}	—	6.0	pF
Input Capacitance ($V_{EB} = -1.0$ Vdc, $I_C = 0$, $f = 1.0$ MHz)		C_{ibo}	—	8.0	pF

2N3250 2N3251,A

ELECTRICAL CHARACTERISTICS (continued) ($T_A = 25^\circ\text{C}$ unless otherwise noted.)

Characteristic	Symbol	Min	Max	Unit
Input Impedance ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ V}$, $f = 1.0\text{ kHz}$)	h_{ie}	1.0 2.0	6.0 12	kohms
Voltage Feedback Ratio ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ V}$, $f = 1.0\text{ kHz}$)	h_{re}	—	10 20	$\times 10^{-4}$
Small-Signal Current Gain ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ V}$, $f = 1.0\text{ kHz}$)	h_{fe}	50 100	200 400	—
Output Admittance ($I_C = -1.0\text{ mA}$, $V_{CE} = -10\text{ V}$, $f = 1.0\text{ kHz}$)	h_{oe}	4.0 10	40 60	μmhos
Collector Base Time Constant ($I_C = -10\text{ mA}$, $V_{CE} = -20\text{ V}$, $f = 31.8\text{ MHz}$)	$r_b'C_C$	—	250	ps
Noise Figure ($I_C = -100\text{ }\mu\text{A}$, $V_{CE} = -5.0\text{ V}$, $R_S = 1.0\text{ k}\Omega$, $f = 100\text{ Hz}$)	NF	—	6.0	dB

SWITCHING CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Delay Time ($V_{CC} = -3.0\text{ Vdc}$, $V_{BE} = +0.5\text{ Vdc}$ $I_C = -10\text{ mAdc}$, $I_{B1} = -1.0\text{ mA}$)	t_d	35	ns
Rise Time	t_r	35	ns
Storage Time ($I_C = -10\text{ mAdc}$, $I_{B1} = I_{B2} = -1.0\text{ mAdc}$ $V_{CC} = -3.0\text{ V}$)	t_s	175 200	ns
Fall Time	t_f	50	ns

(1) Pulse Test: PW = 300 μs , Duty Cycle = 2.0%.

SWITCHING TIME CHARACTERISTICS

FIGURE 1 — DELAY AND RISE TIME

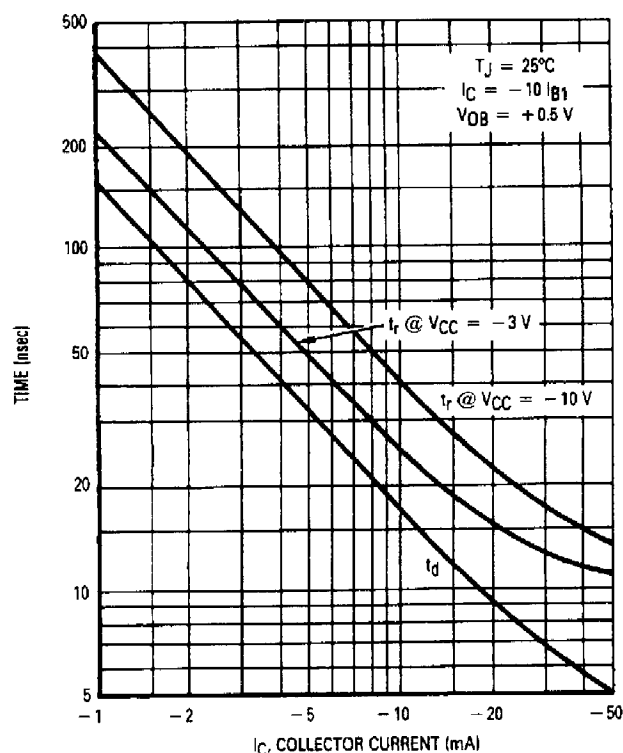


FIGURE 2 — STORAGE AND FALL TIME

