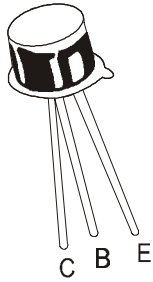


PNP SILICON PLANAR SWITCHING TRANSISTORS

2N3250, A/ 2N3251, A



**TO-18
Metal Can Package**

Designed for Small Signal, General Purpose and Switching Applications

ABSOLUTE MAXIMUM RATINGS

DESCRIPTION	SYMBOL	2N3250 2N3251	2N3250A 2N3251A	UNIT
Collector Emitter Voltage	V_{CEO}	40	60	V
Collector Base Voltage	V_{CBO}	50	60	V
Emitter Base Voltage	V_{EBO}	5		V
Collector Current Continuous	I_C	200		mA
Power Dissipation @ $T_a=25^\circ\text{C}$ Derate Above 25°C	P_D	360		mW
		2.06		mW/ $^\circ\text{C}$
Power Dissipation @ $T_c=25^\circ\text{C}$ Derate Above 25°C	P_D	1.2		W
		6.9		mW/ $^\circ\text{C}$
Operating And Storage Junction Temperature Range	T_j, T_{stg}	- 65 to +200		$^\circ\text{C}$

THERMAL RESISTANCE

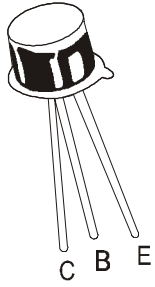
Junction to Ambient in free air	$R_{th(j-a)}$	490	$^\circ\text{C/W}$
Junction to Case	$R_{th(j-c)}$	150	$^\circ\text{C/W}$

ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	2N3250 2N3251	2N3250A 2N3251A	UNIT
Collector Emitter Voltage	$*V_{CEO}$	$I_C=10\text{mA}, I_B=0$	>40	>60	V
Collector Base Voltage	V_{CBO}	$I_C=10\mu\text{A}, I_E=0$	>50	>60	V
Emitter Base Voltage	V_{EBO}	$I_E=10\mu\text{A}, I_C=0$	>5		V
Collector Cutoff Current	I_{CEX}	$V_{CE}=40\text{V}, V_{BE}=3\text{V}$	<20		nA
Base Cutoff Current	I_{BL}	$V_{CE}=40\text{V}, V_{BE}=3\text{V}$	<50		nA

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNIT
Collector Emitter Saturation Voltage	$*V_{CE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$		0.25	V
		$I_C=50\text{mA}, I_B=5\text{mA}$		0.5	V
Base Emitter Saturation Voltage	$*V_{BE(sat)}$	$I_C=10\text{mA}, I_B=1\text{mA}$	0.6	0.9	V
		$I_C=50\text{mA}, I_B=5\text{mA}$		1.2	V

***Pulse Test: Pulse Width $\leq 300\text{ms}$, Duty Cycle $\leq 2\%$**



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ELECTRICAL CHARACTERISTICS ($T_a=25^\circ\text{C}$ unless specified otherwise)

SMALL SIGNAL CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	2N3250, A	2N3251, A	UNIT
DC Current Gain	$*h_{FE}$	$I_C=0.1\text{mA}, V_{CE}=1\text{V}$	>40	>80	
		$I_C=1\text{mA}, V_{CE}=1\text{V}$	>45	>90	
		$I_C=10\text{mA}, V_{CE}=1\text{V}$	50 - 150	100 - 300	
		$I_C=50\text{mA}, V_{CE}=1\text{V}$	>15	>30	

DYNAMIC CHARACTERISTICS

DESCRIPTION	SYMBOL	TEST CONDITION	2N3250, A	2N3251, A	UNIT
Small Signal Current Gain	h_{fe}	$V_{CE}=10\text{V}, I_C=1\text{mA}, f=1\text{KHz}$	50 - 200	100 - 400	
Input Impedence	h_{ie}	$V_{CE}=10\text{V}, I_C=1\text{mA}, f=1\text{KHz}$	1.0 - 6.0	2.0 - 12.0	$\text{K}\Omega$
Reverse Voltage Transfer Ratio	h_{re}	$V_{CE}=10\text{V}, I_C=1\text{mA}, f=1\text{KHz}$	<10	<20	$\times 10^{-4}$
Output Admittance	h_{oe}	$V_{CE}=10\text{V}, I_C=1\text{mA}, f=1\text{KHz}$	4 - 40	10 - 60	$\mu\Omega$
Noise Figure	NF	$V_{CE}=5\text{V}, I_C=0.1\text{mA}, R_S=1\text{K}\Omega, f=100\text{Hz}$	<6.0		dB
Transition Frequency	f_T	$I_C=10\text{mA}, V_{CE}=20\text{V}, f=100\text{MHz}$	>250	>300	MHz
Output Capacitance	C_{ob}	$V_{CB}=10\text{V}, I_E=0, f=100\text{KHz}$	<6.0		pF
Input Capacitance	C_{ib}	$V_{EB}=1\text{V}, I_C=0, f=100\text{KHz}$	<8.0		pF
Collector Base Time Constant	$r_b' C_C$	$I_C=10\text{mA}, V_{CE}=20\text{V}, f=31.8\text{MHz}$	<250		ps

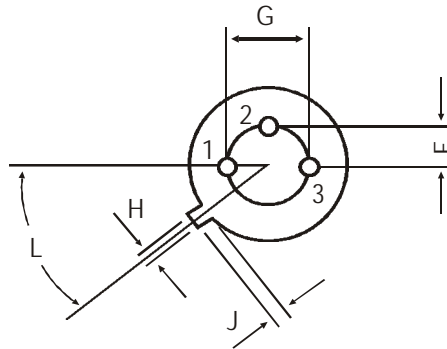
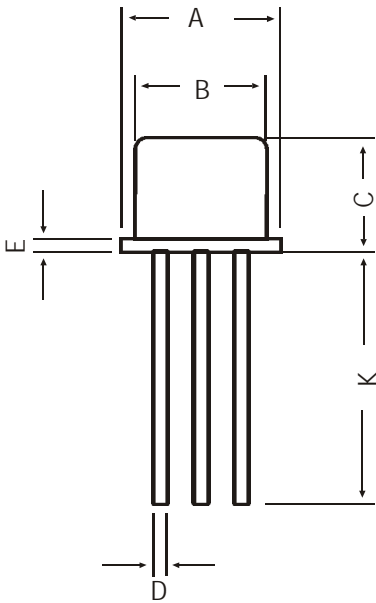
SWITCHING TIME

DESCRIPTION	SYMBOL	TEST CONDITION	2N3250, A	2N3251, A	UNIT
Delay Time	t_d	$V_{CC}=3\text{V}, V_{BE}=0.5\text{V}, I_C=10\text{mA}, I_{B1}=1\text{mA}$	<35		ns
Rise Time	t_r	$I_C=10\text{mA}, I_{B1}=1\text{mA}$	<35		ns
Storage time	t_s	$V_{CC}=3\text{V}, I_C=10\text{mA}, I_{B1}=I_{B2}=1\text{mA}$	<175	<200	ns
Fall Time	t_f		<50		ns

*Pulse Test: Pulse Width $\leq 300\text{ms}$, Duty Cycle $\leq 2\%$

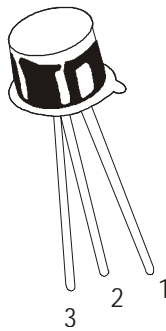
**TO-18
Metal Can Package**

TO-18 Metal Can Package



All dimensions in mm.

DIM	MIN	MAX
A	5.24	5.84
B	4.52	4.97
C	4.31	5.33
D	0.40	0.53
E	—	0.76
F	—	1.27
G	—	2.97
H	0.91	1.17
J	0.71	1.21
K	12.70	—
L	45 DEG	



PIN CONFIGURATION

1. EMITTER
2. BASE
3. COLLECTOR

Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-18	1K/polybag	350 gm/1K pcs	3" x 7.5" x 7.5"	5K	17" x 15" x 13.5"	80K	34 kgs

Disclaimer

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CDIL is a registered Trademark of
Continental Device India Limited

C-120 Naraina Industrial Area, New Delhi 110 028, India.
Telephone + 91-11-2579 6150, 5141 1112 Fax + 91-11-2579 5290, 5141 1119
email@cdil.com www.cdilsemi.com