

2N3072 (SILICON)

2N3073

PNP SILICON ANNULAR TRANSISTORS

... designed for medium-speed, industrial switching applications.

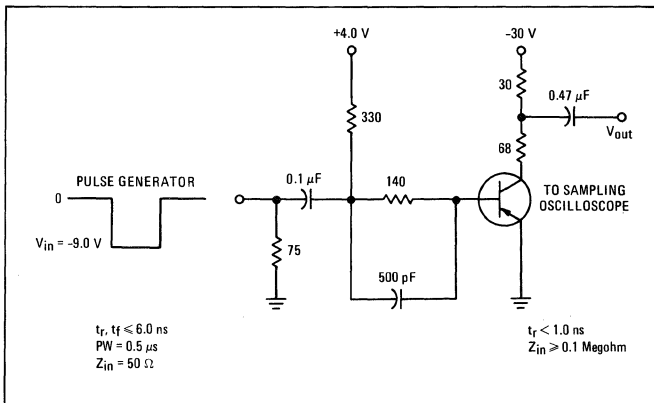
- Choice of Package and Power Ratings
- Low Collector-Emitter Saturation Voltage –
 $V_{CE(sat)} = 0.25 \text{ Vdc (Max) @ } I_C = 50 \text{ mAdc}$
- High Small-Signal Current Gain –
 $h_{fe} = 180 \text{ (Max) @ } I_C = 10 \text{ mAdc}$

*MAXIMUM RATINGS

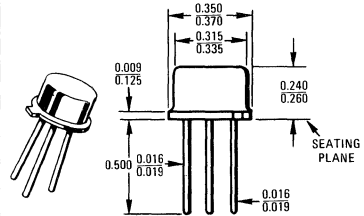
Rating	Symbol	2N3072	2N3073	Unit
Collector-Emitter Voltage	V_{CEO}	60		Vdc
Collector-Base Voltage	V_{CB}	60		Vdc
Emitter-Base Voltage	V_{EB}	4.0		Vdc
Collector Current – Continuous	I_C	500		mAdc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	800	360	mW mW/°C
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	3.0	1.2	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

*Indicates JEDEC Registered Data.

FIGURE 1 – TURN-ON AND TURN-OFF SWITCHING TIMES TEST CIRCUIT

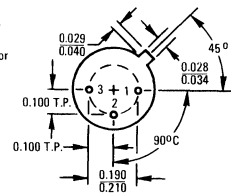


PNP SILICON TRANSISTORS



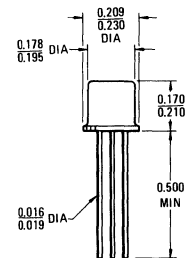
STYLE 1

Pin 1. Emitter
2. Base
3. Collector



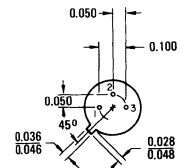
2N3072

CASE 79(1)
TO-39



STYLE 1

Pin 1. Emitter
2. Base
3. Collector



2N3073

Collector Connected to Case
CASE 22(1)
TO-18

2N3072, 2N3073 (continued)

*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) ($I_C = 30 \text{ mAdc}$, $I_B = 0$)	BV_{CEO}	60	—	Vdc
Collector-Base Breakdown Voltage ($I_C = 100 \mu\text{Adc}$, $I_E = 0$)	BV_{CBO}	60	—	Vdc
Emitter-Base Breakdown Voltage ($I_E = 100 \mu\text{Adc}$, $I_C = 0$)	BV_{EBO}	4.0	—	Vdc
Collector Cutoff Current ($V_{CE} = 30 \text{ Vdc}$, $V_{BE} = 0$) ($V_{CE} = 30 \text{ Vdc}$, $V_{BE} = 0$, $T_A = 125^\circ\text{C}$)	I_{CES}	— —	10 10	nAdc μAdc
Emitter Cutoff Current ($V_{EB} = 4.0 \text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	100	μAdc
Base Current ($V_{CE} = 30 \text{ Vdc}$, $V_{BE} = 0$)	I_B	—	10	nAdc

ON CHARACTERISTICS

DC Current Gain(1) ($I_C = 50 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$) ($I_C = 50 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$, $T_A = -55^\circ\text{C}$) ($I_C = 300 \text{ mAdc}$, $V_{CE} = 2.0 \text{ Vdc}$)	h_{FE}	30 12 15	130 — —	—
Collector-Emitter Saturation Voltage ($I_C = 50 \text{ mAdc}$, $I_B = 2.5 \text{ mAdc}$) ($I_C = 300 \text{ mAdc}$, $I_B = 30 \text{ mAdc}$)	$V_{CE(sat)}$	— —	0.25 1.0	Vdc
Base-Emitter Saturation Voltage ($I_C = 50 \text{ mAdc}$, $I_B = 2.5 \text{ mAdc}$) ($I_C = 300 \text{ mAdc}$, $I_B = 30 \text{ mAdc}$)	$V_{BE(sat)}$	— —	1.2 2.0	Vdc
Base-Emitter On Voltage ($I_C = 50 \text{ mAdc}$, $V_{CE} = 1.0 \text{ Vdc}$)	$V_{BE(on)}$	—	1.2	Vdc

SMALL-SIGNAL CHARACTERISTICS

Current-Gain-Bandwidth Product(2) ($I_C = 50 \text{ mAdc}$, $V_{CE} = 20 \text{ Vdc}$, $f = 100 \text{ MHz}$)	f_T	130	—	MHz
Output Capacitance ($V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $f = 140 \text{ kHz}$)	C_{ob}	—	10	pF
Input Impedance ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{ie}	—	1.5	k ohms
Voltage Feedback Ratio ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{re}	—	26	$\times 10^{-4}$
Small-Signal Current Gain ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{fe}	25	180	—
Output Admittance ($I_C = 10 \text{ mAdc}$, $V_{CE} = 10 \text{ Vdc}$, $f = 1.0 \text{ kHz}$)	h_{oe}	—	1200	μmhos

SWITCHING CHARACTERISTICS (Figure 1)

Turn-On Time ($I_C \approx 300 \text{ mAdc}$, $I_{B1} \approx 30 \text{ mAdc}$)	t_{on}	—	40	ns
Turn-Off Time ($I_C \approx 300 \text{ mAdc}$, $I_{B1} \approx I_{B2} \approx 30 \text{ mAdc}$)	t_{off}	—	100	ns

* Indicates JEDEC Registered Data.

(1) Pulse Test: Pulse Width = 300 μs , Duty Cycle = 1.0%.

(2) f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.