

SILICON TRANSISTORS

www.DataSheet4U.com



(e) High speed switches

Maximum Ratings

Electrical Characteristics At T_J=25°C

TYPE NPN PNP	P _D T _a =25°C W	V _{CB0} V	V _{CE0} (sus) V	V _{EB0} V	I _C mA	h _{FE} min/max @	V _{CE} /I _C V/mA	V _{CE} (sat) @ I _C /I _B V mA/mA	f _T min MHz	I _{CB0} max nA	C _{ob}	t _{on} max nS	t _{off} max nS	Case
2N706	0.3	25	20	3	200	20/-	1/10	0.6 10/1	200	500	6	40	75	TO-18
2N706A	0.3	25	15	5	200	20/60	1/10	0.6 10/1	200	500	5	40	75	TO-18
2N708	0.36	40	15	5	200	30/120	1/10	0.4 10/1	300	25	6	40	75	TO-18
2N2368	0.36	40	15	4.5	200	20/60	1/10	0.25 10/1	400	400	4	12	15	TO-18
2N2369	0.36	40	15	4.5	200	40/120	1/10	0.25 10/1	500	400	4	12	18	TO-18
2N2369A	0.36	40	15	4.5	200	40/120	1/10	0.2 10/1	500	400	4	12	18	TO-18
2N2894	0.36	12	12	4	200	40/150	0.5/30	0.15 10/1	400	80 [∞]	6	60	90	TO-18
2N2894A	0.36	12	12	4.5	200	40/150	0.5/30	0.15 10/1	800	80 [∞]	6		25	TO-18
2N3467	1.0	40	40	5	1000	40/120	1/500 **	0.5 500/50	175	100	25	40	90	TO-39
2N3725	0.8	80	50	6	1000	60/150	1/100 **	0.8 800/80	300	1700	10	35	60	TO-39
2N3946	0.36	60	40	6	200	50/150	1/10	0.3 50/5	250	10	4	70	375	TO-18
2N3947	0.36	60	40	6	200	100/300	1/10	0.3 50/5	300	10	4	70	450	TO-18
BSX19	0.36	40	15	4.5	200	20/60	1/10	0.25 10/1	400	400	4	12	15	TO-18
BSX20	0.36	40	15	4.5	200	40/120	1/10	0.25 10/1	500	400	4	12	18	TO-18
BSY38	0.30	20	15	5	200	30/60	0.35/10	0.25 10/1	200	100	5	9 φ	25 φ	TO-18
BSY39	0.30	20	15	5	200	40/120	0.35/10	0.25 10/1	200	100	5	9 φ	25 φ	TO-18
EN2369	0.20	40	15	4.5	200	40/120	1/10	0.25 10/1	500	400	4	12	18	TO-106
SG769	0.20	40	40†	4.5	200	40/120	10/10	0.3 10/1	500	400	4	12	18	TO-106

* Typ gain φ Typ ∞ V_{CER}

† V_{CEs} ∞ I_{CEs}

** Pulse duration ≤ 300 μs
Duty cycle ≤ 2%

TR 13 1200

(f) Darlingtons

TYPE NPN PNP	P _D @ T _a =25°C W	V _{CB0} V @ 100 μA	V _{CE0} V @ 5mA	V _{EB0} V @ 100 μA	I _C A	I _B mA	V _{CER} I _C = 20 mA R _{BE} = 1K V	I _{CB0} V _{CB} = 40V, 60V, 80V V/mA	I _{CEO} V _{CE} = 20V, 30V, 40V V/mA	h _{FE} V _{CE} = 5V I _C = 1A I _B = 10 mA	V _{CE} (sat) I _C = 1A I _B = 10 mA	V _{BE} (sat) I _C = 1A I _B = 10 mA	Case
SE 1000	1	60	40	10	1	100	40	40/1	20/5	1000+	3	3	TO-39
SE 1001	1	60	60	10	1	100	60	60/1	30/5	1000+	3	3	TO-39
SE 1002	1	100	80	10	1	100	80	80/1	40/5	1000+	3	3	TO-39

GAIN GROUP : 1000 - 3000 (Red)
 3000 - 9000 (Orange)
 9000+ (Yellow)

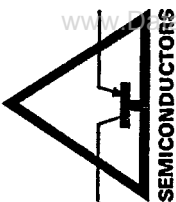
Maximum Ratings

Electrical Characteristics at T_J=25°C

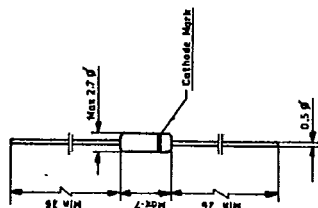
TYPE NPN PNP	P _D T _a =25°C W	V _{CB0} V	V _{CE0} (sus) V	V _{EB0} V	I _C (max) A	I _B (max) mA	h _{FE} min/max @	V _{CE} /I _C V/A	f _T MHz	I _{CB0} max mA	Case
TIP 120	65	60	60	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 121	65	80	80	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 122	65	100	100	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 130	70	60	60	5	8	300	1000/15000	4/4	-	0.2	TO-220
TIP 131	70	80	80	5	8	300	1000/15000	4/4	-	0.2	TO-220
TIP 132	70	100	100	5	5	300	1000/15000	4/4	-	0.2	TO-220
TIP 125	65	60	60	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 126	65	80	80	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 127	65	100	100	5	5	100	1000/-	3/3	-	0.2	TO-220
TIP 135	70	60	60	5	8	300	1000/15000	4/4	-	0.2	TO-220
TIP 136	70	80	80	5	8	300	1000/15000	4/4	-	0.2	TO-220
TIP 137	70	100	100	5	8	300	1000/15000	4/4	-	0.2	TO-220

www.DataSheet4U.com

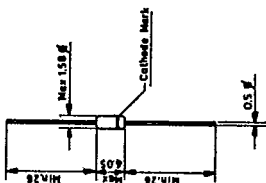
CASE OUTLINES



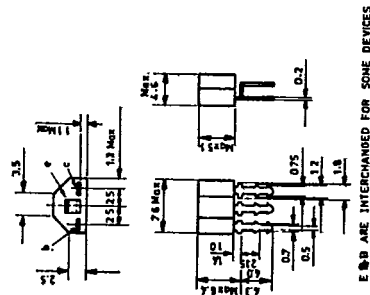
DO-7



DO-35

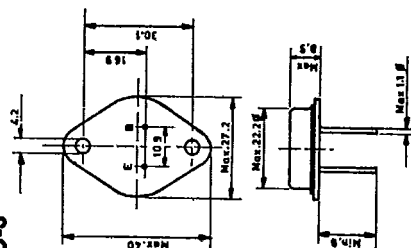


SOT-25

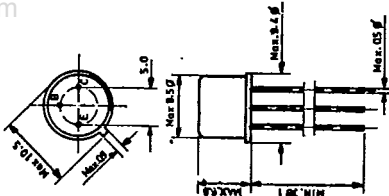


E AND B ARE INTERCHANGED FOR SOME DEVICES

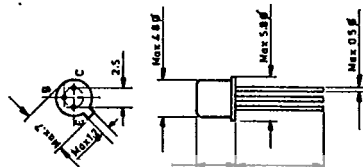
TO-3



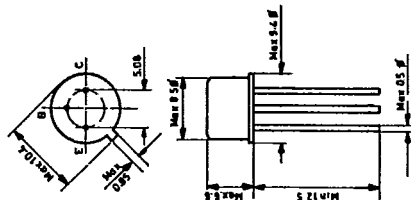
TO-5



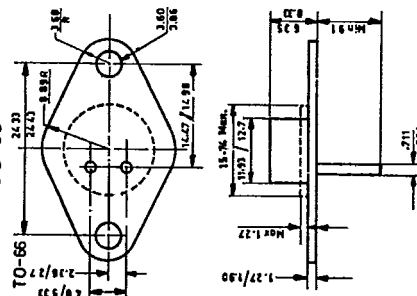
TO-18



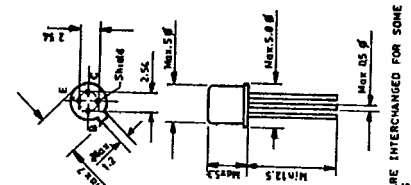
TO-39



TO-66

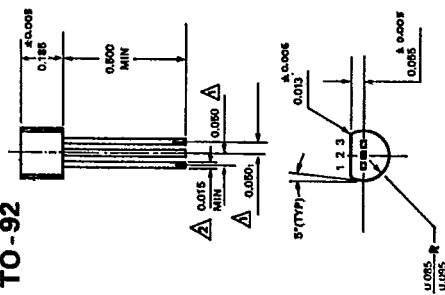


TO-72



E AND B ARE INTERCHANGED FOR SOME DEVICES

TO-92



(Dimensions in inches)

Note : Dimensions in mm unless otherwise specified

The technical drawing shows two views of a synchronous motor:

- Front View (Left):** Shows a cylindrical motor body with six leads extending from the bottom. Dimensions include:
 - Total height: 8.76(32.9)
 - Lead diameter: 0.042(1.65)
 - Lead length: 1.28(50.8)
 - Motor body diameter: 8.00(31.5) DIA
 - Motor body length: 9.04(355)
 - Insulator thickness: 0.51(20.0)
 - Top flange diameter: 0.76(30.0)
 - Flange thickness: 0.36(14.0)
 - Flange outer diameter: 0.36(14.0)
- Side View (Right):** Shows the circular end face of the motor with eight poles labeled 1 through 8. Dimensions include:
 - Pole pitch angle: 45° ± 2 TYPE
 - Radius from center to pole tip: 4.05(160)
 - Radius from center to lead base: 3.05(120)
 - Lead diameter: 0.042(1.65)
 - Lead length: 1.28(50.8)
 - Motor body diameter: 8.00(31.5) DIA
 - Motor body length: 9.04(355)
 - Insulator thickness: 0.51(20.0)
 - Top flange diameter: 0.76(30.0)
 - Flange thickness: 0.36(14.0)
 - Flange outer diameter: 0.36(14.0)

1 EMITTER
2 BASE
3 COLLECTOR

1. EMITTER
2. BASE
3. COLLECTOR

(Dimensions in Inches)

Technical drawing of a mechanical part showing dimensions in inches. The drawing includes a side view and a top view.

Side View Dimensions:

- Top edge: .060, .040
- Bottom edge: .190, .180, .115, .085
- Internal features: .029, .032

Top View Dimensions:

- Left edge: .120, .110
- Right edge: .141 Ø, .145 Ø
- Bottom edge: .420 MAX, .105, .095, .105, .095
- Internal features: .355, .325
- Reference: 250 REF
- Minimum dimension: 500 MIN.

www.DataSheet4

14 pin DIP

2.4 (0.093) NOM.

19.5 (0.770)
18.0 (0.710)

14 13 12 11 10 9 8
7 6 5 4 3 2 1

1.8
(0.070) MAX. 14 PLACES

0.5 (0.020) NOM.

MIN.
0.020
0.5

MIN. MAX.
0.200 5.1

SEATING PLANE

0.3
(0.012) MAX. 14 PLACES

1.9 ±0.005
(0.075)
4 PLACES

0.85
(0.033) MIN. 14 PLACES

0.45
(0.018) ± 0.003
12 PLACES

2.5
PIN SPACING (0.100 TP.)

7.6
±0.010

5.1
±0.250
±0.010

0.3
±0.025

7 PLACES

Note : Dimensions in mm unless otherwise specified