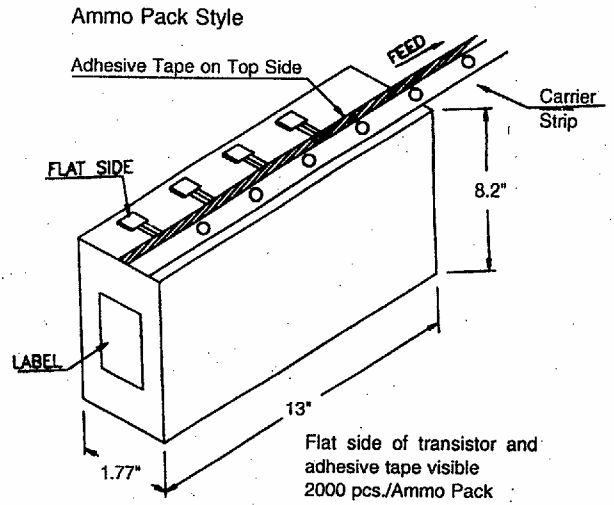
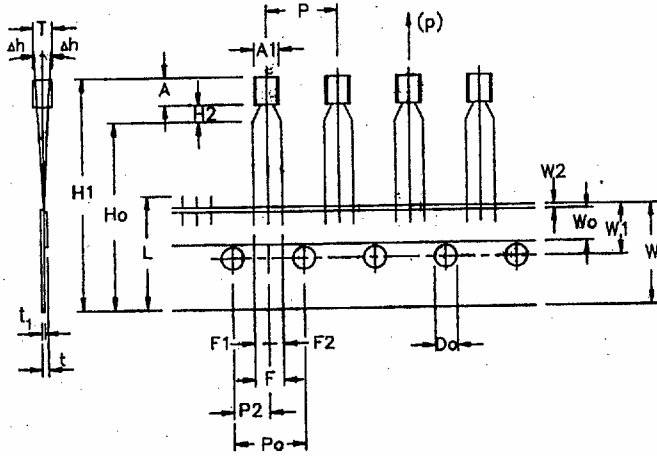




# TO-92 Plastic Package Transistors (NPN)

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EBO</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CB0</sub> (μA)	V <sub>CU</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>i</sub> (MHz)	t <sub>off</sub> (ns)	N <sub>F</sub> (dB)	C <sub>re</sub> (pF)	CDIL Case Style		
	Min	Min	Min	@Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max	Max	Min	Max	Typ	Max	Min	Max	Max	Max		
CSC2002M	60	60	5	0.5	0.3	0.1	60			90	180	50	1	0.6	1.2	300	7	15	50	140	10	TO-92-1
CSC2003	80	80	5	0.5	0.3	0.1	80			90	400	50	1	0.6	1.2	300	7	15	50	140	10	TO-92-1
CSC2003K	80	80	5	0.5	0.3	0.1	80			200	400	50	1	0.6	1.2	300	7	15	50	140	10	TO-92-1
CSC2003L	80	80	5	0.5	0.3	0.1	80			135	270	50	1	0.6	1.2	300	7	15	50	140	10	TO-92-1
CSC2003M	80	80	5	0.5	0.3	0.1	80			90	180	50	1	0.6	1.2	300	7	15	50	140	10	TO-92-1
CSC2120	35	30	5	0.6	0.8	0.1	35			100	320	100	1	0.5		500	13		120	10	TO-92-1	
CSC2120O	35	30	5	0.6	0.8	0.1	35			100	200	100	1	0.5		500	13		120	10	TO-92-1	
CSC2120Y	35	30	5	0.6	0.8	0.1	35			160	320	100	1	0.5		500	13		120	10	TO-92-1	
CSC2216	50	45	4	0.3	0.05	0.1	50			40	100	12.5	12.5	0.2	1.5	15	2	300		13	TO-92-3	
CSC2229Y	200	150	5	0.625	0.5	0.1	200			120	360	10	5	0.5	1	10	3.5	5	120	10	TO-92-1	
CSC2240	120	120	5	0.3	0.1	0.1	120			200	700	2	6	0.3		10	3.0		100	1	6	TO-92
CSC2240BL	120	120	5	0.3	0.1	0.1	120			350	700	2	6	0.3		10	3.0		100	1	6	TO-92
CSC2240GR	120	120	5	0.3	0.1	0.1	120			200	400	2	6	0.3		10	3.0		100	1	6	TO-92-1
CSC2271	300	300	6	0.9	0.1	1	200			40	200	10	10	0.6	1	20	7.5	50		10	TO-92-1	
CSC2271C	300	300	6	0.9	0.1	1	200			40	80	10	10	0.6	1	20	7.5	50		10	TO-92-1	
CSC2271D	300	300	6	0.9	0.1	1	200			60	120	10	10	0.6	1	20	7.5	50		10	TO-92-1	
CSC2271E	300	300	6	0.9	0.1	1	200			100	200	10	10	0.6	1	20	7.5	50		10	TO-92-1	
CSC2274D	100	80	5	0.6	0.5	1	40			60	120	50	5	0.6	1.2	400	5		120	10	TO-92-1	
CSC2274E	100	80	5	0.6	0.5	1	40			100	200	50	5	0.6	1.2	400	5		120	10	TO-92-1	
CSC2274F	100	80	5	0.6	0.5	1	40			160	320	50	5	0.6	1.2	400	5		120	10	TO-92-1	
CSC2274K	100	80	5	0.6	0.5	1	40			60	320	50	5	0.6	1.2	400	5		120	10	TO-92-1	
CSC2309	55	50	5	0.2	0.1	0.5	18			250	1200	2	12	0.2		10	3.5	150	230	2	TO-92-1	
CSC2309D	55	50	5	0.2	0.1	0.5	18			250	500	2	12	0.2		10	3.5	150	230	2	TO-92-1	
CSC2309E	55	50	5	0.2	0.1	0.5	18			400	800	2	12	0.2		10	3.5	150	230	2	TO-92-1	
CSC2309F	55	50	5	0.2	0.1	0.5	18			600	1200	2	12	0.2		10	3.5	150	230	2	TO-92-1	
CSC2328A	30	30	5	1	1.5	0.1	30			100	320	500	2	2		1500	30		120	500	TO-92-1	
CSC2328AO	30	30	5	1	1.5	0.1	30			100	200	500	2	2		1500	30		120	500	TO-92-1	

MECHANICAL DATA



Item	Symbol	Specification				Remarks
		Min.	Nom.	Max.	Tol.	
Body Width	A1	4,0		4,8		
Body Height	A	4,8		5,2		
Body Thickness	T	3,9		4,2		
Pitch of Component	P		12,7		±1	
Feed Hole Pitch	Po		12,7		±0,3	Cumulative Pitch Error 1.0 mm/20 Pitch
Feed Hole Centre to Component Centre	P2		6,35		±0,4	To be measured at bottom of Clinch
Distance between Outer Leads	F		5,08		±0,6	
Component Alignment	Δh		0	1	-0,2	At Top of Body
Tape Width	W		18		±0,5	
Hold-Down Tape Width	Wo		6		±0,2	
Hole Position	W1		9		±0,7	
Hold-Down Tape Position	W2		0,5		±0,2	
Lead Wire Clinch Height	Ho		16		±0,5	
Component Height	H1			32,25		
Length of Snipped leads	L			11,0		
Feed Hole Diameter	Do		4		±0,2	
Total Tape Thickness	t			1,2		t, 0,3-0,6
Lead-to-Lead Distance	F1,F2		2,54		+0,4 -0,1	
Clinch Height	H2			3		
Pull-out Force	(p)	6N				

Dimensions in m.m.

- Notes:**
1. Maximum alignment deviation between leads not to be greater than 0.2 mm.
  2. Maximum non-cumulative variation between tape feed holes shall not exceed 1 mm in 20 pitches
  3. Hold-down tape not to exceed beyond the edge(s) of carrier tape and there shall be no exposure of adhesive.
  4. No more than 3 consecutive missing components permitted.
  5. A tape trailer, having at least three feed holes is required after the last component.
  6. Splices shall not interfere with the sprocket feed holes.