

TO-92 Plastic-Encapsulate Transistors

3DD13001B TRANSISTOR (NPN)

FEATURE

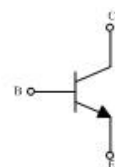
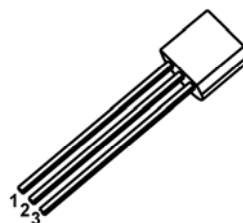
- power switching applications

MAXIMUM RATINGS (T_a=25°C unless otherwise noted)

Symbol	Parameter	Value	Unit
V _{CB0}	Collector -Base Voltage	600	V
V _{CE0}	Collector-Emitter Voltage	400	V
V _{EBO}	Emitter-Base Voltage	7	V
I _C	Collector Current -Continuous	0.2	A
P _C	Collector Power Dissipation	0.75	W
T _J	Junction Temperature	150	°C
T _{stg}	Storage Temperature	-55~150	°C

TO-92

1. BASE
2. COLLECTOR
3. EMITTER



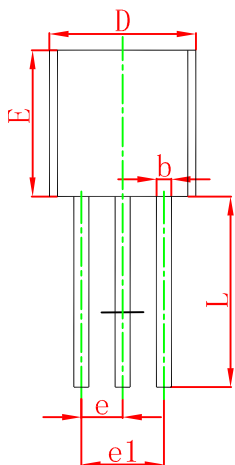
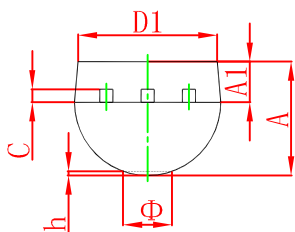
ELECTRICAL CHARACTERISTICS (T_a=25°C unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	V _{(BR)CBO}	I _C = 100μA , I _E =0	600			V
Collector-emitter breakdown voltage	V _{(BR)CEO}	I _C = 1mA , I _B =0	400			V
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = 100μA , I _C =0	7			V
Collector cut-off current	I _{CB0}	V _{CB} = 600V , I _E =0			100	μA
Collector cut-off current	I _{CEO}	V _{CE} = 400V , I _B =0			200	μA
Emitter cut-off current	I _{EBO}	V _{EB} =7V , I _C =0			100	μA
DC current gain	h _{FE(1)}	V _{CE} = 20V , I _C = 20mA	10		40	
	h _{FE(2)}	V _{CE} = 10V , I _C = 0.25 mA	5			
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 50mA , I _B = 10 mA			0.5	V
Base-emitter saturation voltage	V _{BE(sat)}	I _C = 50 mA , I _B = 10mA			1.2	V
Transition frequency	f _T	V _{CE} = 20V , I _C =20mA f = 1MHz	8			MHz
Fall time	t _f	I _C =50mA , I _{B1} =-I _{B2} =5mA, V _{CC} =45V			0.3	μs
Storage time	t _s				1.5	μs

CLASSIFICATION OF h_{FE(1)}

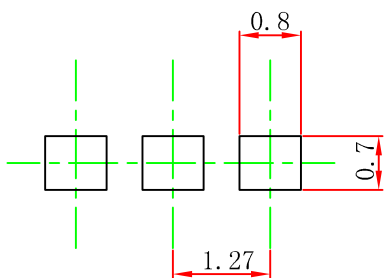
Range	10-13	13-16	16-19	19-22	22-25	25-28	28-31	31-34	34-37	37-40

TO-92 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	3.300	3.700	0.130	0.146
A1	1.100	1.400	0.043	0.055
b	0.380	0.550	0.015	0.022
c	0.360	0.510	0.014	0.020
D	4.400	4.700	0.173	0.185
D1	3.430		0.135	
E	4.300	4.700	0.169	0.185
e	1.270 TYP		0.050 TYP	
e1	2.440	2.640	0.096	0.104
L	14.100	14.500	0.555	0.571
Φ		1.600		0.063
h	0.000	0.380	0.000	0.015

TO-92 Suggested Pad Layout



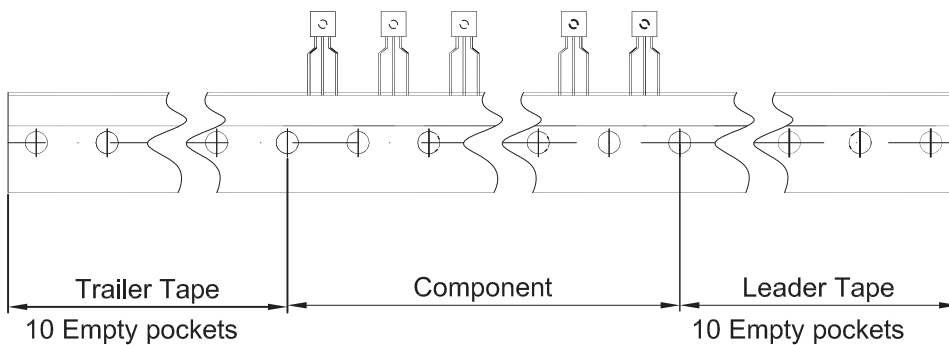
Note:

1. Controlling dimension: in millimeters.
2. General tolerance: ± 0.05 mm.
3. The pad layout is for reference purposes only.

TO-92 PACKAGE TAPEING DIMENSION



Dimiensions are in millimeter								
A1	A	T	P	P0	P2	F1	F2	W
4.5±0.2	4.5±0.2	3.5±0.2	12.7±0.3	12.7±0.2	6.35±0.3	2.5±0.3	2.5±0.3	18.0+1.0/-0.5
W0	W1	W2	H	H0	D0	t1	t2	ΔP
6.0±0.5	9.0±0.5	1.0 MAX.	19.0±1.0	16.0±0.5	4.0±0.5	0.4±0.05	0.2±0.05	0 ± 1.0



Package	Box	Box Size(mm)	Carton	Carton Size(mm)
TO-92	2000 pcs	333×162×43	20,000 pcs	350×340×250