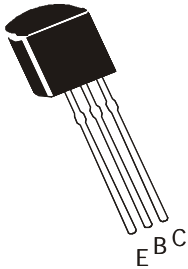




**NPN EPITAXIAL PLANAR DARLINGTON TRANSISTORS**

**MPSA 13**  
**MPSA 14**  
**TO-92**



**ABSOLUTE MAXIMUM RATINGS.**

DESCRIPTION	SYMBOL	VALUE	UNIT
Collector -Emitter Voltage	VCES	30	V
Collector -Base Voltage	VCBO	30	V
Emitter -Base Voltage	VEBO	10	V
Collector Current -Continuous	IC	500	mA
Power Dissipation @ Ta=25 degC	PD	625	mW
Derate above 25 deg C		5.0	mW./deg C
Power Dissipation @ Tc=25 degC	PD	1.5	W
Derate above 25 deg C		12	mW./deg C
Operating And Storage Junction Temperature Range	Tj, Tstg	-55 to +150	deg C

**THERMAL RESISTANCE**

Junction to Case	Rth(j-c)	83.3	deg C/W
Junction to Ambient	Rth(j-a)	200	deg C/W

**ELECTRICAL CHARACTERISTICS (Ta=25 deg C Unless Otherwise Specified)**

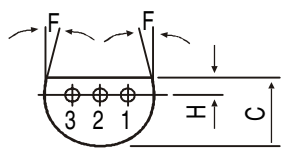
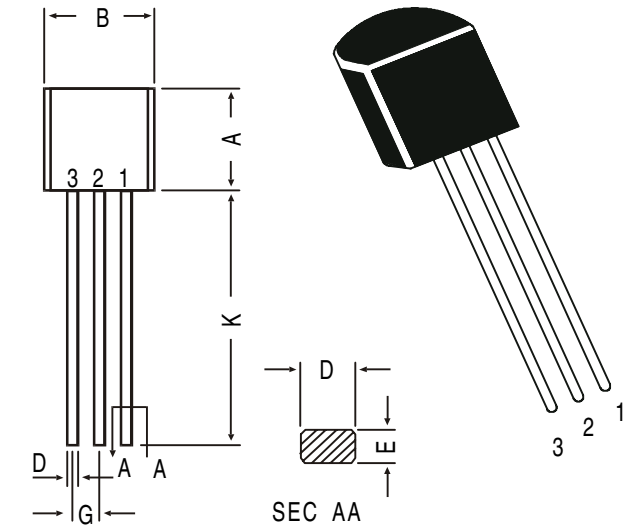
DESCRIPTION	SYMBOL	TEST CONDITION	Min	Max	UNIT	
Collector -Emitter Voltage	VCES	IC=100uA, IB=0	30	-	V	
Collector-Cut off Current	ICBO	VCB=30V, IE=0	-	100	nA	
Emitter-Cut off Current	IEBO	VEB=10V, IC=0	-	100	nA	
DC Current Gain	hFE*					
		<b>MPSA13</b>	IC=10mA, VCE=5V	5.0	-	K
		<b>MPSA14</b>		10	-	K
		<b>MPSA13</b>	IC=100mA, VCE=5V	10	-	K
	<b>MPSA14</b>		20	-	K	
Collector Emitter Saturation Voltage	VCE(Sat)*	IC=100mA, IB=0.1mA	-	1.5	V	
Base Emitter On Voltage	VBE(on) *	IC=100mA, VCE=5V	-	2.0	V	
Current Gain-Bandwidth Product	ft**	IC=10mA, VCE=5V	125	-	MHz	
		f=100MHz				

\*Pulse Test: Pulse Width=300us, Duty Cycle=2%

\*\*ft=/hfe/\*ftest.

# TO-92 Plastic Package

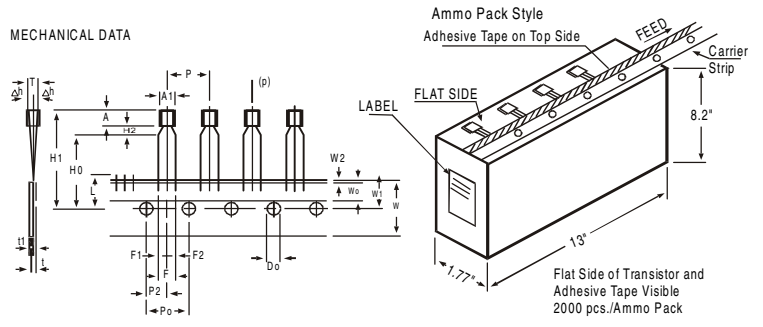
## TO-92 Transistors on Tape and Ammo Pack



**PIN CONFIGURATION**  
 1. COLLECTOR  
 2. BASE  
 3. EMITTER

All dimensions in mm.

DIM	MIN.	MAX.
A	4.32	5.33
B	4.45	5.20
C	3.18	4.19
D	0.41	0.55
E	0.35	0.50
F	5 DEG	
G	1.14	1.40
H	1.14	1.53
K	12.70	—



All dimensions in mm unless specified otherwise

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	
FEED HOLE CENTRE TO COMPONENT CENTRE	P2		6.35		±0.4	
DISTANCE BETWEEN OUTER LEADS	F	5.08			+0.6 -0.2	
COMPONENT ALIGNMENT	Δh	0		1		AT TOP OF BODY
TAPE WIDTH	W	18			±0.5	
HOLD-DOWN TAPE WIDTH	W0	6			±0.2	
HOLE POSITION	W1	9			+0.7 -0.5	
HOLD-DOWN TAPE POSITION	W2	0.5			±0.2	
LEAD WIRE CLINCH HEIGHT	Ho	16			±0.5	
COMPONENT HEIGHT	H1			23.25		
LENGTH OF SNIPPED LEADS	L			11.0		
FEED HOLE DIAMETER	Do		4		±0.2	
TOTAL TAPE THICKNESS	t			1.2		±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				

- 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. HOLDDOWN 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 ARE PERMITTED.
  5. A TAPE TRAILER, HAVING AT LEAST THREE FEED HOLES ARE REQUIRED AFTER THE LAST COMPONENT.
  6. SPLICES SHALL NOT INTERFERE WITH THE SPROCKET FEED HOLES.

## Packing Detail

PACKAGE	STANDARD PACK		INNER CARTON BOX		OUTER CARTON BOX		
	Details	Net Weight/Qty	Size	Qty	Size	Qty	Gr Wt
TO-92 Bulk	1K/polybag	200 gm/1K pcs	3" x 7.5" x 7.5"	5.0K	17" x 15" x 13.5"	80.0K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2.0K	17" x 15" x 13.5"	32.0K	12.5 kgs