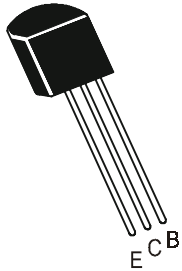


COMPLEMENTARY SILICON PLANAR EPITAXIAL TRANSISTORS

**CSA1020 PNP
CSC2655 NPN**



**TO-92
Plastic Package**

ABSOLUTE MAXIMUM RATINGS (Ta=25°C unless specified otherwise)

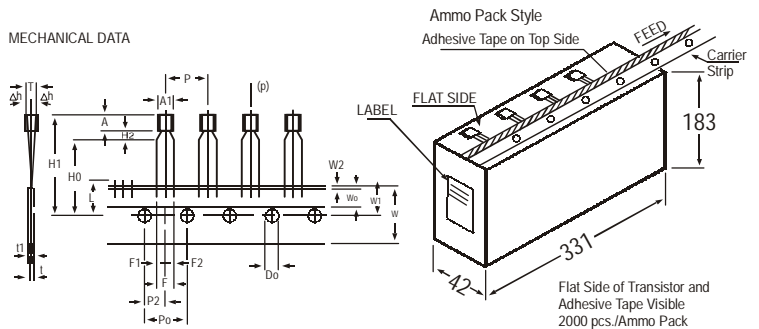
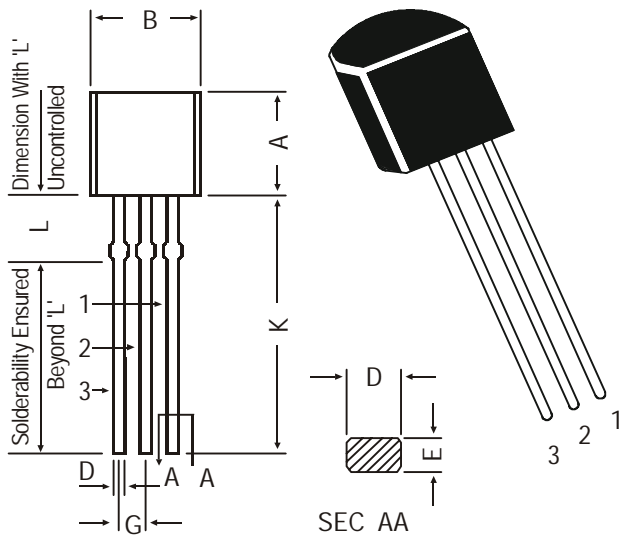
DESCRIPTION	SYMBOL	VALUE	UNIT
Collector Emitter Voltage	V_{CEO}	50	V
Collector Base Voltage	V_{CBO}	50	V
Emitter Base Voltage	V_{EBO}	5	V
Collector Current	I_C	2	A
Collector Power Dissipation	P_C	900	mW
Operating And Storage Junction Temperature Range	T_j, T_{stg}	-55 to +150	°C

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

DESCRIPTION	SYMBOL	TEST CONDITION	min	typ	max	UNIT	
Collector Emitter Voltage	BV_{CEO}	$I_C=10mA, I_B=0$	50		-	V	
Collector Cut off Current	I_{CBO}	$V_{CB}=50V, I_E = 0$	-		1.0	µA	
Emitter Cut off Current	I_{EBO}	$V_{EB}=5V, I_C = 0$	-		1.0	µA	
DC Current Gain	h_{FE}	$V_{CE}=2V, I_C=500mA$ *	70		240		
		$V_{CE}=2V, I_C=1.5A$	40		-		
Collector Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=1A, I_B=50mA$	-		0.5	V	
Base Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=1A, I_B=50mA$	-		1.2	V	
DYNAMIC CHARACTERISTICS							
Gain Bandwidth Product	f_T	$I_C=500mA, V_{CE}=2V$	-	100	-	MHz	
Output Capacitance	C_{ob}	$I_E=0, V_{CB}=10V, f=1MHz$					
			PNP	-	40	-	pF
			NPN	-	30	-	pF
Switching Time							
Turn on Time	t_{on}	$V_{CC}=30V, I_{B1}=I_{B2}=$	-	0.1	-	us	
Storage Time	t_{stg}	50mA, $R_L=30\Omega$	-	1.0	-	us	
Fall Time	t_f	Duty Cycle=1%	-	0.1	-	us	
Classification		O	Y				
h_{FE} *		70 - 140	120 - 240				

TO-92 Plastic Package

TO-92 Transistors on Tape and Ammo Pack



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	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 -0.2	AT TOP OF BODY
COMPONENT ALIGNMENT	Δh		0	1		
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			t1 0.3 - 0.6
LEAD - TO - LEAD DISTANCE F1,	F1		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.

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	—
L	1.982	2.082

All diminsions in mm.

PIN CONFIGURATION

1. BASE
2. COLLECTOR
3. EMITTER

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"	5K	17" x 15" x 13.5"	80K	23 kgs
TO-92 T&A	2K/ammo box	645 gm/2K pcs	12.5" x 8" x 1.8"	2K	17" x 15" x 13.5"	32K	12.5 kgs

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