



## NPN SILICON PLANAR EPITAXIAL TRANSISTOR

## 2N5770



TO-92 Plastic Package

# **VHF/UHF Amplifier Mixer and Oscillator Applications**

### ABSOLUTE MAXIMUM RATINGS (T<sub>a</sub>=25°C unless specified otherwise)

DESCRIPTION	SYMBOL	VALUE	UNITS
Collector Emitter Voltage	V <sub>CEO</sub>	15	V
Collector Base Voltage	V <sub>CBO</sub>	30	V
Emitter Base Voltage	V <sub>EBO</sub>	4.5	V
Collector Current Continuous	Ι <sub>C</sub>	50	mA
Power Dissipation @ T <sub>a</sub> =25 <sup>o</sup> C	P <sub>D</sub>	350	mW
Derate Above 25°C		2.8	mW/ °C
Power Dissipation@ T <sub>c</sub> =25 <sup>o</sup> C	PD	850	mW
Derate Above 25°C		6.8	mW/ °C
Operating And Storage Junction Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	- 55 to +150	°C

#### ELECTRICAL CHARACTERISTICS (T<sub>a</sub>=25<sup>o</sup>C unless specified otherwise)

DESCRIPTION	SYMBOL	TEST CONDITION	MIN	MAX	UNITS
Collector Emitter Voltage	V <sub>CEO</sub>	I <sub>C</sub> =3mA, I <sub>B</sub> =0	15		V
Collector Base Voltage	V <sub>CBO</sub>	I <sub>C</sub> =10μΑ, I <sub>E</sub> =0	30		V
Emitter Base Voltage	V <sub>EBO</sub>	I <sub>E</sub> =10μΑ, I <sub>C</sub> =0	4.5		V
Collector Cut Off Current	I <sub>CBO</sub>	V <sub>CB</sub> =15V, I <sub>E</sub> = 0		10	nA
Collector Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA		0.4	V
Base Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =1mA		1.0	V
DC Current Gain	h <sub>FE</sub>	I <sub>C</sub> =3mA, V <sub>CE</sub> =1V	20		
		I <sub>C</sub> =8mA, V <sub>CE</sub> =10V	50	200	

#### **DYNAMIC CHARACTERISTICS**

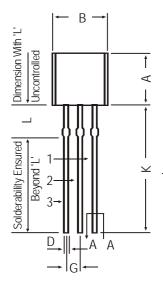
Output Capacitance	C <sub>ob</sub>	I <sub>E</sub> =0, V <sub>CB</sub> =10V, f=140KHz	0.7	1.1	pF
Noise Figure	NF	$V_{CE}$ =6V, $I_C$ =1mA, $R_s$ =400 $\Omega$ , f=60MHz		6.0	dB
Transition Frequency	$f_{T}$	I <sub>C</sub> =8mA, V <sub>CE</sub> =10V,f=100MHz	700	1800	MHz

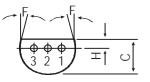
#### 2N5770

# **TO-92 Plastic Package**

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Mechanical Data





**PIN CONFIGURATION** 

- 3. EMITTER
- 1. COLLECTOR 2. BASE
- DIM MIN. MAX. 4.32 5.33 А В 4.45 5.20 С 3.18 4.19 D 0.41 0.55 Ε 0.35 0.50 F 5 DEG G 1.14 1.40 Н 1.14 1.53 К 12.70

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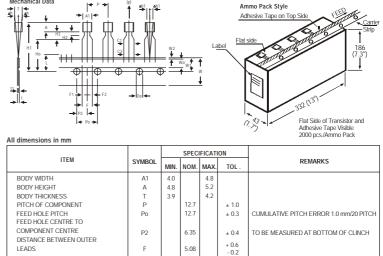
SEC AA

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1

21

3



# **TO-92 Transistors on Tape and Ammo Pack**

ITEM DY WIDTH DY HEIGHT DY THICKNESS CH OF COMPONENT ED HOLE PITCH ED HOLE PITCH ED HOLE CENTRE TANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH LE POSITION	SYMBOL           A1           A           T           P           Po           P2           F           Δh1           W           Wo	MIN. 4.0 4.8 3.9	NOM. 12.7 12.7 6.35 5.08 0 0 18	MAX. 4.8 5.2 4.2 1.0 1.3	± 1.0 ± 0.3 ± 0.4 + 0.6 - 0.2	REMARKS CUMULATIVE PITCH ERROR 1.0 mm/20 PIT TO BE MEASURED AT BOTTOM OF CLINCH AT TOP OF BODY
DY HEIGHT DY THICKNESS CH OF COMPONENT ED HOLE PITCH ED HOLE CENTRE TO MPOONENT CENTRE TANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH DOWN TAPE WIDTH	R F Po P2 F Δh W Wo	4.8	12.7 6.35 5.08 0 0	5.2 4.2 1.0	± 0.3 ± 0.4 + 0.6	TO BE MEASURED AT BOTTOM OF CLINCI
DY THICKNESS CH OF COMPONENT 50 HOLE PITCH ED HOLE CENTRE TO MPONENT CENTRE STANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH DOWN TAPE WIDTH	Po Po P2 F Δh Δh1 W Wo		12.7 6.35 5.08 0 0	4.2	± 0.3 ± 0.4 + 0.6	TO BE MEASURED AT BOTTOM OF CLINCI
CH OF COMPONENT ED HOLE PITCH ED HOLE CENTRE TO MPONENT CENTRE TANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH DOWN TAPE WIDTH	P Po P2 F Δh Δh1 W Wo	3.9	12.7 6.35 5.08 0 0	1.0	± 0.3 ± 0.4 + 0.6	TO BE MEASURED AT BOTTOM OF CLINCI
ED HOLE PITCH ED HOLE CENTRE TO MPONENT CENTRE TANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH +DOWN TAPE WIDTH	Po P2 F Δh W Wo		12.7 6.35 5.08 0 0		± 0.3 ± 0.4 + 0.6	TO BE MEASURED AT BOTTOM OF CLINCI
ED HOLE CENTRE TO MPONENT CENTRE TANCE BETWEEN OUTER US MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH DOWN TAPE WIDTH	P2 F ∆h W Wo		6.35 5.08 0 0		± 0.4 + 0.6	TO BE MEASURED AT BOTTOM OF CLINCI
MPONENT CENTRE TANCE BETWEEN OUTER DS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH DOWN TAPE WIDTH	F Δh Δh1 W Wo		5.08 0 0		+ 0.6	AT TOP OF BODY
TANCE BETWEEN OUTER ADS MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH +DOWN TAPE WIDTH	F Δh Δh1 W Wo		5.08 0 0		+ 0.6	AT TOP OF BODY
ads Mponent Alignment Side View Mponent Alignment Front View Pe Width +Down Tape Width	∆h ∆h1 W Wo		0			
MPONENT ALIGNMENT SIDE VIEW MPONENT ALIGNMENT FRONT VIEW PE WIDTH +DOWN TAPE WIDTH	∆h ∆h1 W Wo		0			
MPONENT ALIGNMENT FRONT VIEW PE WIDTH •DOWN TAPE WIDTH	∆h1 W Wo		0		- 0.2	
PE WIDTH +DOWN TAPE WIDTH	W Wo		-	1.3		
-DOWN TAPE WIDTH	Wo		10			AT TOP OF BODY
					± 0.5	
LE POSITION			6		± 0.2	
	W1		9		+ 0.7	
					- 0.5	
LD-DOWN TAPE POSITION	W2		0.5		± 0.2	
AD WIRE CLINCH HEIGHT	Ho		16		± 0.5	
MPONENT HEIGHT	H1			23.25		
NGTH OF SNIPPED LEADS	L			11.0		
ED HOLE DIAMETER	Do		4		± 0.2	
TAL TAPE THICKNESS	t			1.2		t1 0.3-0.6
- TO - LEAD DISTANCE	F1, F2		2.54		+ 0.4	
AND OFF	H2	0.45		1.45	- 0.1	
INCH HEIGHT	H3			3.0		
AD PARALLELISM	C1 - C2			0.22		
LL - OUT FORCE	(P)	6N				
	WPONENT HEIGHT GTH OF SNIPPED LEADS 10 HOLE DUMMETER FAL TAPE THICKNESS TO - LEAD DISTANCE WD OFF NCH HEIGHT D PARALLELISM L - OUT FORCE imum alignment deviation between lead imum non-cumulative variation between lead bown tape will not exceed beyond the e re will be no more than three (3) consec.	WPONENT HEIGHT         H1           IGTH OF SNIPPED LEADS         L           JD HOLE DJAMETER         Do           TAL TAPE THICKNESS         F1, F2           WD OFF         H2           NCH HEIGHT         H3           JD PARALLELISM         [C1 - C2]           L- OUT FORCE         (P)           imum alignment deviation between leads will not to b         inductor beam targe (set of deg(s)) of deg(s))           iddown tape will not exceed beyond the edge(s) of esing will be not more than three (3) consecutive missing         finance	WPONENT HEIGHT         H1           IGTH OF SNIPPED LEADS         L           JD HOLE DIAMETER         Do           rAL TAPE THICKNESS         t           TO - LEAD DISTANCE         F1, F2           WD OFF         H2           NCH HEIGHT         H3           ND PARALLEUSM          C1-C2            L- OUT FORCE         (P)           Imum alignment deviation between leads will not to be greated from non-cumulative variation between leads will not to be greated from non-cumulative variation between leads will not to be greated primer non-cumulative variation between leads will not to be greated primer and the adje(s) of carrier tape feed holes are provided after 1           Imum alignment deviation between leads will not to be greated primer between tape feed holes are provided after 1           Imum alignment deviation between leads will not to be greated primer between tape feed holes are provided after 1	MPONENT HEIGHT         H1         H1           IGTH OF SNIPPED LEADS         L         Do         4           IATAPE THICKNESS         t         2.54         4           IATAPE THICKNESS         t         2.54         0.45           MD OFF         H2         0.45         0.45           ND OFF         H2         0.45         0.45           ND OFF         H2         0.45         0.45           MD OFF         H2         0.45         0.45           INCH HEIGHT         H3         0         0           Inum alignment deviation between leads will not to be greater than 0         0         0.45           Imum alignment deviation between tape feed holes shall not execet beyond the edge(5) of carrier tape and the twe will be no more than three (3) consecutive missing components in the will be no more than three (4) constance will not the tast         0	MPONENT HIGHT         H1         23.25           IGTH OF SNIPPED LEADS         L         11.0           DI HOLE DIAMETER         Do         4           TATAPE THICKNESS         t         1.2           TO - LEAD DISTANCE         F1, F2         2.54           ND OFF         H2         0.45         1.45           NCH HEIGHT         H3         3.0         0.22           L- OUT FORCE         (P)         6N         0.22           L- OUT FORCE         (P)         6N         0.22           Imum alignment deviation between leads will not to be greater than 0.2mm. Immu mon-cumulative variation between leads will not to be greater than 0.2mm. Immu mon-cumulative variation between leads will not to be greater than 2.5 mm or power than three (3) consecutive missing components in a tape-teel holes are provided after the last compon           er tailer, having at least three for holes are provided after the last components in a tape.	MPONENT HIGHT         H1         23.25           IGTH OF SNIPPED LEADS         L         11.0           JOHDE DJAMETER         Do         4         ± 0.2           IAT APE THICKNESS         t         1.2         + 0.4           TO - LEAD DISTANCE         F1,F2         2.54         + 0.4           ND OFF         H2         0.45         1.45         -0.1           NCH HEIGHT         H3         3.0         0.22         -0.1           NCH HEIGHT         H3         0.45         1.45         -0.1           ND PARALLEUSM          C1 - C2          0.22         -0.22         -0.22           L - OUT FORCE         (P)         6N         -0.1         -0.1           Imum alignment deviation between leads will not to be greater than 0.2mm.         -0.10         -0.10         -0.10           Imum alignment deviation between leads will not to be greater than 0.2mm.         -0.10         -0.10         -0.10         -0.10           Imum alignment deviation between leads will not to be greater than 0.2mm.         -0.10         -0.10         -0.10         -0.10           Imum alignment deviation between leads will not to be greater than 0.2mm.         -0.10         -0.10         -0.10         -0.10         -0.10         -0.10

#### L 1.982 2.082

All diminsions in mm.

# **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

TO-92 Plastic Package

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