

RF Transistors

Type	PNP=P NPN=N	Typical Application	epitaxial=E planar=PL	Maximum Ratings						
				V _{CBO} (V)	V _{CEO} (V)	V _{EB0} (V)	I _C (mA)	T _J (°C)	P _{tot} (mW)	R _{(th)JA} (°C/W)
BF199	N	Uncontrolled TV IF amplifier stages	E, PL	40	25	4	25	150	500	≤250
BF240	N	AM/FM/IF amplifier stages	E, PL	40	40	4	25	150	250	≤420
BF241	N	AM/FM/IF amplifier stages	E, PL	40	40	4	25	150	250	≤420
BF254	N	AM/FM/IF amplifiers, oscillator stages to VHF	E, PL	30	20	5	30	125	220	≤450
BF255	N	AM/FM/IF amplifiers, oscillator stages to VHF	E, PL	30	20	5	30	125	220	≤450
BF414	P	VHF input stages	E, PL	-40	-30	-4	25	150	300	≤350
BF420	N	Video output stages	E, PL	300	300	5	25	150	830	≤150
BF420L	N	Video output stages	E, PL	300	300	5	500	150	625	≤200
BF421	P	Video output stages	E, PL	-300	-300	-5	25	150	830	≤150
BF421L	P	Video output stages	E, PL	-300	-300	-5	500	150	625	≤200
BF422	N	Video output stages	E, PL	250	250	5	25	150	830	≤150
BF422L	N	Video output stages	E, PL	250	250	5	500	150	625	≤200
BF423	P	Video output stages	E, PL	-250	-250	-5	25	150	830	≤150
BF423L	P	Video output stages	E, PL	-250	-250	-5	500	150	625	≤200
BF450	P	AM/FM/IF amplifier stages	E, PL	-40	-40	-4	25	150	250	≤420
BF451	P	AM/FM/IF amplifier stages	E, PL	-40	-40	-4	25	150	250	≤420
BF506	P	Low-noise VHF mixer and oscillator stages	PL	-40	-35	-4	30	150	300	≤350
BF606A	P	VHF oscillator stages and MOS mixer stages	PL	-40	-30	-4	25	150	300	≤350
BF763	N	Low-noise amplifier and oscillator stages	PL	25	15	3.5	25	150	500	≤250
BF939	P	Controlled VHF input stages	PL	-30	-30	-3	20	150	350	≤500
BF959	N	IF preamplifier and general VHF applications	PL	30	20	3	100	150	500	≤250
BF968	P	Low-noise controlled input stages up to 900MHz	PL	-40	-35	-3	30	150	160	≤600
BF970	P	Low-noise UHF mixers and oscillators	PL	-40	-35	-3	30	150	160	≤600
BF979S	P	Low-noise mixer stages; UHF/VHF input stages	PL	-30	-25	-3	50	150	160	≤600
STH17	N	Low-noise amplifiers and oscillators	PL	20	15	3	20	150	500	≤250

Broadband RF and Microwave Transistors

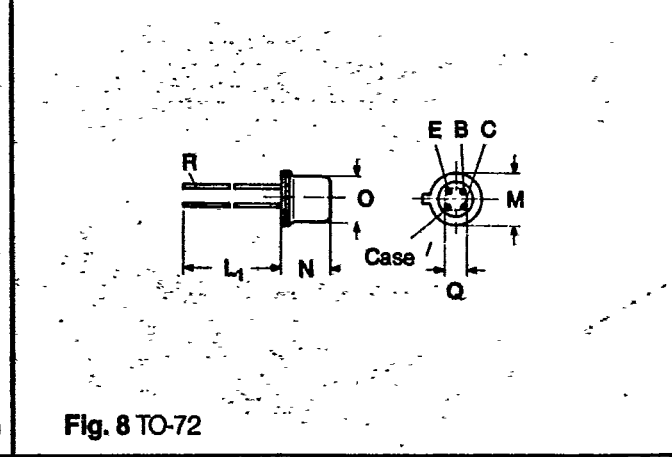
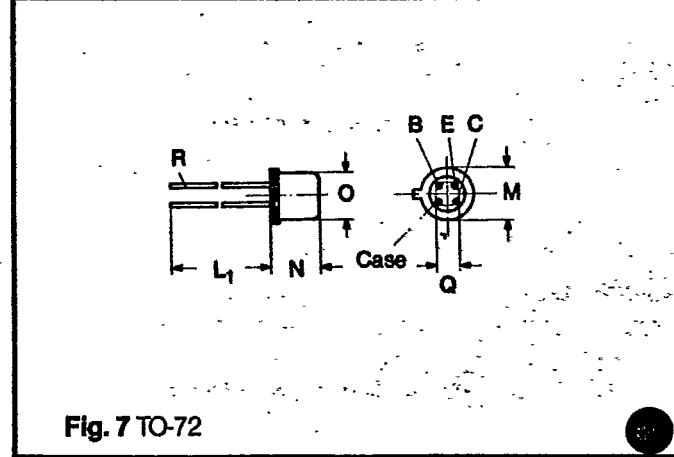
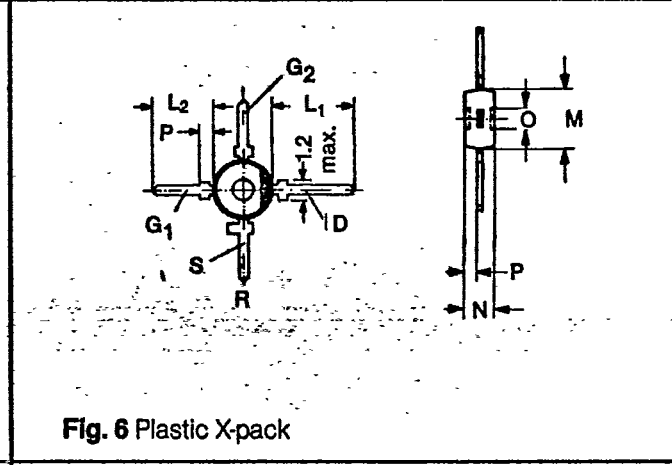
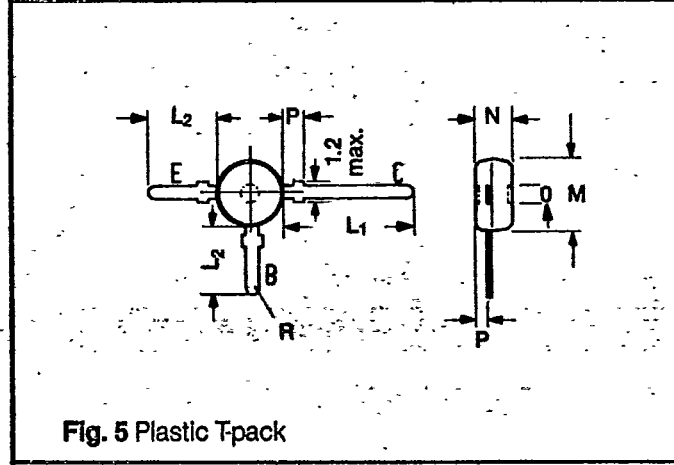
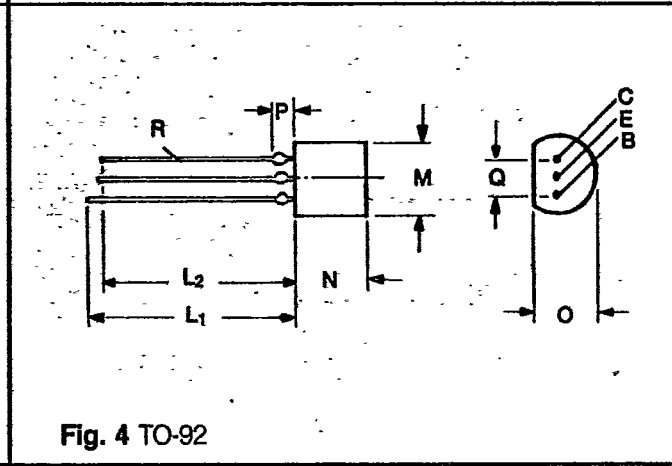
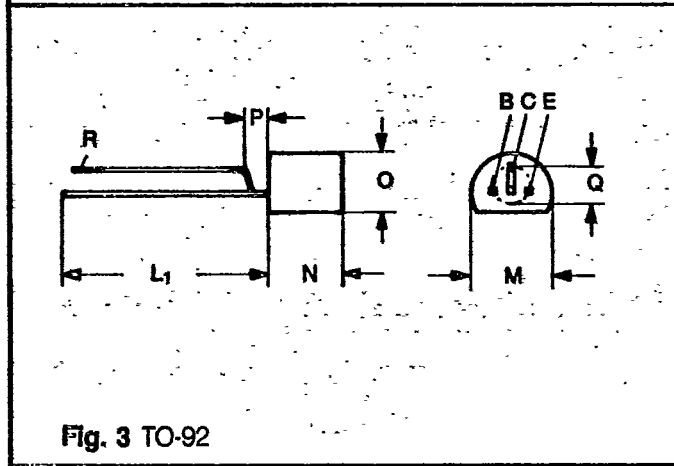
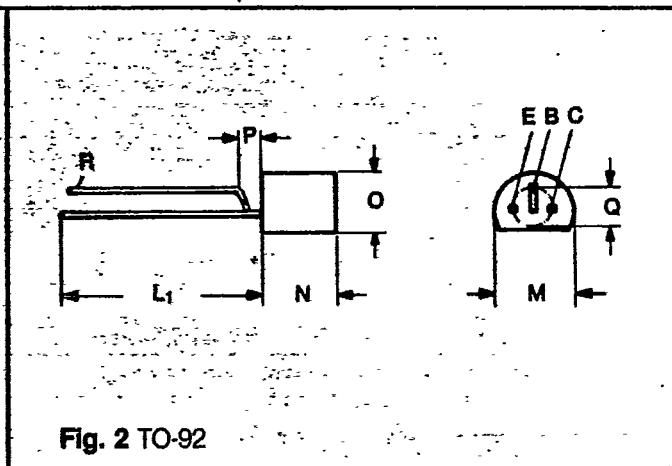
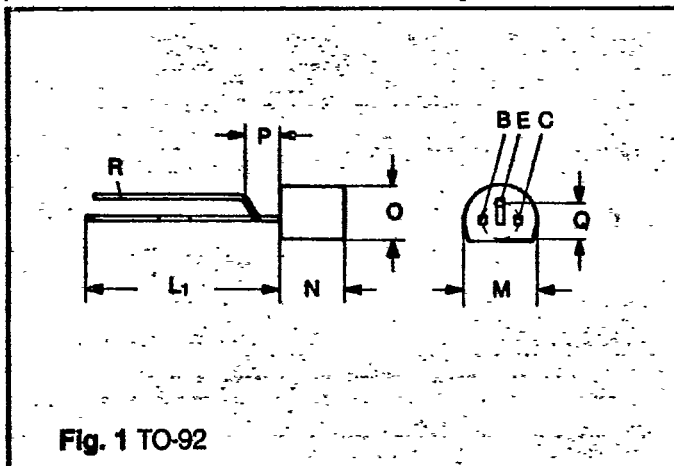
Type	PNP=P NPN=N	Typical Application	epitaxial=E planar=PL	Maximum Ratings						
				V _{CBO} (V)	V _{CEO} (V)	V _{EB0} (V)	I _C (mA)	T _J (°C)	P _{tot} (mW)	R _{(th)JA} (°C/W)
BFQ69	N	Low-noise input stages	E, PL	25	15	2.0	30	150	200	≤400
BFR15A	N	Amplifiers and oscillators	E, PL	20	12	2.5	30	200	200	≤700
BFR34A	N	Amplifiers and oscillators	E, PL	20	12	2.5	30	150	200	≤500
BFR90	N	Input stages and oscillators	E, PL	20	15	2.5	30	150	200	≤500
BFR91	N	Drivers, oscillators, mixers	E, PL	20	15	2.5	50	150	250	≤500
BFR91A	N	Drivers, oscillators, mixers	E, PL	15	12	2	35	150	300	≤400
BFR96	N	Drivers, output stages, oscillators	E, PL	20	15	3	90	150	200	≤200
BFR96S	N	Drivers, output stages, oscillators	E, PL	20	15	3	350	150	700	≤150
BFS55A	N	Drivers, oscillators, mixers	E, PL	20	15	2.5	50	200	250	≤700
BFT65	N	Low-noise input, and driver stages	E, PL	20	15	2.5	50	150	250	≤700
BFT66	N	Low-noise input, and driver stages	E, PL	20	15	2.5	30	200	200	≤700
BFT97	N	Low-noise input stages	E, PL	20	15	2.5	30	150	200	≤400
BFT98	N	Output stages	E, PL	30	20	3	200	150	2250	≤35 ⁽¹⁾
BFT98T	N	Output stages	E, PL	30	20	3	150	150	800	≤125
BFT99	N	Output stages	E, PL	30	20	3	350	150	4000	≤20 ⁽¹⁾
BFT99A	N	Output stages	E, PL	30	20	3	350	150	4000	≤20 ⁽¹⁾
BFW92	N	Input and driver stages	E, PL	25	15	2.5	25	150	200	≤400
BFX59F	N	Input stages and drivers up to 600 MHz	E, PL	30	20	3	100	200	370	≤650
BFY90	N	Input stages and oscillators	E, PL	30	15	2.5	25	200	200	≤700

(1) R_{(th)JC}

Characteristics (T _{amb} = 25°C)							Case		
f _T (MHz)	h _{FE} at I _c (mA)	V _{CE} (V)	I _{CBO} at V _{CB0} (nA)	V _{CB0} (V)	Remarks	Type	Fig.	SOT* Equiv.	
550	≥38	7	10	≤100	40	C _{12a} = 0.32pF at I _c = 1mA; V _{CE} = 10V; f = 1MHz	TO-92	1	BF599
400	67-220	1	10	≤100	20	NF = 1.7dB at I _c = 1mA; V _{CE} = 10V; f = 100 kHz	TO-92	1	-
400	36-125	1	10	≤100	20	NF = 1.7dB at I _c = 1mA; V _{CE} = 10V; f = 100 kHz	TO-92	1	-
260	67-220	1	10			C _{12a} = 0.85pF at I _c = 1mA; V _{CE} = 10V; f = 450kHz	TO-92	1	BF554
200	36-125	1	10			C _{12a} = 0.85pF at I _c = 1mA; V _{CE} = 10V; f = 450kHz	TO-92	1	BF554
560	80	1	-10	≤60	-20	NF = 3dB at I _c = 5mA; V _{CE} = 10V; f = 100MHz	TO-92	2	-
≥60	≥40	25	20	≤10	200	V _{CE SATRF} = 20V at I _c = 25mA; T _J = 150°C	TO-92	3	-
≥50	≥30	30	10	≤100	250	V _{CE SATRF} = 0.5V at I _c = 20mA	TO-92	14	-
≥60	≥40	25	20	≤10	200	V _{CE SATRF} = 20V at I _c = 25mA; T _J = 150°C	TO-92	3	-
≥50	≥25	30	10	≤100	250	V _{CE SATRF} = 0.5V at I _c = 20mA	TO-92	14	-
≥60	≥50	25	20	≤10	200	V _{CE SATRF} = 20V at I _c = 25mA; T _J = 150°C	TO-92	3	-
≥50	≥30	30	10	≤100	200	V _{CE SATRF} = 0.4V at 20mA	TO-92	14	-
≥60	≥50	25	20	≤10	200	V _{CE SATRF} = 20V at I _c = 25mA; T _J = 150°C	TO-92	3	-
≥50	≥30	30	10	≤100	200	V _{CE SATRF} = 0.4V at 20mA	TO-92	14	-
375	≥60	1	-10	≤50	-30	NF = 2dB at I _c = 1mA; V _{CE} = 10V; f = 100kHz	TO-92	1	BF550
325	≥30	1	-10	≤50	-30	NF = 2dB at I _c = 1mA; V _{CE} = 10V; f = 100kHz	TO-92	1	-
550	25	3	-10	100	-20	NF = 3dB at I _c = 2mA; V _{CB} = 10V; f = 200MHz	TO-92	2	-
650	≥30	1	-10	60	-20	C _{12b} = 0.35pF at V _{CE} = 10V; f = 1MHz	TO-92	1	BF660
1800	25-250	5	10	≤50	15	NF = 2.5dB at I _c = 5mA; V _{CE} = 10V; f = 200MHz	TO-92	4	-
750	≥30	20	10	100	-20	NF = 3dB at I _c = 2mA; V _{CE} = 10V; f = 200MHz	TO-92	2	-
≥700	90	20	10	≤100	20	NF = 3dB at I _c = 5mA; V _{CE} = 10V; f = 200MHz	TO-92	1	BF799
1100	≥25	1	-10	≤100	-15	G _{pb} = 14.5dB at I _c = 3mA; V _{CB} = 10V; f = 800MHz	T-pack	5	BF568
850	25	3	-10	≤100	-20	G _{pb} = 14.5dB at I _c = 3mA; V _{CB} = 10V; f = 800MHz	T-pack	5	BF569
1600	≥20	10	-10	≤100	-20	G _{pb} = 16.5dB at I _c = 10mA; V _{CB} = 10V; f = 800MHz	T-pack	5	BF579
≥800	25-250	5	10	100	20	G _{pe} = 24dB at I _c = 5mA; V _{CB} = 12V; f = 200MHz	TO-92	4	-

Characteristics (T _{amb} = 25°C)											Case			
f _T (MHz)	Output Voltage V _A (mV)	I _c (mA)	V _{CE} (V)	Noise figure NF at I _c at V _{CE} (dB) (mA) (V)			Power Gain G _p I _c V _{CE} (dB) (mA) (V)			f (MHz)	R _g for G _p /NF Ω	Type	Fig.	SOT* Equiv.
5.5				1.6	15	10	11	15	15	800	60	T-pack	5	-
4500	140	15	5	3	2	6	12	10	6	800	60	TO-72	7	BFR35A
5000	140	15	6	2	2	6	14	15	6	800	60	T-pack	5	BFR35A
5000	140	15	6	2	2	6	14	15	6	800	60	T-pack	5	BFR92P
5000	350	25	8	1.9	2	8	17	30	5	500	60	T-pack	5	BFR93P
6000	400	25	8	1.6	4	8	14	20	8	800	60	T-pack	5	-
5000	650	60	8	4.5	60	8	9	60	8	800	60	T-pack	5	BFQ19P
5000	700	70	15	4	70	10	11.5	70	10	800	60	T-pack	5	BFQ19P
4500	350	25	8	2.9	10	8	10	25	8	800	60	TO-72	7	BFR93P
5000	350	25	8	2.8	10	8	12	25	8	800	60	T-pack	5	BFR93P
3800	240	20	6	2.1	3	6	-	-	-	800	60	TO-72	7	BFQ29P
4000	240	20	6	2.1	4	6	-	-	-	800	60	T-pack	5	BRQ29P
3000	1200	120	15	-	-	-	15	120	15	800	60	TO-117	9	BFQ64P
3000	500	80	8	-	-	-	12	80	8	800	60	T-pack	5	BFQ64P
3000	1500	200	15	-	-	-	12	200	15	800	60	TO-117	9	-
3000	1500	240	15	-	-	-	12	240	15	800	60	X-pack	10	-
1900	150	14	5	4	2	5	11	14	5	800	60	T-pack	5	BFS17P
1100	-	-	-	3.4	3	10	-	-	-	200	60	TO-72	8	-
1200	150	14	5	2.5	2	5	23	14	10	200	60	TO-72	7	BFS17P

*Refer to Siemens 1985/86 Catalog, Small Outline Discrete Semiconductors for Surface Mounted Circuit Technology.



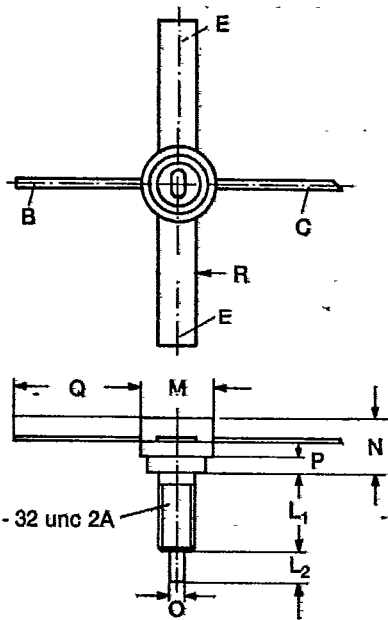


Fig. 9 TO-117

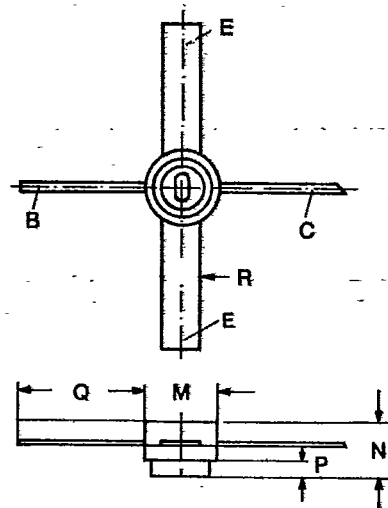


Fig. 10 Plastic X-pack

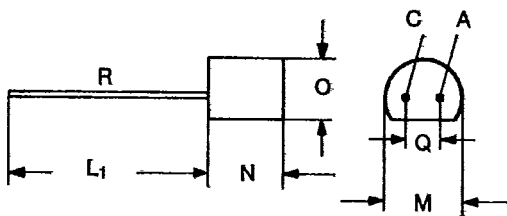


Fig. 11 TO-92

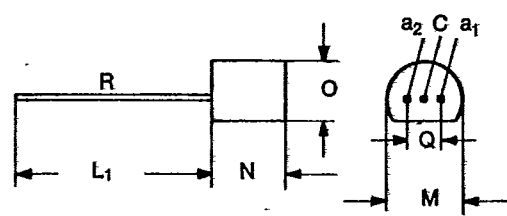


Fig. 12 TO-92

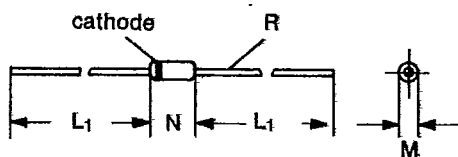


Fig. 13 Axial

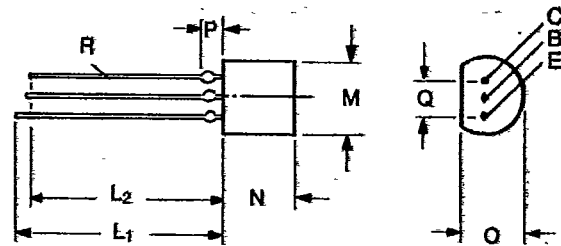


Fig. 14 TO-92

Dimensions in inches

		M	N	O	P	Q	R	L ₁	L ₂
Fig. 1	TO-92	0.205-.008	0.205-.008	0.165-.008	≤.01	0.1±.006	.016x.016	0.555-.008	-
Fig. 2	TO-92	0.205-.008	0.205-.008	0.165-.008	≤.01	0.1±.006	.016x.016	0.555-.008	-
Fig. 3	TO-92	0.205-.008	0.205-.008	0.165-.008	≤.01	0.1±.006	.016x.016	0.555-.008	-
Fig. 4	TO-92	0.205-.008	0.205-.008	0.165-.008	0.06±.006	0.1±.006	.016x.016	≤0.56	≥0.504
Fig. 5	T-pack	0.18-.008	0.1±.008	0.06	0.04	-	.034x.008	0.315±.004	0.2±.004
Fig. 6	X-pack	0.18-.008	0.1±.008	0.06	0.04	-	.034x.008	0.315±.004	0.2±.004
Fig. 7	TO-72	0.22-.006	0.205-.01	0.19-.006	-	0.1±.01	0.02	0.53±.04	-
Fig. 8	TO-72	0.22-.006	0.205-.01	0.19-.006	-	0.1±.01	0.02	0.53±.04	-
Fig. 9	TO-117	≤0.30	≤0.22	0.06	0.06	≥0.39	0.16x.006±.002	0.34	0.13
Fig. 10	X-pack	≤0.30	≤.16	-	0.06	≥0.39	0.16x.006±.002	-	-
Fig. 11	TO-92	0.205-.008	0.205-.008	0.165-.008	-	0.1	.016x.016	0.555-.008	-
Fig. 12	TO-92	0.205-.008	0.205-.008	0.165-.008	-	0.1	.016-.016	0.555-.008	-
Fig. 13	Axial	0.063	0.15	-	-	-	0.02	1.14	-
Fig. 14	TO-92	0.205-.008	0.205-.008	0.165-.008	0.06±.006	0.1±.006	.016x.016	≤0.56	≥0.504

Dimensions in millimeters

		M	N	O	P	Q	R	L ₁	L ₂
Fig. 1	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	≤2.5	2.5±0.15	0.4x0.4	14.1-0.2	-
Fig. 2	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	≤2.5	2.5±0.15	0.4x0.4	14.1-0.2	-
Fig. 3	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	≤2.5	2.5±0.15	0.4x0.4	14.1-0.2	-
Fig. 4	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	1.5±0.2	2.5±0.15	0.4x0.4	≤14.2	≥12.8
Fig. 5	T-pack	4.6-0.2	2.5±0.2	1.2	1.0	-	0.9x0.2	8.0-0.1	5.0-0.1
Fig. 6	X-pack	4.6-0.2	2.5±0.2	1.2	1.0	-	0.9x0.2	8.0-0.1	5.0-0.1
Fig. 7	TO-72	5.5-0.15	5.2-0.3	4.75-0.15	-	2.54±0.3	0.45	13.5±1	-
Fig. 8	TO-72	5.5-0.15	5.2-0.3	4.75-0.15	-	2.54±0.3	0.45	13.5±1	-
Fig. 9	TO-117	≤7.5	≤5.5	1.5	1.5	≥10.0	4x0.15-.05	8.6	3.3
Fig. 10	X-pack	≤7.5	≤4.0	-	1.5	≥10.0	4x0.15-.05	-	-
Fig. 11	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	-	2.54	0.4x0.4	14.1-0.2	-
Fig. 12	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	-	2.54	0.4x0.4	14.1-0.2	-
Fig. 13	Axial	1.6	3.8	-	-	-	0.53	28.9	-
Fig. 14	TO-92	5.2-0.2	5.2-0.2	4.2-0.2	1.5±0.2	2.5±0.15	0.4x0.4	≤14.2	≥12.8

The information contained here has been carefully reviewed and is believed to be accurate. However, due to the possibility of unseen inaccuracies, no responsibility is assumed.

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