

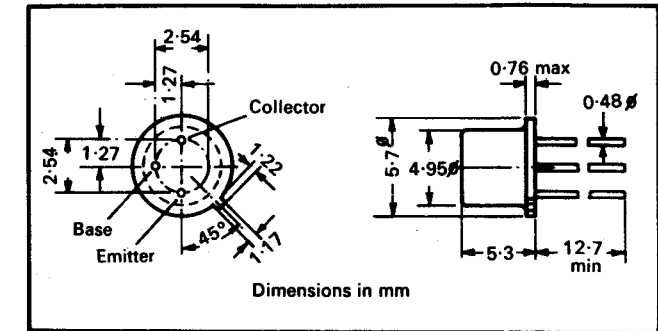
## High Current NPN Amplifiers

Device Type	Polarity	Case	Maximum ratings				hFE1			hFE2			ft MHz	VCE(sat)		Available in TO18	Notes
			BV CBO	BV CEO	BV EBO	ICM	IC	min.	max.	IC	min.	max.		A	V		
			V	V	V	mA											
BFT39	NPN	TO39	90	80	5	1000	100	50	250	1000	20	—	100	1.0	1.6	BFT29	hFE 25 min at 1mA hFE 45 min at 1mA
BFT40	NPN	TO39	70	60	5	1000	100	75	250	1000	25	—	100	1.0	1.0	BFT30	
BFT41	NPN	TO39	60	50	5	1000	100	100	300	1000	25	—	100	1.0	1.0	BFT31	
BFY50	NPN	TO39	80	35	6	1000	150	30	—	1000	15	—	60	1.0	1.0	BFT53	hFE 20 min at 10mA hFE 30 min at 10mA
BFY51	NPN	TO39	60	30	6	1000	150	40	—	1000	15	—	50	1.0	1.6	BFT54	
BFY52	NPN	TO39	40	20	6	1000	150	60	—	1000	15	—	50	1.0	1.6	BFT55	
BC142	NPN	TO39	80	60	5	800	200	20	—	—	—	—	40	0.2	0.4		
BC300	NPN	TO39	120	80	7	1000	150	40	240	500	20	—	120	0.15	0.5		hFE 20 min at 100µA Available in 3 hFE Bands at IC=150 mA
BC301	NPN	TO39	90	60	7	1000	150	40	240	500	20	—	120	0.15	0.5		
BC302	NPN	TO39	60	45	7	1000	150	40	240	500	20	—	120	0.15	0.5		
2N697	NPN	TO39	60	40	5	1000	150	40	120	—	—	—	50	0.15	1.5		hFE 20 min at 100µA hFE 35 min at 100µA
2N1613	NPN	TO39	75	50	7	1000	150	40	120	500	20	—	60	0.15	1.5		
2N1711	NPN	TO39	75	50	7	1000	150	100	300	500	40	—	70	0.15	1.5		
2N1890	NPN	TO39	100	60	7	—	150	100	300	—	—	—	60	0.15	5.0		hFE 20 min at 100µA
2N1893	NPN	TO39	120	80	7	500	150	40	120	10	35	—	50	0.15	5.0		
2N2243A	NPN	TO39	120	80	7	1000	150	40	120	10	30	—	50	0.15	0.25		

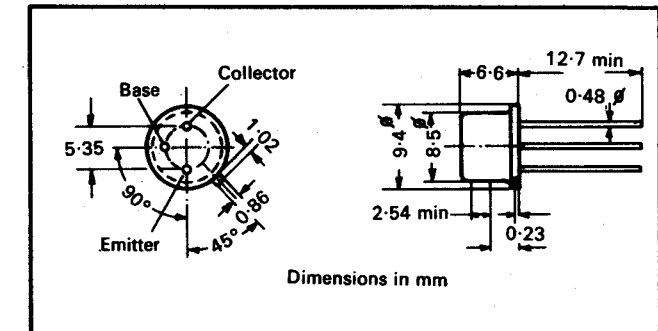
## PNP Amplifiers and Fast Switches

Device Type	Polarity	Case	Maximum ratings				hFE1			hFE2			ft min. MHz	VCE(sat)		Max. ton ns	Max. ts ns	Max. toff ns	Notes
			BV CBO	BV CEO	BV EBO	ICM	IC	min.	max.	IC	min.	max.		mA	V				
			V	V	V	mA													
2N2411	PNP	TO18	25	20	5	300	10	20	60	50	10	—	140	10	0.20	25	90	100	hFE 10 min at 50µA hFE 20 min at 50µA hFE 25 min at 100mA
2N2412	PNP	TO18	25	20	5	300	10	40	120	50	20	—	140	10	0.20	25	90	100	
2N2894	PNP	TO18	12	12	4	200	10	30	—	30	40	150	400	10	0.15	60	—	90	
2N3012	PNP	TO18	12	12	4	200	10	25	—	30	30	120	400	10	0.15	60	—	75	hFE 30 min at 100mA VCE(sat) 0.5V max at 100mA hFE 25 min at 100mA
2N3576	PNP	TO18	20	15	5	200	10	40	120	100	10	—	400	10	0.15	30	30	50	
2N3829	PNP	TO52	35	20	20	500	10	25	—	30	30	120	350	10	0.18	25	50	65	
2N4260	PNP	TO72	15	15	45	30	10	30	150	30	20	—	1800	10	0.35	1.2	—	1.2	

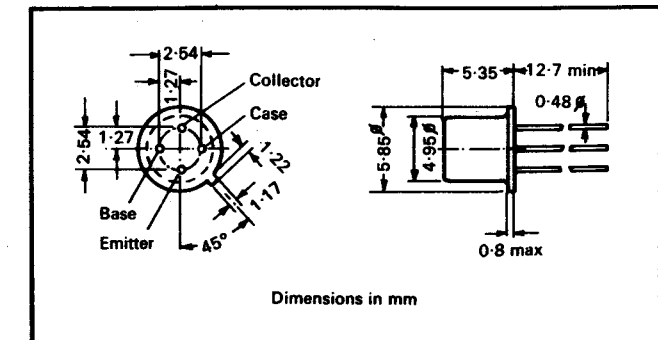
## Case Outlines



TO-18



TO-39



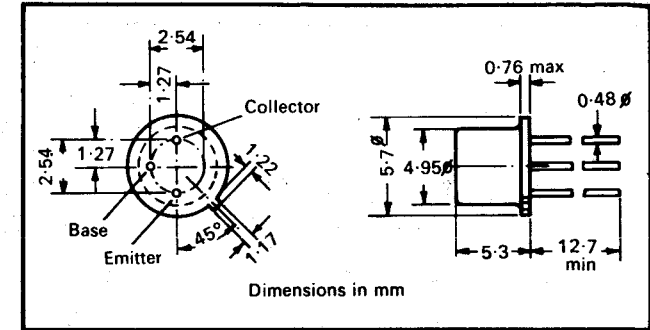
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## Small Signal Transistors

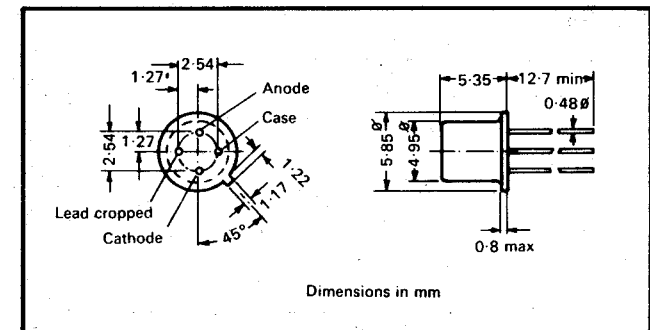
BS Type Number	Commercial Equivalent	Case Outline	Polarity	Absolute Maximum Rating			hFE at Collector Current			Min. ft MHz	Comments	
				V <sub>CB</sub> V	V <sub>CE</sub> V	V <sub>EB</sub> V	hFE min.	hFE max.	I <sub>C</sub> mA			
BS9300 C328	2S104	TO18	NPN	60	45	6	80	200	5	80	ton 140 ns toff 500 ns ton 140 ns toff 500 ns High Voltage hFE 35-100 in IC-1mA	
BS9300 C371	2N2221A*	TO18	NPN	60	45	6	35	85	10	150		
BS9300 C372	2N2222A*	TO18	NPN	60	45	6	75	170	10	150		
BS9300 C404	2N1893	TO5	NPN	120	80	7	40	120	150	60		
BS9300 C460	2N1613	TO5	NPN	75	50	7	40	120	150	60	High Gain General Purpose Amplifier SRDE. Low Level Amplifier High Frequency Amplifier and Fast Switch Low Level Low Noise High Gain Amplifiers Medium Power High Gain General Purpose Amplifier Complementary to CV7580 & CV7581 Complementary to CV7495 & CV7496	
BS9300 C461	2S103	TO18	NPN	60	45	6	40	100	5	60		
BS9300 C462	2N2411	TO18	PNP	25	20	5	20	60	10	150		
BS9300 C463	2N2412	TO18	PNP	25	20	5	40	120	10	150		
BS9300 C478	2N918	TO12	NPN	30	15	3	30	—	3	100		
BS9300 C492	2N929	TO18	NPN	45	45	5	40	120	0.01	30		
BS9300 C493	2N930	TO18	NPN	45	45	5	100	300	0.01	30		
BS9300 C495	2N696	TO5	NPN	60	40	5	20	60	150	50		
BS9300 C496	2N697	TO5	NPN	60	40	5	40	120	150	50		
BS9300 C580	2N1131	TO5	PNP	50	35	5	20	45	150	50		
BS9300 C581	2N1132	TO5	PNP	50	35	5	30	90	150	60		
BS9300 C588	2S104	TO18	NPN	60	45	6	80	200	5	100		NPN General Purpose Amplifiers PNP High Frequency Amplifiers and Saturated Switches High Voltage General Purpose Amplifier
BS9300 C596	2S103	TO18	NPN	60	45	6	40	100	5	80		
BS9300 C630	2N2696	TO18	PNP	25	25	4	30	130	50	100		
BS9300 C631	2N2927	TO5	PNP	25	25	4	30	130	50	100		
BS9300 C633	2N1937	TO5	PNP	120	100	6	65	200	200	60		
BS9300 C637	2N2905*	TO5	PNP	32	32	5	80	160	1.0	40	General Purpose PNP Amplifiers High Speed Medium Power Switching and General Purpose Amplifiers High Speed Switching and General Purpose Medium Power Amplifiers	
BS9300 C638	2N2905A*	TO5	PNP	60	60	5	60	120	1.0	40		
BS9300 C644	BC107A*	TO18	NPN	65	65	5	50	200	10	50		
BS9300 C669	2N2904	TO5	PNP	60	40	5	40	120	150	200		
BS9300 C670	2N2905	TO5	PNP	60	40	5	100	300	150	200		
BS9300 C671	2N2904A	TO5	PNP	60	60	5	40	120	150	200		
BS9300 C672	2N2905A	TO5	PNP	60	60	5	100	300	150	200		
BS9300 C673	2N2906	TO18	PNP	60	40	5	40	120	150	200		
BS9300 C674	2N2907	TO18	PNP	60	40	5	100	300	150	200		
BS9300 C675	2N2906A	TO18	PNP	60	60	5	40	120	150	200		
BS9300 C676	2N2907A	TO18	PNP	60	60	5	100	300	150	200		
BS9300 C722	BFY50	TO5	NPN	80	35	6	30	100	150	50		General purpose Amplifier
BS9300 C723	BFY51	TO5	NPN	60	30	6	40	120	150	50		
BS9300 C724	BFY52	TO5	NPN	40	20	6	60	200	150	50		
BS9300 C725	BFY50	TO5	NPN	80	35	6	30	—	150	50		General Purpose Amplifier and Saturated Switches 1 Amp hFE Minimum 10 High Gain Medium Power Amplifier Very High Gain Low Noise Low Level Amplifier
BS9300 C726	BFY51	TO5	NPN	60	30	6	35	—	150	50		
BS9300 C727	BFY52	TO5	PNP	40	20	6	50	—	150	50		
BS9300 C735	2N1711	TO5	PNP	75	50	7	100	300	150	70		
BS9300 C738	2N2484	TO18	NPN	60	60	6	100	500	0.01	60		
BS9300 C748	2N2221*	TO18	NPN	25	25	4	38	162	10	120	High Frequency, Low Power Switching and Amplifier Applications. Fully Complementary High Frequency, Medium Power NPN Amplifier High Current Switches	
BS9300 C749	2N2906*	TO18	PNP	25	25	4	38	162	10	120		
BS9300 C750	2N2221A*	TO18	NPN	45	35	4	38	162	10	120		
BS9300 C751	2N2906A*	TO18	PNP	45	35	4	38	162	10	120		
BS9300 C752	2N2222A*	TO18	NPN	45	35	4	75	250	10	120		
BS9300 C753	2N2907A*	TO18	PNP	45	35	4	75	250	10	120		
BS9300 C754	2N2222*	TO18	NPN	25	25	4	75	250	10	120		
BS9300 C755	2N2907*	TO18	PNP	25	25	4	75	250	10	120		
BS9300 C756	2N2218	TO5	NPN	60	30	5	40	120	150	250		
BS9300 C764	2N2219	TO5	NPN	60	30	5	100	300	150	250		
BS9300 C765	2N2218A	TO5	NPN	75	40	6	40	120	150	250		
BS9300 C766	2N2219A	TO5	NPN	75	40	6	100	300	150	250		
BS9300 C767	2N2221	TO18	NPN	60	30	5	40	120	150	250		TO18 Version of CV7763-66 General Purpose Amplifier High Voltage Amplifier
BS9300 C768	2N2222	TO18	NPN	60	30	5	100	300	150	250		
BS9300 C769	2N2221A	TO18	NPN	75	40	6	40	120	150	250		
BS9300 C770	2N2222A	TO18	NPN	75	40	6	100	300	150	250		
BS9300 C774	2N2194	TO5	NPN	60	40	5	20	60	150	50		
BS9300 C775	2N2243A	TO5	NPN	120	80	7	40	120	150	50		

\*Near Equivalent

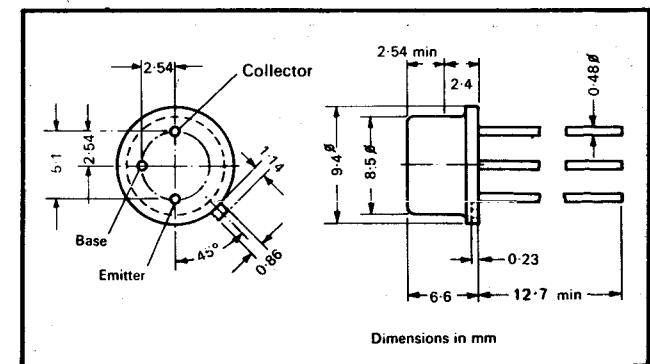
## Case Outlines



TO-18



TO-72



TO-5