



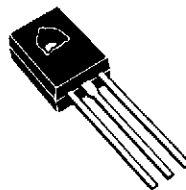
TO-18



TO-72



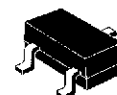
TO-39



TO-126/SOT-32



SOT-223



SOT-23

**TRANSISTORS FOR RADIO FREQUENCY APPLICATIONS**

Polarity	Max rating			Type	Main function	Trans. Freq.		Noise figure			Gain		Package
	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>			f <sub>T</sub> @ I <sub>C</sub>		NF @ I <sub>C</sub> / f <sub>T</sub>			P <sub>G</sub> @ f		
	(V)	(mA)	(mW)			(MHz)	(mA)	(dB)	(mA)	(MHz)	(dB)	(MHz)	
NPN	15	40	200	<a href="#">2N2857</a>	VHF/UHF amp./osc	1200	5	3.8	1.5	450	16	450	TO-72
NPN	12	50	200	<a href="#">2N5179</a>	VHF amp./osc	1400	5	3	1.5	200	21	200	TO-72
NPN	15	50	200	<a href="#">BFX89</a>	UHF amplifier	1200	25	5	2	500	12	500	TO-72
PNP	25	50	225	<a href="#">BFR99A</a>	UHF amplifier	1400	10	5	3	800	10	800	TO-72
PNP	25	50	225	<a href="#">BFR99</a>	UHF amplifier	2000	10	3.5	3	800	12	800	TO-72
NPN	25	150	700	<a href="#">BFW16A</a>	CATV-MATV amplifier	1200	150	6	30	200	6.5	800	TO-39
NPN	25	150	700	<a href="#">BFW17A</a>	CATV-MATV amplifier	1100	150	—	—	—	16	200	TO-39
NPN	20	500	3500	<a href="#">2N4427</a>	VHF power amplifier	500	50	—	—	—	10	175	TO-39
NPN	30	500	3500	<a href="#">2N3866</a>	UHF/VHF power amp.	500	50	—	—	—	10	400	TO-39
NPN	15	25	200	<a href="#">BFY90</a>	VHF amplifier	1400	25	4.5	2	800	8	800	TO-72
NPN	15	50	200	<a href="#">2N918</a>	UHF amplifier	900	4	3.5	1	60	22	200	TO-72
NPN	20	200	600	<a href="#">2N3137</a>	VHF amplifier	750	50	—	—	—	7	250	TO-39
NPN	30	200	800	<a href="#">BFR36</a>	CATV-MATV amplifier	1200	100	4	30	200	16	200	TO-39
NPN	20	400	1000	<a href="#">2N5109</a>	CATV-MATV amplifier	1400	50	3	10	200	14	200	TO-39

**NPN GENERAL PURPOSE TRANSISTORS - TO-18**

$V_{CE0}$ $V_{CER}^*$	$h_{FE} @ I_C$		Type	$V_{CE(sat)} @ I_C / I_B$		$f_T$	$t_s$	$P_{tot}$	Also available
(V)	min/max	(mA)		max (V)	(mA)	min (MHz)	(ns)	(mW)	
55	50/—	50	<a href="#">BSX33</a>	0.3	150 / 15	60	800	500	
30	100/300	150	<a href="#">2N2222</a>	1.6	500 / 50	250	225	500	<a href="#">2N2221</a>
40	40/120	150	<a href="#">2N2221A</a>	1	500 / 50	250	225	500	
40	100/300	150	<a href="#">2N2222A</a>	1	500 / 50	250	225	500	
80	40/—	150	<a href="#">2N720A</a>	5	150 / 15	50	—	500	
80	100/300	150	<a href="#">2N3700</a>	0.5	500 / 50	100 typ.	—	500	

## SMALL SIGNAL

## NPN GENERAL PURPOSE TRANSISTORS - TO-39

V <sub>CEO</sub> V <sub>CER</sub> *	h <sub>FE</sub> @ I <sub>C</sub>		Type	V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>		f <sub>T</sub>  min	t <sub>s</sub> t <sub>off</sub> *	P <sub>tot</sub>  (mW)	Also available
	min/max	(mA)		max (V)	(mA)	(MHz)	max (ns)		
40	40/250	100	<a href="#">BC140</a>	0.35 typ.	500/50	50	850*	800	h <sub>FE</sub> groups -6, -10, -16
60	40/250	100	<a href="#">BC141</a>	0.35 typ.	500/50	50	850*	800	
30	40/-	150	<a href="#">BFY51</a>	0.35	150/15	50	300 typ.	800	<a href="#">BFY52</a>                BFY56
30	100/300	150	<a href="#">2N2219</a>	1.6	500/50	250	225	800	
35	30/-	150	<a href="#">BFY50</a>	0.2	150/15	60	300 typ.	800	
40	40/120	150	<a href="#">2N2218A</a>	1	500/50	250	225	800	
40	50/250	150	<a href="#">2N3053</a>	1.4	150/15	100 typ.	-	800	
40	100/300	150	<a href="#">2N2219A</a>	1	500/50	300	225	800	
50*	40/120	150	<a href="#">2N1613</a>	1.5	150/15	60	-	800	
50*	100/300	150	<a href="#">2N1711</a>	1.5	150/15	70	-	800	
55	40/120	150	<a href="#">BFY56A</a>	0.25	150/15	60	-	800	
65	40/120	150	<a href="#">2N 2102</a>	0.5	150/15	60	30*	1000	
80	40/120	150	<a href="#">2N 1893</a>	1.5	150/15	50	-	800	
80	40/120	150	<a href="#">2N 3020</a>	0.5	500/50	80	-	800	
80	40/240	150	<a href="#">BC300</a>	0.5	150/15	120 typ.	-	800	
80	100/300	150	<a href="#">2N 3019</a>	0.5	500/50	100	-	800	
50	40/250	500	<a href="#">2N5321</a>	0.8	500/50	50	800*	1000	-4, -5, -6
60	40/250	500	<a href="#">BC441</a>	1	1000/100	50	-	1000	
75	30/130	500	<a href="#">2N5320</a>	0.5	500/50	50	800*	1000	

## PNP GENERAL PURPOSE TRANSISTORS - TO-18

V <sub>CEO</sub>  (V)	h <sub>FE</sub> @ I <sub>C</sub>		Type	V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>		f <sub>T</sub>  min	t <sub>s</sub> t <sub>off</sub> *	P <sub>tot</sub>  (mW)	Also available
	min/max	(mA)		max (V)	(mA)	(MHz)	max (ns)		
30	90/-	10	<a href="#">BFX48</a>	0.3	50/5	400	160*	360	
40	50/150	10	<a href="#">2N3250</a>	0.5	50/5	250	200	360	
40	50/-	10	<a href="#">BCY70</a>	0.5	50/5	250	350	350	
40	100/300	10	<a href="#">2N3251</a>	0.5	50/5	300	200	360	
45	100/600	10	<a href="#">BCY71</a>	0.5	50/5	200	-	350	
45	100/260	100	<a href="#">BC297</a>	0.7	500/50	250 typ.	-	375	
40	40/120	150	<a href="#">2N2906</a>	1.6	500/50	200	80	400	
40	100/300	150	<a href="#">2N2907</a>	0.4	150/15	200	80	400	
45	100/300	150	<a href="#">2N3504</a>	0.4	150/15	200	40	400	
60	40/120	150	<a href="#">2N2906A</a>	0.4	150/15	200	80	400	
60	100/300	150	<a href="#">2N2907A</a>	0.4	150/15	200	80	400	
60	40/120	150	<a href="#">2N3301</a>	0.22	150/15	250 typ.	150*	360	
60	100/300	150	<a href="#">2N3302</a>	0.22	150/15	250 typ.	150*	360	

**PNP GENERAL PURPOSE TRANSISTORS - TO-39**

$V_{CE0}$ (V)	$h_{FE}$ @ $I_C$		Type	$V_{CE(sat)}$ @ $I_C$ / $I_B$		$f_T$ min (MHz)	$t_s$ $t_{off}^*$ max (ns)	$P_{tot}$ (mW)	Also available
	min/max	(mA)		max (V)	(mA)				
40	80/200	100	<a href="#">BFY64</a>	1.8	500/50	250 typ.	120*	700	
55	85/—	100	<a href="#">BFX38</a>	0.5	500/50	100	350	800	
60	63/160	100	<a href="#">BSV16-10</a>	1	500/25	—	500	5000	
60	100/300	100	<a href="#">2N4032</a>	0.5	500/50	100	350	800	
75	40/—	100	<a href="#">BFX41</a>	0.5	500/50	100	350	800	
75	85/—	100	<a href="#">BFX40</a>	0.5	500/50	100	350	800	
80	100/300	100	<a href="#">2N4033</a>	0.5	500/50	150	350	800	<a href="#">2N4031</a>
40	40/120	150	<a href="#">2N2904</a>	0.4	150/15	200	80	600	
40	100/230	150	<a href="#">2N2905</a>	0.4	150/15	200	80	600	
45	100/300	150	<a href="#">2N3502</a>	1.2	500/50	200	100*	700	
60	40/120	150	<a href="#">2N2904A</a>	0.4	150/15	200	80	600	
60	100/300	150	<a href="#">2N2905A</a>	0.4	150/15	200	80	600	
50	40/250	500	<a href="#">2N5323</a>	1.2	500/50	50	—	1000	
60	40/250	500	<a href="#">BC461</a>	1	1000/100	50	—	1000	
75	30/130	500	<a href="#">2N5322</a>	0.7	500/50	50	1000*	1000	
60	40/120	100	<a href="#">2N4030</a>	0.5	500/50	100	350	800	
40	40/250	100	<a href="#">BC160</a>	0.35 typ.	500/50	50	600*	650	
60	40/250	100	<a href="#">BC161</a>	0.35 typ.	500/50	50	600*	650	

**NPN TRANSISTORS FOR LOW LEVEL, LOW NOISE APPLICATIONS - TO-18**

$V_{CE0}$ (V)	$h_{FE}$ @ $I_C$		Type	$V_{CE(sat)}$ @ $I_C$ / $I_B$		$f_T$ min (MHz)	NF max (db)	$P_{tot}$ (mW)	Also available
	min/max	(mA)		max (V)	(mA)				
45	100/300	0.01	<a href="#">2N930</a>	1	10/0.5	30	3	300	
60	100/500	0.01	<a href="#">2N2484</a>	0.35	1/0.1	60	3	360	
60	150/300	1	<a href="#">BFY76</a>	0.35	1/0.1	100	3	360	
20	110/800	2	<a href="#">BC108</a>	0.6	100/5	100	10	300	
20	200/800	2	<a href="#">BC109</a>	0.6	100/5	100	4	300	
32	120/630	2	<a href="#">BCY58</a>	0.7	100/2.5	200 typ.	6	390	
45	110/450	2	<a href="#">BC107</a>	0.6	100/5	100	10	300	
45	120/630	2	<a href="#">BCY59</a>	0.7	100/2.5	100	6	360	

## PNP TRANSISTORS FOR LOW LEVEL, LOW NOISE APPLICATIONS - TO-18

V <sub>CEO</sub> (V)	h <sub>FE</sub> @ I <sub>C</sub>		Type	V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>		f <sub>T</sub> (MHz)	NF (dB)	P <sub>tot</sub> (mW)	Also available
	min/max	(mA)		max (V)	(mA)				
45	250/500	0.01	2N3964	0.25	10/0.5	50	2	360	
60	100/300	0.01	2N3962	0.25	10/0.5	40	3	360	
80	70/230	0.01	BFX37	0.4	50/5	40	3.5	360	
80	100/300	0.01	2N3963	0.25	10/0.5	40	3	360	
20	240/500	2	BC179	0.25	10/0.5	200 typ.	—	300	BC179
25	125/500 <sup>(1)</sup>	2	BC178	0.25	10/0.5	200 typ.	10	300	
32	120/460	2	BCY78	0.8	100/2.5	180 typ.	6	360	
40	200/—	2	BC479	0.25	10/0.5	—	4	360	
45	120/460	2	BCY79	0.8	100/2.5	180 typ.	6	390	
45	125/500 <sup>(1)</sup>	2	BC177	0.25	10/0.5	200 typ.	10	300	
40	110/450	2	BC478	0.25	10/0.5	150 typ.	6	360	
80	110/250	2	BC477	0.25	10/0.5	150 typ.	10	360	

(1) h<sub>FE</sub> @ 1KHz.

## HIGH VOLTAGE TRANSISTORS

Polarity	V <sub>CEO</sub>	h <sub>FE</sub> @ I <sub>C</sub>		Type	V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>		f <sub>T</sub> (MHz)	P <sub>tot</sub> (mW)	Package
	(V)	min/max	(mA)		max (V)	(mA)			
PNP	150	40/—	10	BFW43	0.5	10/1	60	400	TO-18
NPN	180	30/—	10	BC394	0.3	10/1	50	400	TO-18
PNP	180	50/—	10	BC393	0.3	10/1	50	400	TO-18
PNP	180	80/300	10	2N3930	0.25	10/1	40	400	TO-18
PNP	180	80/300	10	BFX90	0.25	10/1	160	400	TO-18
PNP	200	35/150	30	BSS74S	0.5	50/5	50	500	TO-18
NPN	200	50/—	10	BSS71S	0.5	50/5	50	500	TO-18
NPN	200	40/—	30	BSS72S	0.5	50/5	200	500	TO-18
PNP	200	40/250	30	BSS75S	0.4	30/3	200	500	TO-18
PNP	150	40/—	10	BFW44	0.5	10/1	60	700	TO-39
NPN	160	25/—	30	BF257	1	30/6	90 typ.	1000	TO-39
PNP	180	80/300	10	BFX91	0.25	10/1	40	700	TO-39
PNP	180	80/300	10	2N3931	0.25	10/1	60	700	TO-39
PNP	200	30/150	10	2N5415S	2.5	50/5	15	1000	TO-39
NPN	300	25/—	30	BF259	1	30/6	90 typ.	1000	TO-39
NPN	250	25/—	30	BF258	1	30/6	90 typ.	1000	TO-39
NPN	150	30/—	30	2N3114	1	50/5	40	800	TO-39
NPN	160	30/—	30	BF457	1	50/10	90 typ.	1250	TO-126
NPN	250	30/—	30	BF458	1	50/10	90 typ.	1250	TO-126
NPN	300	30/—	30	BF459	1	50/10	90 typ.	1250	TO-126

**NPN TRANSISTORS FOR FAST AND ULTRA FAST SWITCHING**

$V_{CE0}$ (V)	$h_{FE}$ @ $I_C$		Type	$V_{CE(sat)}$ @ $I_C / I_B$		$f_T$ (MHz)	$t_s$ $t_{off}^*$ (ns)	$P_{tot}$ (mW)	Package
	min/max	(mA)		max (V)	(mA)				
12	30/120	10	<a href="#">BSX28</a>	0.25	30/3	400	13	360	TO-18
15	20/60	10	<a href="#">BSX19</a>	0.6	100/10	400	10	360	TO-18
15	20/60	10	<a href="#">2N2368</a>	0.25	10/1	400	10	360	TO-18
15	30/120	10	<a href="#">2N708</a>	0.4	10/1	300	75*	360	TO-18
15	30/120	10	<a href="#">2N914</a>	0.7	200/20	300	20	360	TO-18
15	40/120	10	<a href="#">BSX20</a>	0.6	100/10	450	13	360	TO-18
15	40/120	10	<a href="#">2N2369</a>	0.25	10/1	500	13	360	TO-18
15	40/120	10	<a href="#">2N2369A</a>	0.2	10/1	500	13	360	TO-18
15	30/120	30	<a href="#">BSX26</a>	0.5	300/30	350	18	360	TO-18
20	30/120	30	<a href="#">2N3014</a>	0.18	100/10	350	18	360	TO-18
20	40/120	30	<a href="#">BSX39</a>	0.28	100/10	350	18	360	TO-18
15	25/-	100	<a href="#">2N3013</a>	0.5	300/30	350	18	360	TO-18
30	30/120	150	<a href="#">2N2845</a>	0.4	150/15	350	40*	360	TO-18
30	60/150	100	<a href="#">2N4013</a>	0.20	100/10	300	60*	500	TO-18
50	60/150	100	<a href="#">2N4014</a>	0.52	500/50	300	60*	360	TO-18
30	60/150	100	<a href="#">2N3724</a>	0.2	100/10	—	60*	800	TO-39
40	60/150	100	<a href="#">BSX32</a>	0.5	500/50	300	60*	800	TO-39
50	60/150	100	<a href="#">2N3725</a>	0.52	500/50	300	60*	800	TO-39

**PNP TRANSISTORS FOR FAST AND ULTRA FAST SWITCHING**

$V_{CE0}$ (V)	$h_{FE}$ @ $I_C$		Type	$V_{CE(sat)}$ @ $I_C / I_B$		$f_T$ (MHz)	$t_{off}$ (ns)	$P_{tot}$ (mW)	Package
	min/max	(mA)		max (V)	(mA)				
12	30/120	30	<a href="#">BSX29</a>	0.2	30/3	400	90	360	TO-18
12	40/120	30	<a href="#">2N2894</a>	0.2	100/10	400	90	360	TO-18
20	30/120	30	<a href="#">2N3209</a>	0.2	30/3	400	90	360	TO-18

## SMALL SIGNAL

## NPN GENERAL PURPOSE TRANSISTORS - SOT-23

V <sub>CB0</sub> V <sub>CEs</sub> *	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub> max min *
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
30	20	100	200	BCW31	110/220	2	5	250	10	0.5	300
30	20	100	200	BCW32	200/450	2	5	250	10	0.5	300
30	30	100	310	BC848A	110/220	2	5	600	100	5	300
30	30	100	310	BC848B	200/450	2	5	600	100	5	300
30	30	100	310	BC849B	200/450	2	5	600	100	5	300
32 *	32	200	310	BCW60A	120/220	2	5	550	50	1.25	125 *
32 *	32	200	310	BCW60B	180/310	2	5	550	50	1.25	125 *
32 *	32	200	310	BCW60C	250/460	2	5	550	50	1.25	125 *
45 *	45	200	310	BCX70G	120/220	2	5	550	50	1.25	125 *
45 *	45	200	310	BCX70H	180/310	2	5	550	50	1.25	125 *
45 *	45	200	310	BCX70J	250/460	2	5	550	50	1.25	125 *
50 *	45	200	310	BCX19	100/600	100	1	620	500	50	200
50	45	100	200	BCW71	110/220	2	5	250	10	0.5	300
50	45	100	200	BCW72	200/450	2	5	250	10	0.5	300
50	45	100	200	BCW81	420/800	2	5	250	10	0.5	300
50	50	100	310	BC847A	110/220	2	5	600	100	5	300
50	50	100	310	BC847B	200/450	2	5	600	100	5	300
50	50	100	310	BC850B	200/450	2	5	600	100	5	300
60 *	32	800	360	BCW65A	120/250	100	1	700	500	50	100 *
60 *	32	800	360	BCW65B	160/400	100	1	700	500	50	100 *
60 *	32	800	360	BCW65C	250/600	100	1	700	500	50	100 *
60	40	200	300	SO3904	100/300	10	1	300	50	5	300 *
60	60	100	200	BCV71	110/220	2	5	250	10	0.5	300
60	60	100	200	BCV72	200/450	2	5	250	10	0.5	300
75 *	45	800	360	BCW66F	100/250	100	1	700	500	50	100 *
75 *	45	800	360	BCW66G	160/400	100	1	700	500	50	100 *
75 *	45	800	360	BCW66H	250/600	100	1	700	500	50	100 *
80	80	500	350	SOA06	50/-	100	1	250	100	10	100 *
120	80	100	200	BSS64	20/-	4	1	200	50	15	60 *

**PNP GENERAL PURPOSE TRANSISTORS - SOT-23**

V <sub>CB0</sub> V <sub>CES</sub> *	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>C</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>			f <sub>T</sub> max min *
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
30	20	100	200	BCW29	120/260	2	5	300	10	0.5	150
30	20	100	200	BCW30	215/600	2	5	300	10	0.5	150
30	30	100	310	BC858A	110/220	2	5	650	50	5	150
30	30	100	310	BC858B	200/450	2	5	650	50	5	150
30	30	100	310	BC859A	110/220	2	5	650	50	5	150
30	30	100	310	BC859B	200/450	2	5	650	50	5	150
32 *	32	200	310	BCW61A	120/220	2	5	550	50	1.25	180
32 *	32	200	310	BCW61B	180/310	2	5	550	50	1.25	180
32 *	32	200	310	BCW61C	250/460	2	5	550	50	1.25	180
45 *	32	800	360	BCW67A	100/250	100	1	700	500	50	100 *
45 *	32	800	360	BCW67B	160/400	100	1	700	500	50	100 *
45 *	32	800	360	BCW67C	250/630	100	1	700	500	50	100 *
45 *	45	200	310	BCX71G	120/220	2	5	550	500	50	180
45 *	45	200	310	BCX71H	180/310	2	5	550	500	50	180
45 *	45	200	310	BCX71J	250/460	2	5	550	500	50	180
50	45	100	200	BCW69	120/260	2	5	300	10	0.5	150
50	45	100	200	BCW70	215/500	2	5	300	10	0.5	150
50 *	45	100	310	BCX17	100/600	100	1	620	500	50	100
50	50	100	310	BC857A	110/220	2	5	650	50	5	150
50	50	100	310	BC857B	200/450	2	5	650	50	5	150
50	50	100	310	BC860A	110/220	2	5	650	50	5	150
50	50	100	310	BC860B	200/450	2	5	650	50	5	150
60 *	45	800	360	BCW68F	100/250	100	1	700	500	50	100 *
60 *	45	800	360	BCW68G	160/400	100	1	700	500	50	100 *
60 *	45	800	360	BCW68H	250/630	100	1	700	500	50	100 *
60	60	100	200	BCW89	120/260	2	5	300	10	0.5	150
80	80	500	350	SOA56	50/—	100	1	250	100	10	50
110	100	100	200	BSS63	30/—	25	1	900	75	7.5	50

## SMALL SIGNAL

## PNP DARLINGTONS - SOT-23

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
40	30	500	350	BCV26	4000/-	500	5	1000	100	0.1	200
80	60	500	350	BCV46	2000/-	500	5	1000	100	0.1	200

## NPN DARLINGTONS - SOT-23

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
40	30	500	350	BCV27	4000/—	500	5	1000	100	0.1	200
80	60	500	350	BCV47	30000/—	20	2	1000	100	0.1	220

## NPN SWITCHING TRANSISTORS - SOT-23

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
20	12	200	200	BSV52	40/120	10	1	400	50	5	400
40	15	200	200	SO2369	40/120	10	1	250	30	3	400
40	15	200	200	SO2369A	40/120	10	0.35	500	100	10	500

## NPN HIGH FREQUENCY TRANSISTORS - SOT-23

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub> max min *
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
15	12	35	200	BFR93	25/-	30	5	—	—	—	5000 typ.
15	12	35	200	BFR93A	40/-	30	5	—	—	—	5000 typ.
20	15	25	200	BFR92	25/-	14	10	—	—	—	5000 typ.
20	15	25	200	BFR92A	40/-	14	10	—	—	—	5000 typ.
30	15	50	200	SO918	20/-	3	1	400	10	1	600 *



**NPN HIGH VOLTAGE TRANSISTORS - SOT-23**

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>C</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
160	140	600	200	SO5550	60/250	10	5	250	50	5	100
180	160	600	200	SO5551	80/250	10	5	200	50	5	100
300	300	100	310	SO642	40/-	30	20	500	10	2	50

**PNP HIGH VOLTAGE TRANSISTORS - SOT-23**

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>C</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
130	120	600	200	SO5400	40/180	10	5	500	50	5	100
160	150	600	200	SO5401	60/240	10	5	500	50	5	100
300	300	100	310	SO692	40/-	10	10	500	20	2	50

**NPN LOW NOISE PREAMPLIFIER TRANSISTORS - SOT-23**

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>C</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
45	45	30	200	SO930	-/600	10	5	1000	10	0.5	200
60	60	50	200	SO2484	-/800	10	5	350	1	0.1	200

**NPN MEDIUM CURRENT SWITCHING TRANSISTORS - SOT-23**

V <sub>CBO</sub>	V <sub>CEO</sub>	I <sub>C</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>C</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>C</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
60	30	800	310	BSR13	100/300	150	10	1600	500	50	250
60	30	800	310	SO2222	100/300	150	10	400	150	15	250
75	40	800	310	BSR14	100/300	150	10	1000	500	50	300
75	40	800	310	SO2222A	100/300	150	10	300	150	15	250

## PNP MEDIUM CURRENT SWITCHING TRANSISTORS - SOT-23

V <sub>CB0</sub>	V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub>	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub>
					min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
60	40	600	310	BSR15	100/300	150	10	1600	500	50	200
60	60	800	310	SO2907	40/120	150	10	400	150	15	200
60	60	600	310	BSR16	100/300	150	10	1000	500	50	200
60	60	800	310	SO2907A	100/300	150	10	400	150	15	200

## NPN TRANSISTORS - SOT-223

V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub> •	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub> typ min *
				min/max	(mA)	(V)	max (mV)	(mA)	(mA)	(MHz)
30	800	1500	STZT2222	100/300	150	10	1600	500	50	250 *
40	800	1500	STZT2222A	100/300	150	10	1000	500	50	300 *
40	200	1500	STZT3904	100/300	10	1	300	50	5	300 *
45	1500	2000	BCP54	40/250	150	2	500	500	50	130
60	1500	2000	BCP55	40/250	150	2	500	500	50	130
60	1000	2000	BSP40	40/120	100	5	500	500	50	100 *
60	1000	2000	BSP41	100/300	100	5	500	500	50	100 *
80	1500	2000	BCP56	40/250	150	2	500	500	50	130
80	1000	2000	BSP42	40/120	100	5	500	500	50	100 *
80	1000	2000	BSP43	100/300	100	5	500	500	50	100 *

## PNP TRANSISTORS - SOT-223

V <sub>CEO</sub>	I <sub>c</sub>	P <sub>tot</sub> •	Type	h <sub>FE</sub> @ I <sub>c</sub> / V <sub>CE</sub>			V <sub>CE(sat)</sub> @ I <sub>c</sub> / I <sub>B</sub>			f <sub>T</sub> typ min *
				min/max	(mA)	(V)	max (mV)	(mA)	(mA)	(MHz)
40	600	1500	STZT2907	100/300	150	10	400	150	15	250 *
45	1500	2000	BCP51	100/300	150	2	500	50	5	300 *
60	600	1500	STZT2907A	40/250	150	10	400	150	15	130
60	1500	2000	BCP52	40/250	150	2	500	500	50	130
60	1000	2000	BSP30	40/120	100	5	500	500	50	100 *
60	1000	2000	BSP31	100/300	100	5	500	500	50	100 *
80	1500	2000	BCP53	40/250	150	2	500	500	50	130
80	1000	2000	BSP32	40/120	100	5	500	500	50	100 *
80	1000	2000	BSP33	100/300	100	5	500	500	50	100 *

**NPN HIGH VOLTAGE AND VIDEO AMPLIFIER TRANSISTORS - SOT-223**

$V_{CE0}$ $V_{CER}^*$  (V)	$I_C$  (mA)	$P_{tot} \bullet$  (mW)	Type	$h_{FE} @ I_C / V_{CE}$			$V_{CE(sat)} @ I_C / I_B$			$f_T$  min (MHz)
				min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
140	600	2000	<a href="#">STZT5550</a>	60/250	10	5	250	50	5	100
160	600	2000	<a href="#">STZT5551</a>	80/250	10	5	200	50	5	100
300	500	2000	<a href="#">STZTA42</a>	40/—	10	10	500	20	2	50

**PNP HIGH VOLTAGE AND VIDEO AMPLIFIER TRANSISTORS - SOT-223**

$V_{CE0}$ $V_{CER}^*$  (V)	$I_C$  (mA)	$P_{tot} \bullet$  (mW)	Type	$h_{FE} @ I_C / V_{CE}$			$V_{CE(sat)} @ I_C / I_B$			$f_T$  min (MHz)
				min/max	(mA)	(V)	max (mV)	(mA)	(mA)	
120	600		<a href="#">STZT5400</a>	40/180	10	5	500	50	5	100
150	600		<a href="#">STZT5401</a>	60/240	10	5	500	50	5	100
300	500		<a href="#">STZTA92</a>	40/—	10	10	500	20	2	50

• Mounted on a ceramic substrate area of 35 x 35 x 0.7 mm