

# NPN GENERAL PURPOSE

**TABLE 1 – NPN SILICON PLANAR GENERAL PURPOSE TRANSISTORS**

The devices shown in this table are general purpose transistors designed for small and medium signal amplification from d.c. to radio frequencies. Typical application areas include: AUDIO FREQUENCY AMPLIFIERS, DRIVERS and OUTPUT STAGES, OSCILLATORS, and GENERAL PURPOSE SWITCHES.

The transistors are listed in order of decreasing breakdown voltages ( $V_{CBO}$  and  $V_{CEO}$ ), then in order of decreasing collector current ( $I_C$ ), power dissipation ( $P_{tot}$ ) etc.

Type	$V_{CBO}$ V	$V_{CEO}$ V	Max $I_C$ mA	Max $V_{CE(sat)}$ at			$h_{FE}$ at			Min $f_T$ at		$P_{tot}$ at $T_{amb} = 25^\circ C$ mW	Complement
				V	$I_C$ mA	$I_B$ mA	Min	Max	$I_C$ mA	MHz	$I_C$ mA		
ZTX453	120	100	1000	0.7	150	15	40	200	150	150	50	1000	—
ZTX452	100	80	1000	0.7	150	15	40	150	150	150	50	1000	—
MPSA06	80	80	500	0.25	100	10	50	—	100	100	10	750	MPSA56
BC546P	80	65	200	0.25	10	0.5	75	200	2	300*	10	500	BC556P
ZTX451	80	60	1000	0.35	150	15	50	150	150	150	50	1000	ZTX551
BFS61	80	60	1000	0.35	150	15	40	160	150	150	50	500	BFS98
MPS2222A	75	45	800	1.0	500	50	100	300	150	300	20	500	MPS2907A
ZTX304	70	70	500	0.35	50	5	50	300	10	150	10	300	ZTX504
MPSA05	60	60	500	0.25	100	10	50	—	100	100	10	750	—
BCY77P	60	60	100	0.35	10	0.25	120	460	2	125	10	1000†	BCY77P
BC182P	60	50	200	0.25	10	0.5	100	480	2	150	10	300	BC212P
ZTX107	60	50	100	0.1*	10	1	125	500	2	350*	10	300	ZTX212
ZTX450	60	45	1000	0.25	150	15	100	300	150	150	50	1000	ZTX550
MPS6565	60	45	200	0.4	10	1	40	160	10	—	—	500	—
MPS6566	60	45	200	0.4	10	1	100	400	10	—	—	500	—
BFS60	60	40	1000	0.25	150	15	100	300	150	150	50	500	BFS97
2N4401	60	40	600	0.4	150	15	100	300	150	250	20	500	{ 2N4403
ZTX4401													
2N4400	60	40	600	0.4	150	15	50	150	150	200	20	500	{ 2N4402
ZTX4400													
MPS6531	60	40	600	0.3	100	10	90	270	100	390	50	500	MPS6534
MPS6530	60	40	600	0.5	100	10	40	120	100	390	50	500	MPS6533
2N3904	60	40	200	0.2	10	1	100	300	10	300	10	500	{ 2N3906
ZTX3904													
2N3903	60	40	200	0.2	10	1	50	150	10	250	10	500	{ 2N3905
ZTX3903													
BFS59	60	30	1000	0.35	150	15	40	300	150	150	50	500	BFS96
MPS2222	60	30	800	1.6	500	50	100	300	150	250	20	500	MPS2907
MPS3416	50	50	500	0.3	50	3	75	225	2	—	—	500	—
MPS3417	50	50	500	0.3	50	3	180	540	2	—	—	500	—
BC547P	50	45	200	0.25	10	0.5	75	450	2	300*	10	500	BC557P
ZTX382	50	45	200	0.25	10	0.5	100	850	2	150	10	350	—
BC107P	50	45	200	0.2	10	0.5	120	460	2	150	10	300	BC177P
BC237P	50	45	200	0.2	10	0.5	120	460	2	150	10	300	BC307P
ZTX237	50	45	200	0.25	10	0.5	120	460	2	150	10	300	ZTX212
ZTX223	50	30	800	0.3	100	10	100	450	50	100	50	500	—

\*Typical  $f_T$  at  $T_{case} = 45^\circ C$

# PNP GENERAL PURPOSE

**TABLE 2 – PNP SILICON PLANAR GENERAL PURPOSE TRANSISTORS**

The devices shown in this table are general purpose transistors designed for small and medium signal amplification from d.c. to radio frequencies. Typical application areas include: AUDIO FREQUENCY AMPLIFIERS, DRIVERS and OUTPUT STAGES, OSCILLATORS, and GENERAL PURPOSE SWITCHES.

The transistors are listed in order of decreasing breakdown voltages ( $V_{CB0}$  and  $V_{CE0}$ ), then order of decreasing collector current ( $I_C$ ), power dissipation ( $P_{tot}$ ) etc.

Type	$V_{CB0}$ V	$V_{CE0}$ V	Max $I_C$ mA	Max $V_{CE(sat)}$ at			$h_{FE}$ at			Min $f_T$ at		$P_{tot}$ at $T_{amb} = 25^\circ C$ mW	Complement
				$I_C$ mA	$I_B$ mA	Min	Max	$I_C$ mA	MHz	$I_C$ mA			
MPSA56	80	80	500	0.25	100	10	50	—	100	100	10	750	MPSA06
BC556P	80	65	200	0.25	10	0.5	75	450	2	150*	10	500	BC546P
ZTX551	80	60	1000	0.25	150	15	50	150	150	150	50	1000	ZTX451
BFS98	80	60	1000	0.35	150	15	40	160	150	150	50	500	BFS61
ZTX504	70	70	500	0.6	50	5	50	300	10	150	10	300	ZTX304
MPS2907A	60	60	600	1.6	500	50	100	300	150	200	50	500	MPS2222A
MPSA55	60	60	500	0.25	100	10	50	—	100	100	10	750	MPSA05
BCY77P	60	60	100	0.25	10	0.25	120	460	2	180*	10	1000†	BCY65EP
ZTX212	60	50	200	0.25	10	0.5	60	400	2	200	10	500	ZTX107
BC212P	60	50	200	0.6	100	5	60	400	2	200	10	300	BC182P
ZTX550	60	45	1000	0.25	150	15	100	300	150	150	50	1000	ZTX450
BFS97	60	40	1000	0.25	150	15	100	300	150	50	150	500	BFS60
MPS2907	60	40	600	1.6	500	50	100	300	150	200	50	500	MPS2222
BFS96	60	30	1000	0.35	150	15	40	300	150	150	50	500	BFS59
BC557P	50	45	200	0.25	10	0.5	75	450	2	150*	10	500	BC547P
BC177P	50	45	200	0.2	10	0.5	120	460	2	130	10	300	BC107P
BC307P	50	45	200	0.2	10	0.5	120	460	2	130*	10	300	BC237P
MPS3703 } ZTX3703 }	50	30	500	0.25	50	5	30	150	50	100	50	500	MPS3704 ZTX3704 MPS3705 ZTX3705
ZTX503	45	45	500	0.35	50	5	50	300	10	150	10	300	ZTX303

\*Typical †at  $T_{case} = 45^\circ C$

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# MEDIUM POWER

**TABLE 7 – NPN/PNP SILICON PLANAR MEDIUM POWER TRANSISTORS**

The transistors shown in this table have been designed to operate and provide useful gain at current levels up to 1 amp with power dissipation capabilities in excess of 500 mW at 25°C ambient temperature.

Typical application areas include: Audio Frequency Drivers and Output Stages, Relay Switching, etc.

The transistors are listed in order of decreasing breakdown voltages ( $V_{CB0}$  and  $V_{CEO}$ ), then order of decreasing current ( $I_C$ ), power dissipation ( $P_{tot}$ ) etc.

Type	$V_{CB0}$ V	$V_{CEO}$ V	Max $I_C$ mA	Max $V_{CE(sat)}$ at			$h_{FE}$ at			Min $f_T$ at		$P_{tot}$ at $T_{amb} = 25^\circ C$ mW	Complement
				V	$I_C$ mA	$I_B$ mA	Min	Max	$I_C$ mA	MHz	$I_C$ mA		
<b><u>NPN</u></b>													
ZTX453	120	100	1000	0.7	150	15	40	200	150	150	50	1000	—
ZTX452	100	80	1000	0.7	150	15	40	150	150	150	50	1000	—
MPSA06	80	80	500	0.25	100	10	50	—	100	100	10	750	MPSA56
ZTX451	80	60	1000	0.35	150	15	50	150	150	150	50	1000	ZTX551
MPSA05	60	60	500	0.25	100	10	50	—	100	100	10	750	MPSA55
ZTX450	60	45	1000	0.25	150	15	100	300	150	50	50	1000	ZTX550
ZTX337	50	45	1000	0.7	500	50	100	630	100	200*	10	750	ZTX537
BC337P	50	45	1000	0.7	500	50	100	630	100	100	10	625	BC327P
ZTX338	30	25	1000	0.7	500	50	100	630	100	200*	10	750	ZTX538
BC338P	30	25	1000	0.7	500	50	100	630	100	100	10	625	BC328P
<b><u>PNP</u></b>													
MPSA56	80	80	500	0.25	100	10	50	—	100	100	10	750	MPSA06
ZTX551	80	60	1000	0.25	150	15	50	150	150	150	50	1000	ZTX451
MPSA55	60	60	500	0.25	100	10	50	—	100	100	10	750	MPSA05
ZTX550	60	45	1000	0.25	150	15	100	300	150	150	50	1000	ZTX450
ZTX537	50	45	1000	0.7	500	50	100	630	100	200*	10	750	ZTX337
BC327P	50	45	1000	0.7	500	50	100	630	100	100	10	625	BC337P
ZTX538	30	25	1000	0.7	500	50	100	630	100	200*	10	750	ZTX338
BC328P	30	25	1000	0.7	500	50	100	630	100	100	10	625	BC338P

\*Typical