TABLE 2 : PNP GENERAL PURPOSE

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.

Type	V_{CBO}	V_{CEO}	Max I_C	Max $V_{CE(sat)}$ at			h_{FE} at			Min f_T at		P_{tot} at $T_{amb}=25°C$	Complement
					I_C	I_B			I_C		I_C		
	V	V	mA	V	mA	mA	Min	Max	mA	MHz	mA	mW	
ZTX552	100	100	1000	0.7	150	15	40	150	150	150	50	1000	ZTX452
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	0.35	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
BCY70P	50	40	200	0.5	50	5	100	—	10	250	10	350	—
BCY71P	45	45	200	0.5	50	5	100	400	10	15	0.1	350	—
ZTX503	45	45	500	0.35	50	5	50	300	10	150	10	300	ZTX303
ZTX531	45	45	500	0.7	10	0.5	40	120	0.01	30	0.5	250	ZTX331
BCY79P	45	45	200	0.25	10	0.25	120	460	2	180*	10	1000†	BCY59P
ZTX213	45	30	200	0.25	10	0.5	80	550	2	200	10	500	ZTX108
BC213P	45	30	200	0.6	100	5	80	600	2	200	10	300	BC183P
2N4403	40	40	600	0.4	150	15	100	300	150	200	20	500	2N4401
2N4402	40	40	600	0.4	150	15	50	150	150	150	20	500	2N4400
2N3906	40	40	200	0.25	10	1	100	300	10	250	10	500	2N3904
2N3905	40	40	200	0.25	10	1	50	150	10	200	10	500	2N3903
ZTX502	35	35	500	0.25	50	5	100	300	10	150	10	300	ZTX302
ZTX501	35	35	500	0.25	50	5	50	300	10	150	10	300	ZTX301
BCY78P	32	32	200	0.25	10	0.25	120	630	2	180*	10	1000†	BCY58P
ZTX530	30	30	500	0.7	10	0.5	100	400	0.1	30	0.5	250	ZTX330
BC558P	30	30	200	0.25	10	0.5	75	800	2	150*	10	500	BC548P
2N4125	30	30	200	0.4	50	5	50	150	2	200	10	500	2N4123
BC178P	30	25	200	0.2	10	0.5	120	800	2	130	10	300	BC108P
BC308P	30	25	200	0.2	10	0.5	120	800	2	130*	10	300	BC238P
BCY72P	30	25	200	0.5	50	3	100	—	10	250	10	350	—
ZTX500	25	25	500	0.35	50	5	50	300	10	150	10	300	ZTX300
2N4126	25	25	200	0.4	50	5	120	360	2	250	10	500	2N4124

*Typical †$T_{case}=45°C$

Datasheet Direct

TABLE 7 : NPN/PNP MEDIUM POWER

The transistors shown in this table have been designed to operate and provide useful gain at current levels up to 2 amps with power dissipation capabilities in excess of 1000 mW at 25°C ambient temperature.

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

Type	V_{CBO} V	V_{CEO} V	Max Cont. I_C mA	Max $V_{CE(sat)}$ at V	I_C mA	I_B mA	h_{FE} at Min	Max	I_C mA	Min f_T at MHz	I_C mA	P_{tot} at T_{amb} = 25°C mW	Complement
NPN													
ZTX455	160	140	1000	0.7	150	15	100	300	150	100	50	1000	—
ZTX454	140	120	1000	0.7	150	15	100	300	150	100	50	1000	—
ZTX653	120	100	2000	0.3	1000	100	100	300	500	100	100	1000	ZTX753
ZTX453	120	100	1000	0.7	150	15	40	200	150	150	50	1000	—
ZTX652	100	80	2000	0.3	1000	100	100	300	500	100	100	1000	ZTX752
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
ZTX651	80	60	2000	0.3	1000	100	100	300	500	100	100	1000	ZTX751
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
ZTX650	60	45	2000	0.3	1000	100	100	300	500	100	100	1000	ZTX750
ZTX450	60	45	1000	0.25	150	15	100	300	150	50	50	1000	ZTX550
ZTX337	50	45	800	0.7	500	50	100	630	100	200*	10	750	ZTX537
BC337P	50	45	800	0.7	500	50	100	630	100	100	10	625	BC327P
ZTX449	50	30	1000	0.5	1000	100	100	300	500	150	50	1000	ZTX549
ZTX338	30	25	800	0.7	500	50	100	630	100	200*	10	750	ZTX538
BC338P	30	25	800	0.7	500	50	100	630	100	100	10	625	BC328P
PNP													
ZTX753	120	100	2000	0.3	1000	100	100	100	500	75	100	1000	ZTX653
ZTX752	100	80	2000	0.3	1000	100	100	300	500	75	100	1000	ZTX652
ZTX552	100	80	1000	0.7	150	15	40	150	150	150	50	1000	ZTX452
MPSA56	80	80	500	0.25	100	10	50	—	100	100	10	750	MPSA06
ZTX751	80	60	2000	0.3	1000	100	100	300	500	75	100	1000	ZTX651
ZTX551	80	60	1000	0.35	150	15	50	150	150	150	50	1000	ZTX451
MPSA55	60	60	500	0.25	100	10	50	—	100	100	10	750	MPSA05
ZTX750	60	45	2000	0.3	1000	100	100	300	500	75	100	1000	ZTX650
ZTX550	60	45	1000	0.25	150	15	100	300	150	150	50	1000	ZTX450
ZTX537	50	45	800	0.7	500	50	100	630	100	200*	10	750	ZTX337
BC327P	50	45	800	0.7	500	50	100	630	100	100	10	625	BC337P
ZTX549	35	25	1000	0.5	1000	100	100	300	1000	100	100	1000	ZTX449
ZTX538	30	25	800	0.7	500	50	100	630	100	200*	10	750	ZTX338
BC328P	30	25	800	0.7	500	50	100	630	100	100	10	625	BC338P

*Typical

ELECTRICAL CHARACTERISTICS

N.P.N. MEDIUM POWER

Dice Type	V_{CBO} Min.	V_{CEO} Min.	I_{CBO} Max. at V_{CB}		h_{FE} @ I_C			V_{CE}	$V_{CE(sat)}$ I_C I_B			f_T Min.	C_{obo} Max.	Geometry
	V	V	nA	V	Min.	Max.	mA	V	Max.	mA	mA	MHz	pF	
ZTX653	120	100	100	100	100	300	500	2	0.5	2000	200	140	—	G17
ZTX453	120	100	100	100	40	200	150	10	0.7	150	15	150	15	G4
ZTX652	100	80	100	80	100	300	500	2	0.5	2000	200	140	—	G17
ZTX452	100	80	100	80	40	150	150	10	0.7	150	15	150	15	G4
MPSA06	80	80	100	80	50	—	100	1	0.25	100	10	100	—	G4
ZTX651	80	60	100	60	100	300	500	2	0.5	2000	200	140	—	G17
ZTX451	80	60	100	60	50	150	150	10	0.35	150	15	150	15	G4
BFY50	80	35	500	80	30	—	150	10	0.1	10	1	60	12	G4
MPSA05	60	60	100	60	50	—	100	1	0.25	100	10	100	—	G4
ZTX650	60	45	100	45	100	300	500	2	0.5	2000	200	140	—	G17
ZTX450	60	45	100	45	100	300	150	10	0.25	150	15	150	15	G4
BFY51	60	30	500	60	40	—	150	10	0.15	10	1	50	12	G4
BC337A	50	45	100*	45	100	250	100	1	0.7	500	50	100	12	G4
BC337B	50	45	100*	45	160	400	100	1	0.7	500	50	100	12	G4
BC337C	50	45	100*	45	250	630	100	1	0.7	500	50	100	12	G4
BFY52	40	20	500	40	60	—	150	10	0.15	10	1	50	12	G4
BC338A	30	25	100*	25	100	250	100	1	0.7	500	50	100§	12§	G4
BC338B	30	25	100*	25	160	400	100	1	0.7	500	50	100§	12§	G4
BC338C	30	25	100*	25	250	630	100	1	0.7	500	50	100§	12§	G4

P.N.P. MEDIUM POWER

Dice Type	V_{CBO} Min.	V_{CEO} Min.	I_{CBO} Max. at V_{CB}		h_{FE} @ I_C			V_{CE}	$V_{CE(sat)}$ I_C I_B			f_T Min.	C_{obo} Max.	Geometry
	V	V	nA	V	Min.	Max.	mA	V	Max.	mA	mA	MHz	pF	
ZTX753	120	100	100	100	100	300	500	2	0.5	2000	200	100	—	G16
ZTX752	100	80	100	80	100	300	500	2	0.5	2000	200	100	—	G16
ZTX552	100	80	100	80	40	150	150	10	0.7	150	15	150	25	G6
MPSA56	80	80	100	80	50	—	100	1	0.25	100	10	100	—	G6
ZTX751	80	60	100	60	100	300	500	2	0.5	2000	200	100	—	G16
ZTX551	80	60	100	60	50	150	150	10	0.35	150	15	150	25	G6
MPSA55	60	60	100	60	50	—	100	1	0.25	100	10	100	—	G6
ZTX750	60	45	100	45	100	300	500	2	0.5	2000	200	100	—	G16
ZTX550	60	45	100	45	100	300	150	10	0.25	150	15	150	25	G6
BC327A	50	45	100*	45	100	250	100	1	0.7	500	50	100§	12§	G6
BC327B	50	45	100*	45	160	400	100	1	0.7	500	50	100§	12§	G6
BC327C	50	45	100*	45	250	630	100	1	0.7	500	50	100§	12§	G6
BC328A	30	25	100*	25	100	250	100	1	0.7	500	50	100§	12§	G6
BC328B	30	25	100*	25	160	400	100	1	0.7	500	50	100§	12§	G6
BC328C	30	25	100*	25	250	630	100	1	0.7	500	50	100§	12§	G6

$V_{CE(sat)}$, f_T and C_{obo} are parameters which are assembly dependent and figures quoted are those typically achieved on Ferranti assembly lines.

*I_{CES} at V_{CES} §Typical