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

Datasheet Direct

TABLE 8 : NPN/PNP HIGH PERFORMANCE TYPES

These transistors offer the ultimate performance for a TO-92 style package, and are suited to audio output stages, lamp driving, general switching applications etc.

Type	V_{CBO} V	V_{CEO} V	Max Cont I_C mA	Max I_{CM}	Max $V_{CE(sat)}$ at V	I_C mA	I_B mA	h_{FE} Min	h_{FE} Max	h_{FE} at I_C mA	Min f_T MHz	Min f_T at I_C mA	P_{tot} at T_{amb} = 25°C mW	Complement
NPN														
ZTX653	120	100	2000	6	0.3	1000	100	100	300	500	100	100	1000	ZTX753
ZTX652	100	80	2000	6	0.3	1000	100	100	300	500	100	100	1000	ZTX752
ZTX651	80	60	2000	6	0.3	1000	100	100	300	500	100	100	1000	ZTX751
ZTX650	60	45	2000	6	0.3	1000	100	100	300	500	100	100	1000	ZTX750
ZTX649	35	25	2000	6	0.3	1000	100	100	300	1000	150	100	1000	ZTX749
PNP														
ZTX753	120	100	2000	6	0.3	1000	100	100	300	500	75	50	1000	ZTX653
ZTX752	100	80	2000	6	0.3	1000	100	100	300	500	75	50	1000	ZTX652
ZTX751	80	60	2000	6	0.3	1000	100	100	300	500	75	50	1000	ZTX651
ZTX750	60	45	2000	6	0.3	1000	100	100	300	500	75	50	1000	ZTX650
ZTX749	35	25	2000	6	0.3	1000	100	100	300	1000	100	100	1000	ZTX649

TABLE 9 : NPN DARLINGTON TYPES

The devices shown in this table are designed for applications requiring very high current gain. The monolithic construction has the inherent advantages of fast switching times, low saturation voltages and low leakage current.

Type	V_{CBO} V	V_{CEO} V	Max I_C mA	Max $V_{CE(sat)}$ at V	I_C mA	I_B mA	h_{FE} Min	h_{FE} Max	h_{FE} at I_C mA	Max. I_{CBO} at nA	I_{CBO} at V_{CB} V	P_{tot} at T_{amb} = 25°C mW
ZTX600	160	140	1000	1.2	1000	10	2K	100K	500	100	140	1000
ZTX601	180	160	1000	1.2	1000	10	2K	100K	500	100	160	1000
BCX38C	80	60	800	1.25	800	8	10K	—	500	100	60	1000
BCX38B	80	60	800	1.25	800	8	4K	—	500	100	60	1000
BCX38A	80	60	800	1.25	800	8	1K	—	500	100	60	1000
MPSA14	30	30	300	1.5	100	0.1	20K	—	100	100	30	750
MPSA13	30	30	300	1.5	100	0.1	10K	—	100	100	30	750
MPSA12	—	20	300	1	10	0.01	20K	—	10	100	15	750

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