

Silicon NPN Transistors

Type	Con- struction	P _c Max. (mW)	Typical f _T or *f _{T1} † fab (MHz)	Absolute Max. Ratings				Typical h _{FE} at (mA) (or *h _{FE})	Max I _{CBO} at V _{CB}		Application	Base Ref.
				V _{CB0} (V)	V _{CEO} (V)	V _{EB0} (V)	I _C (mA)		μA	V		

I.T.T. (Continued)

Current Types (Continued)

BFY50	PE	800	100	80	35	6	1A	30 at 150	0.05	60	High level amplifiers	2
BFY51	PE	800	110	60	30	6	1A	40 at 150	0.05	40		2
BFY52	PE	800	120	40	20	6	1A	60 at 150	0.05	30		2
2N2218	PE	800	250	60	30	5	800	40 at 150	0.01	50	High speed switching	2
2N2218A	PE	800	250	75	40	6	800	40 at 150	0.01	60		2
2N2219	PE	800	250	60	30	5	800	200 at 150	0.01	50		2
2N2219A	PE	800	250	75	40	6	800	200 at 150	0.01	60	Fast switching	2
2N3724	PE	800	250	50	30	6	1A	95 at 150	1.7	40		2
2N3725	PE	800	250	80	50	6	1A	95 at 150	1.7	60		2
2N4046	PE	800	250	50	30	6	500	95 at 150	1.7	40	Video output stages	2
2N4047	PE	800	250	80	50	6	500	95 at 150	1.7	60		2
BSY81	PE	900	100	40	18	5	1A	80 at 150	0.1	30		2
BSY83	PE	900	100	80	35	7	1A	80 at 150	0.01	60	High level switching	2
2N2297												2
BSY85	PE	900	110	120	64	7	1A	80 at 150	0.01	90		2
2N2193A	PE	900	120	40	18	5	1A	200 at 150	0.1	30	2	
BSY82												2
BSY84												2
BSY86	PE	900	130	120	64	7	1A	200 at 150	0.01	90	2	
BF257	PE	5W	90	160	160	5	100	25 at 30	0.05	100	Video output stages	2
BF258	PE	5W	90	250	250	5	100	25 at 30	0.05	200		2
BF259	PE	5W	90	300	300	5	100	25 at 30	0.05	250		2
BF457	PE	10W	90	160	160	5	100	25 at 30	0.05	100		65
BF458	PE	10W	90	250	250	5	100	25 at 30	0.05	200		65
BF459	PE	10W	90	300	300	5	100	25 at 30	0.05	250	65	

JOSEPH LUCAS (ELECTRICAL) Ltd.

Replacement Types

DT1602	DJ	100	—	75	75	1	25	5‡ at 3	100	75	Drivers for cold cathode counters	2
DT1603	DJ	100	—	150	150	1	25	5‡ at 3	100	150		2
DT1612	DJ	100	—	75	75	1	25	20‡ at 3	100	75		2
DT1613	DJ	100	—	150	150	1	25	20‡ at 3	100	150	General purpose	2
DT1510	DJ	800	1†	30	20	8	1A	25 at 300	4	30		2
DT1511	DJ	800	1†	60	40	8	1A	25 at 300	4	60		2
DT1512	DJ	800	1†	100	70	8	1A	25 at 300	4	100	2	
DT1520	DJ	800	2†	30	20	8	1A	120 at 300	4	30	2	
DT1521	DJ	800	2†	60	40	8	1A	120 at 300	4	60		
DT1522	DJ	800	2†	100	70	8	1A	120 at 300	4	100		
DT1110	DJ	1W	1.5†	30	30	10	1A	45 at 300	2	30	2	
DT1111	DJ	1W	1.5†	60	60	10	1A	45 at 300	2	60		
DT1112	DJ	1W	1.5†	100	100	10	1A	45 at 300	2	100		
DT1120	DJ	1W	2.5†	30	30	10	1A	60 at 300	2	30		
DT1121	DJ	1W	2.5†	60	60	10	1A	60 at 300	2	60		
DT1122	DJ	1W	2.5†	100	100	10	1A	60 at 300	2	100	2	
DT1621	DJ	2W	2.5	60	40	8	1A	125 at 250	10	60	2	
DT3200	DJ	15W	0.5	45	30	8	5A	30 at 3A	25	45	3	
DT3201	DJ	15W	0.5	80	60	8	5A	30 at 3A	25	80	3	

Current Types

DT1003	DJ	4W	1	200	200	5	300	24 at 200	—	—	General purpose	2
DT1013	DJ	4W	1	200	200	5	300	60 at 200	—	—		2
DT1311	DJ	5W	1.5	60	40	12	1.5A	40 at 200	—	—		2
DT1312	DJ	5W	1.5	100	60	12	1.5A	40 at 200	—	—		2
2N1479	DJ	5W	1.5	60	40	12	1.5A	40 at 200	—	—		2
2N1480	DJ	5W	1.5	100	55	12	1.5A	40 at 200	—	—		2
2N1481	DJ	5W	1.5	60	40	12	1.5A	67 at 200	—	—		2
2N1482	DJ	5W	1.5	100	55	12	1.5A	67 at 200	—	—		2
DT1321	DJ	5W	2.5	60	40	12	1.5A	80 at 200	—	—		2

Continued

Silicon NPN Transistors

Type	Con- struction	P _c Max. (mW)	Typical f _T or *f ₁ † fab (MHz)	Absolute Max. Ratings				Typical h _{FE} at (mA) (or *h _{fe})	Max I _{CBO} at V _{CB}		Application	Base Ref.
				V _{CB0} (V)	V _{CE0} (V)	V _{EB0} (V)	I _C (mA)		μA	V		
40323	PE	5W	120	—	18	—	900	210 at 50	0.25	15	Pre-driver	2
40326	PE	5W	120	—	40	—	900	120 at 10	0.25	15		2
40360	PE	5W	120	—	70	—	900	120 at 10	—	—	2	
40361	PE	5W	120	—	70	—	900	210 at 50	—	—	Driver	2
40366	PE	5W	120	—	65	—	900	80 at 150	0.002	60	General purpose	2
40389	PE	5W	120	—	40	—	900	150 at 150	0.25	30		2
40392	PE	5W	120	—	40	—	900	150 at 150	0.25	30	2	
40407	PE	5W	120	—	50	—	900	120 at 1	0.25	10	Pre-driver	2
40408	PE	5W	120	—	90	—	900	120 at 10	—	—		2
40409	PE	5W	120	—	90	—	900	150 at 150	—	—	2	
40544	PE	5W	120	—	50	—	900	117 at 50	10	40	Driver	2
40611	PE	5W	120	—	25	—	900	285 at 50	0.5	15		2
40616	PE	5W	120	—	32	—	900	285 at 50	0.5	15	Driver	2
40625	PE	5W	120	—	45	—	900	200 at 150	0.25	60		2
40628	PE	5W	120	—	55	—	900	200 at 150	0.25	60	2	
40635	PE	5W	120	—	70	—	900	150 at 150	—	—	2	
40814	PE	5W	120	—	45	—	900	150 at 10	—	—	Pre-driver	2
2N1479	H	8.75W	1.4	—	40	—	900	40 at 200	10	30	D.C./D.C. converter	2
2N1480	H	8.75W	1.4	—	55	—	900	40 at 200	10	30	Chopper	2
2N1481	H	8.75W	1.4	—	40	—	900	67 at 200	10	30	Amplifiers	2
2N1482	H	8.75W	1.4	—	55	—	900	67 at 200	10	30	Actuators	2
40347	H	8.75W	1.4	—	40	—	900	62 at 450	1	30	Audio drivers	2
40348	H	8.75W	1.4	—	65	—	900	77 at 300	1	60	Relay driver	2
40367	H	8.75W	1.4	—	55	—	900	67 at 200	4	30	Actuators	2
40349	H	8.75W	1.5	—	140	—	900	72 at 150	1	90	General purpose	2
40316	H	10W	0.8	—	40	—	3A	70 at 1A	10	15	1	
40610	H	10W	1	—	25	—	2.5A	60 at 1.2A	—	—	Audio amplifiers	2
40615	H	10W	1	—	30	—	2.5A	60 at 1.2A	—	—		2
40620	H	10W	1	—	32	—	2.5A	60 at 1.5A	—	—		2
BF257	PE	10W	15	—	160	—	2A	25‡ at 30	0.05	100	High speed	2
BF258	PE	10W	15	—	250	—	2A	25‡ at 30	0.05	200		2
BF259	PE	10W	15	—	300	—	2A	25‡ at 30	0.05	300	High power	2
2N3440	PE	10W	15	—	250	—	2A	100 at 20	—	—	Fast switching	2
2N3439	PE	10W	15	—	350	—	2A	100 at 20	—	—		2
2N4063	PE	10W	15	—	350	—	2A	100 at 20	—	—		2
2N4064	PE	10W	15	—	250	—	2A	100 at 20	—	—		2
40321	PE	10W	15	—	300	—	2A	112 at 20	—	—	Audio drivers	2
40327	PE	10W	15	—	300	—	2A	145 at 20	—	—		2
40346	PE	10W	15	—	175	—	2A	25‡ at 10	—	—	'Nixie' driver	2
40385	PE	10W	15	—	350	—	2A	100 at 20	—	—	Fast switching	2
40390	PE	10W	15	—	250	—	2A	100 at 20	—	—		2
40412	PE	10W	15	—	250	—	2A	40‡ at 30	—	—	Audio amplifiers	2
40986	PE	10W	15	—	175	—	2A	60 at 10	—	—	Pre-driver	2
40990	PE	10W	15	—	175	—	2A	145 at 1	—	—	Amplifier input	2
40998	PE	10W	15	—	100	—	2A	60 at 10	—	—	Pre-driver	2
2N5320	P	10W	50	—	75	—	1.5A	80 at 500	—	—	General purpose	2
2N5321	P	10W	50	—	50	—	1.5A	145 at 500	—	—		2
40539	P	10W	50	—	55	—	1.5A	102 at 500	—	—	Audio amplifiers	2
40594	P	10W	50	—	95	—	1.5A	210 at 300	—	—	Drivers	2
2N6175	—	20W	20	—	250	—	2A	110 at 20	—	—	Fast switching	51
2N6176	—	20W	20	—	300	—	2A	90 at 20	—	—		51
2N6177	—	20W	20	—	350	—	2A	90 at 20	—	—		51
2N3054	H	25W	0.8	—	55	—	3A	62 at 500	—	—	General purpose	1
40250	H	25W	0.8	—	40	—	3A	62 at 1.5A	1	30		1
40372	H	25W	0.8	—	55	—	3A	62 at 500	—	—		1
2N1483	H	25W	1.2	—	40	—	2A	40 at 750	15	30	D.C./D.C. converter	3
2N1484	H	25W	1.2	—	55	—	2A	40 at 750	15	30	Chopper	3
2N1485	H	25W	1.2	—	40	—	2A	67 at 750	15	30	Servo amplifiers	3
2N1486	H	25W	1.2	—	55	—	2A	67 at 750	15	30	Actuators	3
40368	H	25W	1.2	—	55	—	2A	67 at 750	9	30		3
2N6178	—	25W	50	—	75	—	1.5A	80 at 500	—	—	General purpose	51

Continued

Silicon NPN Transistors

Type	Con- struction	P _c Max. (mW)	Typical f _T or *f ₁ † fab (MHz)	Absolute Max. Ratings				Typical h _{FE} at (mA) (or *h _{fe})	Max I _{CBO} at V _{CB}		Application	Base Ref.
				V _{CB0} (V)	V _{CE0} (V)	V _{EB0} (V)	I _C (mA)		μA	V		
2N3724	—	800	300	—	30	—	—	105 at 100	—	—	High speed saturated switching	2
2N3725	—	800	300	—	50	—	—	105 at 100	—	—		2
BC300	—	850	—	120	—	—	1A	140 at 150	—	—	Audio driver	2
BC301	—	850	—	90	—	—	1A	140 at 150	—	—		2
BC302	—	850	—	60	—	—	1A	140 at 150	—	—		2
2N699B	—	870	60	—	80	—	—	80 at 150	—	—	General purpose	2
BC440	—	1W	—	50	—	—	2A	145 at 500	—	—		2
BC441	—	1W	—	75	—	—	2A	145 at 500	—	—		2
BF257	—	1W	—	160	160	—	200	83 at 30	—	—	Video output	2
BF258	—	1W	—	250	250	—	200	83 at 30	—	—		2
BF259	—	1W	—	300	300	—	200	83 at 30	—	—		2
2N3253	—	1W	175	—	40	—	—	25‡ at 150	—	—	High speed switching	2
2N5109	—	2.5W	200	—	20	—	—	—	—	—	R.F. amps./osc.	2
BUY47	P	7W	90	150	120	—	10A	130 at 2A	—	—	High voltage switching	2
BUY48	P	7W	90	200	170	—	10A	130 at 2A	—	—		2
BU125	P	7W	100	130	60	—	5A	70 at 5A	—	—	TV line output	2
BUY68	P	7W	100	100	60	—	5A	70 at 5A	—	—	General purpose	2
BUY24	P	15W	100	120	60	—	5A	40 at 5A	—	—	Power switching	1
BD215	tDM	21.5W	—	500	300	—	500	150 at 500	—	—	Audio amplifiers	1
BD216	tDM	21.5W	—	300	200	—	1A	95 at 100	—	—		1
BD162	H	23W	—	40	20	—	4A	110 at 500	—	—		1
BD163	H	23W	—	60	50	—	4A	102 at 500	—	—	1	
BUY46	H	24W	—	90	55	—	4A	62 at 500	—	—		
BD375	P	25W	—	50	45	—	2A	90 at 1A	—	—	Switching	51
BD377	P	25W	—	75	60	—	2A	90 at 1A	—	—		51
BD379	P	25W	—	100	80	—	2A	100 at 500	—	—		51
BD117	P	30W	50	100	60	—	5A	70 at 5A	—	—	1	
BD281	E	36W	—	22	22	—	4A	40‡ at 3A	—	—	Audio amplifiers	51
BD283	E	36W	—	32	32	—	4A	30‡ at 3A	—	—		51
BD285	E	36W	—	45	45	—	4A	20‡ at 3A	—	—		51
BD433	E	36W	—	22	22	—	4A	40‡ at 3A	—	—	51	
BUY18	P	62W	50	300	150	—	10A	30‡ at 1A	—	—	Switching	1
BU127	P	62W	70	200	120	—	10A	25 at 7A	—	—	General purpose	1
BU102	P	62W	80	400	150	—	7A	25 at 7A	—	—	TV line	1
BU128	P	62W	80	300	200	—	10A	25 at 7A	—	—	General purpose	1
BD111A	P	62W	100	60	60	—	10A	40 at 5A	—	—	TV frame	1
BU100A	P	62W	100	150	100	—	10A	40 at 5A	—	—	TV line	1
BD663A	H	75W	—	—	40	—	10A	10‡ at 4A	—	—	52	
BD663B	H	75W	—	—	40	—	10A	10‡ at 4A	—	—		
BDX70 } 2N6098 }	H	75W	—	70	60	—	10A	50 at 4A	—	—	General purpose	52
BDX71 } 2N6099 }	H	75W	—	70	60	—	10A	50 at 4A	—	—		52
BDX72 } 2N6100 }	H	75W	—	80	70	—	10A	50 at 5A	—	—		52
BDX73 } 2N6101 }	H	75W	—	80	70	—	10A	50 at 5A	—	—	52	
BD120	tDM	100W	—	400	200	—	15A	65 at 1A	—	—	Choppers	1
BD121	tDM	100W	—	400	—	—	15A	60 at 1A	—	—	TV line	1
BD122	tDM	100W	—	330	—	—	10A	—	—	—		1
BDX12 } 2N4347 }	H	100W	—	140	120	—	5A	45 at 2A	—	—	Switching	1
BD141	H	117W	—	140	120	—	8A	45 at 2A	—	—	Audio amplifiers	1
BD142	H	117W	—	50	45	—	15A	86 at 4A	—	—		1
BDX10 } 2N3055 }	H	117W	—	100	60	—	15A	45 at 4A	—	—	General purpose	1
BDX11 } 2N3442 }	H	117W	—	160	140	—	10A	45 at 3A	—	—	Switching	1
BDX13 } 40251 }	H	117W	—	50	40	—	15A	37 at 8A	—	—	Audio amplifiers	1

Continued

Silicon NPN Transistors

Type	Construction	P _c Max. (mW)	Typical f _T or *f _i + f _{ab} (MHz)	Absolute Max. Ratings				Typical h _{FE} at (mA) (or *h _{fe})	Max I _{CBO} at V _{CB}		Application	Base Ref.
				V _{CBO} (V)	V _{CEO} (V)	V _{EBO} (V)	I _C (mA)		μA	V		
TEXAS (Continued)												
<i>Current Types (Continued)</i>												
2N2222A	PE	500	300	75	40	6	800	200 at 150	0.01	60	General purpose	2
2N3303	PE	600	—	25	12	4	1A	75 at 300	—	—	Fast switching	2
2N699	DDP	600	30	120	80	5	—	80 at 150	2	60	Amps./osc.	2
2N1420	DDP	600	30	60	30	5	1A	200 at 150	1	30		2
2N696	P	600	40	60	40	5	500	20‡ at 150	—	—	Medium power	2
2N697	P	600	50	60	40	5	500	40 at 150	—	—		2
TIS90	PE	625	—	40	40	5	400	160 at 50	0.1	20	General purpose	24
TIS90M	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
TIS92	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
TIS92M	PE	625	—	40	40	5	400	160 at 50	0.1	20		24
BSS34	—	625	90	100	80	—	200	50‡ at 10	—	—	Indicator tube driver	24
BSS35	—	625	90	120	100	—	200	40‡ at 10	—	—		24
BFY50	PE	800	—	80	80	6	1A	—	0.05	60	General purpose	2
BFY51	PE	800	—	60	60	6	1A	—	0.05	40		2
BFY52	PE	800	—	40	40	6	1A	—	0.05	30		2
2N3036	PE	800	—	120	80	7	1.2A	100 at 150	0.01	60	General purpose	2
2N3418	PE	800	—	85	60	8	3A	40 at 1A	—	—		2
2N3419	PE	800	—	125	80	8	3A	40 at 1A	—	—		2
2N3420	PE	800	—	85	60	8	3A	80 at 1A	—	—		2
2N3421	PE	800	—	125	80	8	3A	80 at 1A	—	—	2	
2N3724	PE	800	—	50	30	6	500	35‡ at 500	1.7	40	High speed switching	2
2N3725	PE	800	—	80	50	6	500	35‡ at 500	1.7	40		2
2N1714	tDM	800	16	—	60	6	750	40 at 200	—	—	H.F.	2
2N1715	tDM	800	16	—	100	6	750	40 at 200	—	—		2
2N1716	tDM	800	16	—	60	6	750	80 at 200	—	—		2
2N1717	tDM	800	16	—	100	6	750	80 at 200	—	—		2
2N1718	tDM	800	16	—	60	6	750	40 at 200	—	—	16	
2N1719	tDM	800	16	—	100	6	750	40 at 200	—	—	16	
2N1720	tDM	800	16	—	60	6	750	80 at 200	—	—	16	
2N1721	tDM	800	16	—	100	6	750	80 at 200	—	—	16	
2N698	P	800	40	120	80	7	500	20‡ at 150	—	—	Medium power	2
2N1507	DDP	800	50	60	30	5	1A	100‡ at 150	—	—		2
2N1889	DDP	800	50	100	60	7	500	40‡ at 150	—	—	Medium power	2
2N1893	DDP	800	50	120	80	7	500	40‡ at 150	—	—		2
2N2192	PE	800	50	60	40	5	1A	100‡ at 150	—	—		2
2N2192A	PE	800	50	60	40	5	1A	100‡ at 150	—	—		2
2N2193	PE	800	50	80	50	8	1A	40‡ at 150	—	—	Medium power	2
2N2193A	PE	800	50	80	50	8	1A	40‡ at 150	—	—		2
2N2194	PE	800	50	60	40	5	1A	20‡ at 150	—	—		2
2N2194A	PE	800	50	60	40	5	1A	20‡ at 150	—	—		2
2N2243	PE	800	50	120	80	7	1A	20‡ at 150	—	—	2	
2N2243A	PE	800	50	120	80	7	1A	40‡ at 150	—	—	2	
2N3036	PE	800	50	120	80	7	1.2A	50‡ at 150	—	—	Medium power	2
2N1613	DDP	800	60	75	50	7	500	40‡ at 150	—	—		2
2N1890	DDP	800	60	100	60	7	500	100‡ at 150	—	—	Medium power	2
2N1711	DDP	800	60	75	50	7	1A	100‡ at 150	—	—		2
BFR39	—	800	100	90	80	—	1A	30‡ at 150	—	—	General purpose	24
BFR40	—	800	100	70	60	—	1A	40‡ at 150	—	—		24
BFR41	—	800	100	60	50	—	1A	60‡ at 150	—	—		24
BF257	PE	800	110	160	160	5	100	25‡ at 30	0.05	100	Video amplifiers	2
BF258	PE	800	110	250	250	5	100	25‡ at 30	0.05	200		2
BF259	PE	800	110	300	300	5	100	25‡ at 30	0.05	250		2
BFR86	—	800	130	120	120	—	400	20‡ at 30	—	—		24
BFR87	—	800	130	160	160	—	400	20‡ at 30	—	—	Video output	24
BFR88	—	800	130	250	250	—	400	20‡ at 30	—	—		24
BFR89	—	800	130	300	300	—	400	20‡ at 30	—	—	24	
2N2217	PE	800	250	60	30	5	800	20‡ at 150	—	—	H.F.	2
2N2218	PE	800	250	60	30	5	800	40‡ at 150	—	—		2
2N2218A	PE	800	250	75	40	6	800	80 at 150	0.01	60		2
2N2219	PE	800	250	60	30	5	800	100‡ at 150	—	—		2
2N2219A	PE	800	250	75	40	6	800	200 at 150	0.01	60	2	

Continued