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BD836	BD788		3-304	BD957		BD777	3-302
BD837	BD789		3-308	BD977		BD777	3-302
BD838	BD790		3-308	BD978	BD778		3-302
BD839		BD790	3-308	BD979	BD779		3-302
BD861	BD675		3-298	BD980	BD780		3-302
BD862	BD676		3-300	BDT29	TIP29		3-1071
BD863	BD677		3-298	BDT29A	TIP30		3-1071
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BD895	BD895		3-320	BDT32	TIP32		3-1073
BD895A	BD895A		3-320	BDT32A	TIP32A		3-1073
BD896	BD896		3-322	BDT32B	TIP32B		3-1073
BD896A	BD896A		3-322	BDT32C	TIP32C		3-1073
BD897	BD897		3-320	BDT41	TIP41		3-1083
BD897A	BD897A		3-320	BDT41A	TIP41A		3-1083
BD898	BD898		3-322	BDT41B	TIP41B		3-1083
BD898A	BD898A		3-322	BDT41C	TIP41C		3-1083
BD899	BD899		3-320	BDT42	TIP42		3-1083
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BD900	BD900		3-322	BDT42B	TIP42B		3-1083
BD900A	BD900A		3-322	BDT42C	TIP42C		3-1083
BD901	BD901		3-320	BDT60	TIP125		3-1098
BD902	BD902		3-322	BDT60A	TIP126		3-1098
BD905	N26486		—	BDT60B	TIP127		3-1098
BD906	2N6489		3-207	BDT60C	BDX53D		3-338
BD907	2N6487		3-207	BDT61	TIP120		3-1098
BD908	2N6490		3-207	BDT61A	TIP121		3-1098
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BD934	BD242		3-282	BDT62A	BDW46		3-328
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*Consult Motorola if a direct replacement is necessary.

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BDV64	BDV64		3-324	BDW55	BD135		3-258
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BDV65	BDV65		3-324	BDW59	BD139		3-258
BDV65A	BDV65A		3-324	BDW60	BD140		3-260
BDV65B	BDV65B		3-324	BDW63	BDX53		3-338
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BDV66C	MJH11017		3-1034	BDW63C	BDX53C		3-338
BDV66D	MJH11019		3-1034	BDW63D	BDX53D		3-338
BDV67D	MJH11020		3-1034	BDW64	BDX54		3-338
BDV91	MJE3055T		3-904	BDW64A	BDX54A		3-338
BDV92	TIP34B		3-1077	BDW64B	BDX54B		3-338
BDV93	TIP34C		3-1077	BDW64C	BDX54C		3-338
BDV94	TIP2955		3-1108	BDW73	BD895		3-320
BDV95	TIP33B		3-1077	BDW73A	BD897		3-320
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BDW21	2N3714		3-26	BDW73C	BD901		3-320
BDW21A	2N3714		3-26	BDW73D	BDX33D		3-334
BDW21B				BDW74	BD896		3-322
BDW21C	2N3714		3-26	BDW74A	BD898		3-322
BDW22	2N3789		3-56	BDW74B	BD900		3-322
BDW22A	2N3789		3-56	BDW74C	BD902		3-322
BDW22B	2N3790		3-56	BDW74D	BDX34D		3-334
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BDW23	BDX53		3-338	BDW83A	BDV65		3-324
BDW23A	BDX53A		3-338	BDW83B	BDV65A		3-324
BDW23B	BDX53B		3-338	BDW83C	BDV65B		3-324
BDW23C	BDX53C		3-338	BDW84	BDV64		3-324
BDW24	BDX54		3-338	BDW84A	BDV64		3-324
BDW24A	BDX54A		3-338	BDW84B	BDV64A		3-324
BDW24B	BDX54B		3-338	BDW84C	BDV64B		3-324
BDW24C	BDX54C		3-338	BDW93	BDW39		3-328
BDW39	BDW39		3-328	BDW93A	BDW40		3-328
BDW40	BDW40		3-328	BDW93B	BDW41		3-328
BDW41	BDW41		3-328	BDW93C	BDW42		3-328
BDW42	BDW42		3-328	BDW94	BDW44		3-328
BDW44	BDW44		3-328	BDW94A	BDW45		3-328
BDW45	BDW45		3-328	BDW94B	BDW46		3-328
BDW46	BDW46		3-328	BDW94C	BDW47		3-328
BDW47	BDW47		3-328	BDX10	2N3055A		3-9
BDW51	2N3715		3-26	BDX10-4	2N3055A		3-9
BDW51A	2N3715		3-26	BDX10-6	2N3055A		3-9
BDW51B	2N3716		3-26	BDX10-7	2N3055A		3-9

*Consult Motorola if a direct replacement is necessary.

TABLE 5 — PLASTIC TO-220 (continued)

I _C Cont Amps Max	V _{CEO} (sus) Volts Min	Device Type		h _{FE} Min/Max	@ I _C Amp	Resistive Switching			f _T MHz Min	P _D (Case) Watts @ 25°C
		NPN	PNP			t _s μs Max	t _f μs Max	@ I _C Amp		
7	45	BD795	BD796	25 min	3				3	65
	50	2N6290	2N6109	30/150	2.5	0.4 typ	0.15 typ	3	4	40
	60	BD797	BD798	25 min	3				3	65
	70	2N6292	2N6107	30/150	3	0.4 typ	0.15 typ	3	4	40
	80	BD799	BD800	15 min	3				3	65
	100	BD801	BD802	15 min	3				3	65
	150	BU407,D		30 min	1.5		0.75	5	10	60
	200	BU406,D		30 min	1.5		0.75	5	10	60
	375	BU522##		250 min	2.5				7.5	75
	425	BU522A##		250 min	2.5				7.5	75
8	450	BU522B##		250 min	2.5				7.5	75
	40	2N6386##		1k/20k	3				20#	65
	45	BDX53##	BDX54##	750 min	3				4#	60
		BD895##	BD896##	750 min	3				1#	70
		BD895A##	BD896A##	750 min	4				1#	70
	60	2N6043##	2N6040##	1k/10k	4	1.5 typ	1.5 typ	3	4#	75
		BDX53A##	BDX54A##	750 min	3				4#	60
		BD897##	BD898##	750 min	3				1#	70
		BD897A##	BD898A##	750 min	4				1#	70
		TIP100##	TIP105##	1k/20k	3	1.5 typ	1.5 typ	3	4#	80
	80	2N6044##	2N6041##	1k/10k	4	1.5 typ	1.5 typ	3	4#	75
		BDX53B##	BDX54B##	750 min	3				4#	60
		BD899##	BD900##	750 min	3				1#	70
		BD899A##	BD900A##	750 min	4				1#	70
		TIP101##	TIP106##	1k/20k	3	1.5 typ	1.5 typ	3	4#	80
	100	2N6045##	2N6042##	1k/10k	3	1.5 typ	1.5 typ	3	4#	75
		BDX53C##	BDX54C##	750 min	3				4#	60
		BD901##	BD902##	750 min	3				1#	70
	120	TIP102##	TIP107##	1k/20k	3	1.5 typ	1.5 typ	3	4#	80
		BDX53D##	BDX54D##	750 min	3				4#	60
		MJE15028	MJE15029	20 min	4				30	50
	150	MJE15030	MJE15031	20 min	4					50
		BU807##		100 min	5	0.55 typ	0.2 typ	5	30	60
	200	BU806##		100 min	5	0.55 typ	0.2 typ	5		60
	300	MJE13006		5/30	5	3	0.7	5	4	80
		MJE5740##		200 min	4	8 typ	2 typ	6		80
	350		MJE5850	15 min	2	2	0.5	4		80
		MJE5741##		200 min	4	8 typ	2 typ	6		80
	400		MJE5851	15 min	2	2	0.5	4		80
		MJE5742W##		200 min	4	8 typ	2 typ	6		80
		MJE13007		5/30	5	3	0.7	5	4	80
			MJE5852	15 min	2	2	0.5	4		80
10	30			5 min	8	2	0.5	5		80
				6/25	8	2 typ	0.1 typ	5		100
	450	MJE16080		5 min	8					80
		MJE16106		6/25	8					100
	40			5 min	8					80
				6/25	8					100
	45			5 min	8					80
				6/25	8					100
10	30			5 min	8					80
				6/25	8					100
	40			5 min	8					80
				6/25	8					100
	45			5 min	8					80
				6/25	8					100
	60			5 min	8					80
				6/25	8					100

h_{FE} @ 1 MHz, ## Darlington

(continued)

MOTOROLA SEMICONDUCTOR TECHNICAL DATA

**BD806
BD808
BD810**

PLASTIC HIGH POWER SILICON PNP TRANSISTOR

designed for use in high power audio amplifiers utilizing complementary or quasi complementary circuits.

- DC Current— $h_{FE} = 30$ (Min) @ $I_C = 2.0$ Adc
- BD 806, 808, 810 are complementary with BD 805, 807, 809

**10 AMPERE
POWER TRANSISTOR**

PNP SILICON

**45, 60, 80 VOLTS
90 WATTS**

MAXIMUM RATINGS

Rating	Symbol	Type	Value	Unit
Collector-Emitter Voltage	V_{CEO}	BD806 BD808 BD810	45 60 80	Vdc
Collector-Base Voltage	V_{CBO}	BD806 BD808 BD810	55 70 80	Vdc
Emitter-Base Voltage	V_{EBO}		5	Vdc
Collector Current	I_C		10.0	Adc
Base Current	I_B		6.0	Adc
Total Device Dissipation $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D		90 720	Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}		-55 to +150	°C

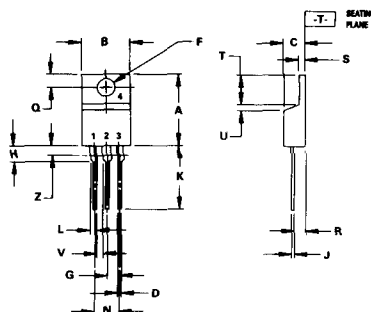
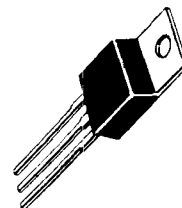
THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	θ_{JC}	1.39	°C/W

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Type	Min	Max	Unit
Collector-Emitter Sustaining Voltage* ($I_C = 0.2$ Adc, $I_B = 0$)	BV_{CEO}	BD806 BD808 BD810	45 60 80	—	Vdc
Collector Cutoff Current ($V_{CB} = 55$ Vdc, $I_E = 0$) ($V_{CB} = 70$ Vdc, $I_E = 0$) ($V_{CB} = 80$ Vdc, $I_E = 0$)	I_{CBO}	BD806 BD808 BD810	—	1.0 1.0 1.0	mA
Emitter Cutoff Current ($V_{BE} = 5.0$ Vdc, $I_C = 0$)	I_{EBO}		—	2.0	mA
DC current Gain ($I_C = 2$ A, $V_{CE} = 2$ V) ($I_C = 4$ A, $V_{CE} = 2$ V)	h_{FE}		30 15	—	
Collector-Emitter Saturation Voltage* ($I_C = 4$ Adc, $I_B = 0.4$ Adc)	$V_{CE(sat)}$		—	1.1	Vdc
Base-Emitter On Voltage* ($I_C = 4$ Adc, $V_{CE} = 2.0$ Vdc)	$V_{BE(on)}$		—	1.6	Vdc
Current Gain-Bandwidth Product ($I_C = 1.0$ Adc, $V_{CE} = 10$ Vdc, $f = 1.0$ MHz)	f_T		1.5	—	MHz

* Pulse Test: Pulse Width ≤ 300 μ s. Duty Cycle $\leq 20\%$.



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982
2. CONTROLLING DIMENSION: INCH
3. DIM Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	14.48	15.75	0.570	0.620
B	9.55	10.26	0.380	0.405
C	4.07	4.95	0.160	0.190
D	0.64	0.88	0.025	0.035
F	3.61	3.73	0.142	0.147
G	2.42	2.66	0.095	0.105
H	2.90	3.93	0.110	0.155
J	0.46	0.71	0.018	0.028
K	12.70	14.27	0.500	0.562
L	1.15	1.39	0.045	0.055
N	4.83	5.33	0.190	0.210
Q	2.54	3.04	0.100	0.120
R	2.04	2.75	0.080	0.110
S	1.15	1.28	0.045	0.055
T	5.97	6.47	0.235	0.255
U	0.00	1.27	0.000	0.050
V	1.15	—	0.045	—
Z	—	2.04	—	0.080

STYLE 1:

- PIN 1: BASE
2: COLLECTOR
3: EMITTER
4: COLLECTOR

**CASE 221A-04
TO-220AB**

BD806, BD808, BD810

FIGURE 1 - ACTIVE REGION DC
SAFE OPERATING AREA

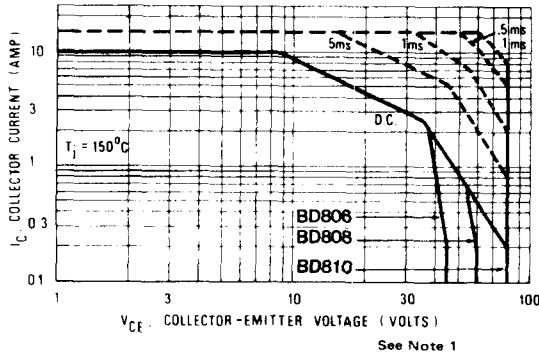


FIGURE 2 - POWER-TEMPERATURE
DERATING CURVE

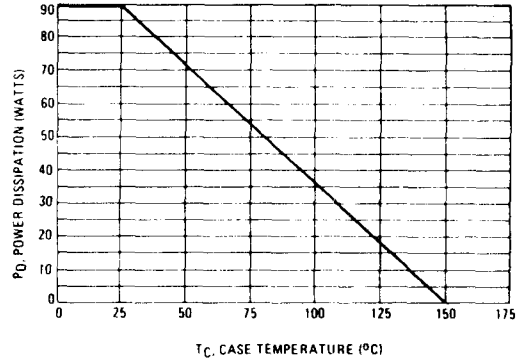


FIGURE 3 - "ON" VOLTAGES

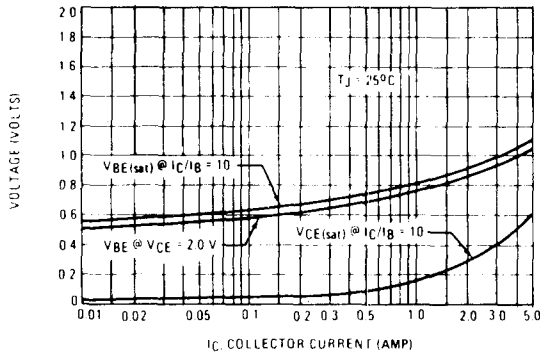


FIGURE 4 - CURRENT GAIN

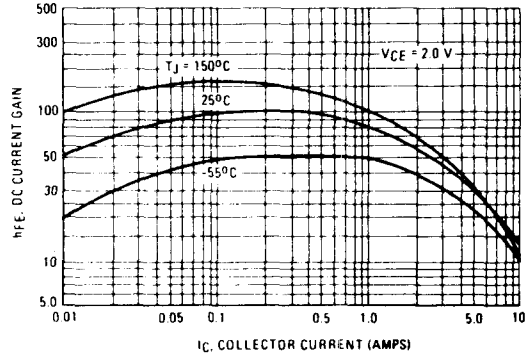
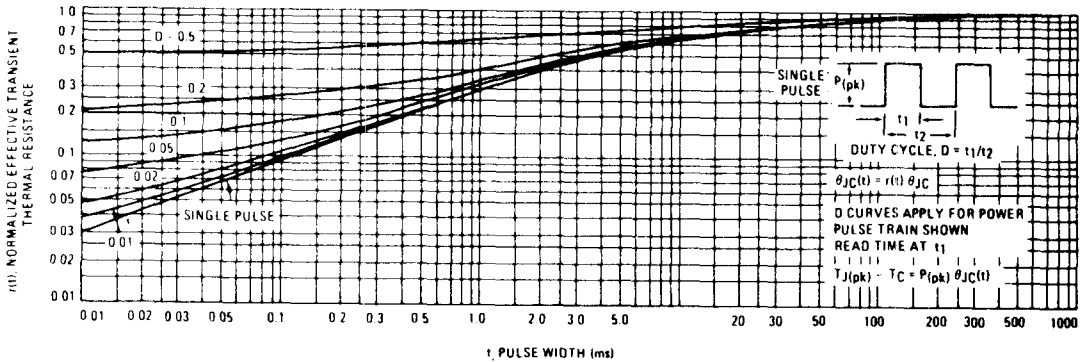


FIGURE 5 - THERMAL RESPONSE



Note 1:

There are two limitations on the power handling ability of a transistor; average junction temperature and second breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation, i.e., the transistor must not be subjected to greater dissipation than the curves indicate.

The data of Figure 1 is based on $T_{J(pk)} = 150^\circ\text{C}$; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \leq 150^\circ\text{C}$. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown. (See AN-415)