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BUS12A	BUX47A		3-499
BUS13	BUX48		3-506
BUS13A	BUX48A		3-506
BUS14	BUX98		—
BUS14A	BUX98A		—
BUS46P		MJE16002	3-976
BUS47	BUX47		3-499
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BUS47AP	BUV47A		3-462
BUS47P	BUV47		3-462
BUS48	BUX48		3-506
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BUS52		BUS51	3-384
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Industry Part Number	Motorola Direct Replacement	Motorola Similar Replacement	Page Number
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BUW24	BU326A		3-363
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BUW26	BUS326A		—
BUW34	BUX47		3-499
BUW35	BUX47		3-499
BUW36	BUX47A		3-499
BUW44	BUX48		3-506
BUW45	BUX48		3-506
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BUW74	BUX47		3-499
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BUW76	BUX47		3-499
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BUW81	MJ10014		3-600
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BUW84	MJE13003		3-938
BUW85	MJE13003		3-938
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BUX14CECCF	BUX14		—
BUX14CECCL	BUX14		—
BUX15	BUX47A		3-499
BUX15CECCF	BUX47A		3-499
BUX15CECCL	BUX47A		3-499
BUX16	2N6543		3-215
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BUX16B	2N6543		3-215
BUX16C	2N6543		3-215
BUX17	BUX48		3-506
BUX17A	BUX48		3-506
BUX17B	BUX48		3-506
BUX17C	BUX48		3-506
BUX18	2N6545		3-221
BUX18A	2N6545		3-221
BUX18B	2N6545		3-221
BUX18C	2N6545		3-221
BUX39	BUX39		3-487
BUX40	BUX40		3-490
BUX41	BUX41		3-493
BUX41N		BUX41	3-493
BUX42		BUX13	3-484
BUX43		BUX13	3-484
BUX47	BUX47		3-499
BUX47A	BUX47A		3-499
BUX48	BUX48		3-506
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BUX66A	2N6212		3-161
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BUX67	2N3584		3-20
BUX67A	2N3584		3-20
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BUX81		MJ13335	3-700

*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 NPN	Device Type PNP	h_{FE} Min/Max	@ I_C Amp	Resistive Switching t_s µs Max	Resistive Switching t_f µs Max	Resistive Switching @ I_C Amp	f_T MHz Min	P_D (Case) Watts @ 25°C
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
	450	BU522B##		250 min	2.5				7.5	75
8	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
		TIP102##	TIP107##	1k/20k	3	1.5 typ	1.5 typ	3	4#	80
	120	BDX53D##	BDX54D##	750 min	3				4#	60
		MJE15028	MJE15029	20 min	4				30	50
	150	MJE15030	MJE15031	20 min	4				30	50
		BU807##		100 min	5	0.55 typ	0.2 typ	5		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
			MJE5850	15 min	2	2	0.5	4		80
	350	MJE5741##		200 min	4	8 typ	2 typ	6		80
			MJE5851	15 min	2	2	0.5	4		80
	400	MJE5742##		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
		MJE16080		5 min	8	2	0.5	5		80
		MJE16106		6/25	8	2 typ	0.1 typ	5		100
	450	MJE16081		5 min	8	2	0.5	5		80
10	30		D45H1	20 min	4					50
			D45H2	40 min	4					50
	40	D44E1##		1000 min	5	2 typ	0.5 typ	10		50
	45	BDX33##	BDX34##	750 min	4				3	70
		BD805	BD806	15 min	4				1.5	90
			D45H4	20 min	4					50
		D44H5	D45H5	40 min	4					50
	60	BDX33A##	BDX34A##	750 min	4				3	70
		BD807	BD808	15 min	4				1.5	90

$|h_{fe}|$ @ 1 MHz, ## Darlington

(continued)

TABLE 12 — POWER DARLINGTONS (continued)

I_C Cont Amps Max	$V_{CEO(sus)}$ Volts Min	Device Type NPN	Device Type PNP	h_{FE} Min/Max	@ I_C Amp	Resistive Switching t_s μs Max	Resistive Switching t_f μs Max	Resistive Switching @ I_C Amp	$\|h_{fe}\|$ @ 1 MHz Min	P_D (Case) Watts @ 25°C	Case JEDEC/MOT
8	80	MJ1001	MJ901	1k min	3					90	TO-204/1
		TIP101	TIP106	1k/20k	3	1.5 typ	1.5 typ	3	4	80	TO-220/221A
		2N6044	2N6041	1k/10k	4	1.5 typ	1.5 typ	3	4	75	TO-220/221A
		2N6301	2N6299	750k/18k	4	1.5 typ	1.5 typ	4	4	75	TO-213A/80
		2N6056	2N6054	750k/18k	4	1.5 typ	1.5 typ	4	4	100	TO-204A/1
		MJE6044	MJE6041	1k/20k	4	1.5 typ	1.5 typ	4	2	75	TO-225AB/90
	100	BDX53C	BDX54C	750 min	3				4	60	TO-220/221A
		BD901	BD902	750 min	3				1	70	TO-220/221A
		MJE6045		1k/20k	4	1.5 typ	1.5 typ	4	2	75	TO-225AB/90
		MJD122	MJD127	1k/12k	4	1.5 typ	2 typ	4	4	20	TO-252/369A-04
		MJF102	MJF107	3k min	3	1.5 typ	1.5 typ	3	4	35	—/221C-02
		TIP102	TIP107	1k/20k	3	1.5 typ	1.5 typ	3	4	80	TO-220/221A
		2N6045	2N6042	1k/10k	4	1.5 typ	1.5 typ	3	4	75	TO-220/221A
	120	BDX53D	BDX54D	750 min	3				4	60	TO-220/221A
	150	BU807•		100 min	5	0.55 typ	0.2 typ	5		60	TO-220/221A
	200	BU806•		100 min	5	0.55 typ	0.2 typ	5		60	TO-220/221A
	300	MJE5740		200/400	4	8 typ	2 typ	6		80	TO-220/221A
	350	MJE5741		200/400	4	8 typ	2 typ	6		80	TO-220/221A
	400	MJE5742		200/400	4	8 typ	2 typ	6		80	TO-220/221A
	500	BUT50P•		30 min	2	0.75 typ	0.1 typ	5		100	TO-218/340D
	1400*	MJ10011		20 min	4			1	4	80	TO-204/1
10	40	2N6383	2N6648	1k/20k	5				20	100	TO-204/1
		D44E1		1000 min	5	2 typ	0.5 typ	10		50	TO-220/221A
	45	BDX33	BDX34	750 min	4				3	70	TO-220/221A
	60	BDV65	BDV64	1k min	5					125	TO-218/340D
		BDX33A	BDX34A	750 min	4				3	70	TO-220/221A
		MJ3000	MJ2500	1k min	5					150	TO-204/1
		2N6387	2N6667	1k/20k	5				20	65	TO-220/221A
		2N6384		1k/20k	5				20	100	TO-204/1
		D44E2		1000 min	5	2 typ	0.5 typ	10		50	TO-220/221A
		TIP140	TIP145	500 min	10	2.5 typ	2.5 typ	5	4	125	TO-218/340
	80	2N6388	2N6668	1k/20k	5				20	65	TO-220/221A
		2N6385		1k/20k	5				20	100	TO-204/1
		BDV65A	BDV64A	1k min	5					125	TO-218/340D
		BDX33B	BDX34B	750 min	3				3	70	TO-220/221A
		D44E3		1000 min	5	2 typ	0.5 typ	10		50	TO-220/221A
		MJD44E3		1k min	5	2 typ	0.5 typ	10		20	TO-252/369A-04
		TIP141	TIP146	500 min	10	2.5 typ	2.5 typ	5	4	125	TO-218/340
	100	BDV65B	BDV64B	1k min	5					125	TO-218/340D
		BDX33C	BDX34C	750 min	3				3	70	TO-220/221A
		TIP142	TIP147	500 min	10	2.5 typ	2.5 typ	5	4	125	TO-218/340
	120	BDV65C	BDV64C	1k min	5					125	TO-218/340D
		BDX33D	BDX34D	750 min	3				3	70	TO-220/221A
	200	BU323P		150 min	6	15	15	6		125	TO-218/340D
	250	BU323AP		150 min	6	15	15	6		125	TO-218/340D
	350	BU323		150 min	6	7.5 typ	5.2 typ	6		175	TO-204/1
		MJ10002		30/300	5	2.5	1	5	10	150	TO-204/1
		MJ10006•		30/300	5	1.5	0.5	5	10	150	TO-204/1
	400	BU323A		150 min	6	7.5 typ	5.2 typ	6		175	TO-204/1
		MJH10012		100/2k	6	15	15	6		118	TO-218/340
		MJ10007•		30/300	5	1.5	0.5	5	10	150	TO-204/1

• Darlington with speed-up diode.

(continued)

MOTOROLA
SEMICONDUCTOR
TECHNICAL DATA

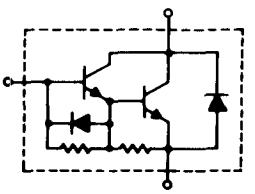
BU806
BU807

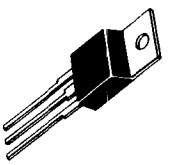
8.0 AMPERE
DARLINGTON
NPN POWER
TRANSISTORS
60 WATTS
150 and 200 VOLTS

NPN DARLINGTON POWER TRANSISTORS

These Darlington transistors are high voltage, high speed devices for horizontal deflection circuits in TV's and CRT's.

- High Voltage: V_{CEV} = 330 or 400 V
- Fast Switching Speed: t_c = 1.0 μs (max)
- Low Saturation Voltage: $V_{CE(sat)}$ = 1.5 V (max)
- Packaged in JEDEC TO-220AB
- Damper Diode V_F is specified. V_F = 2.0 V (max)



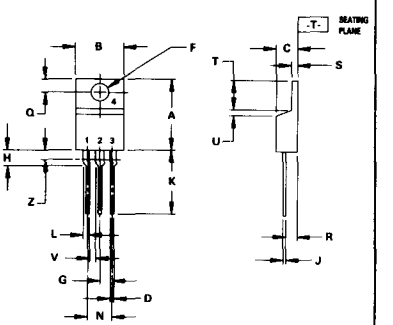


MAXIMUM RATINGS

Rating	Symbol	BU806	BU807	Unit
Collector-Emitter Voltage	V_{CEO}	200	150	Vdc
Collector-Emitter Voltage	V_{CEV}	400	330	Vdc
Collector-Base Voltage	V_{CBO}	400	330	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Collector Current — Continuous — Peak	I_C	8.0 15		Adc
Emitter-Collector Diode Current	I_F	10		Adc
Base Current	I_B	2.0		Adc
Total Device Dissipation, T_C = 25°C Derate above T_C = 25°C	P_D	60 0.48		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to 150		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	2.08	°C/W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	70	°C/W
Lead Temperature for Soldering Purposes, 1/8" from Case for 5.0 Seconds	T_L	275	°C



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 MIN	MILLIMETERS MAX	INCHES MIN	INCHES MAX
A	14.48	15.75	0.570	0.620
B	9.66	10.28	0.380	0.405
C	4.07	4.82	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	2.80	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	2.79	0.080	0.110
S	1.15	1.39	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

3

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage (1) (I_C = 100 mAdc, I_B = 0)	BU806 BU807	$V_{CEO(sus)}$	200 150	— —	— —	Vdc
Collector Cutoff Current (V_{CE} = Rated V_{CBO}, V_{BE} = 0)		I_{CES}	—	—	100	μAdc
Collector Cutoff Current (V_{CE} = Rated V_{CEV}, $V_{BE(off)}$ = 6.0 Vdc)		I_{CEV}	—	—	100	μAdc
Emitter Cutoff Current (V_{EB} = 6.0 Vdc, I_C = 0)		I_{EBO}	—	—	3.0	mAdc
ON CHARACTERISTICS (1)						
Collector-Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 50 mAdc)		$V_{CE(sat)}$	—	—	1.5	Vdc
Base-Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 50 mAdc)		$V_{BE(sat)}$	—	—	2.4	Vdc
Emitter-Collector Diode Forward Voltage (I_F = 4.0 Adc)		V_F	—	—	2.0	Vdc
SWITCHING CHARACTERISTICS						
Turn-On Time	(Resistive Load, V_{CC} = 100 Vdc, I_C = 5.0 Adc, I_{B1} = 50 mAdc, I_{B2} = 500 mAdc)	t_{on}	—	0.35	—	μs
Storage Time		t_s	—	0.55	—	μs
Fall Time		t_f	—	0.20	—	μs
Crossover Time (I_C = 5.0 Adc, I_{B1} = 50 mAdc, $V_{BE(off)}$ = 4.0 Vdc, V_{clamp} = 200 Vdc, L = 500 μH)		t_c	—	0.40	1.0	μs

(1) Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 1%

3

FIGURE 1 — DC CURRENT GAIN

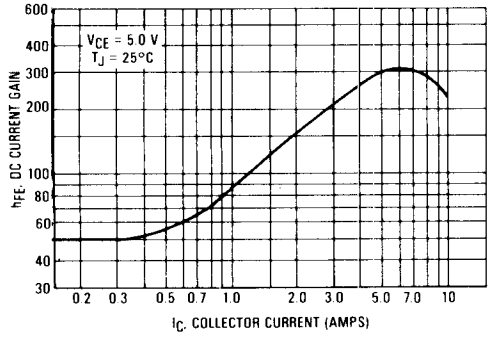


FIGURE 2 — SAFE OPERATING AREA (FBSOA)