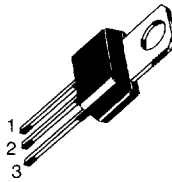


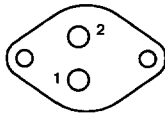
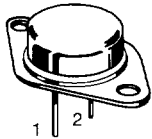
STYLE 1:  
 PIN 1. EMITTER  
 2. BASE  
 3. COLLECTOR



(COLLECTOR CONNECTED TO TAB)

I <sub>C</sub> Cont Amps Max	V <sub>CEO</sub> (sus) Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
		0.5	300			MPSU10	MPSU60	30 min		
0.8	40	MPSU02	MPSU52	30 min	0.5				100	10
1	120	MPSU03		40 min	0.01				35	10
	180	MPSU04		40 min	0.01				35	10
2	30	MPSU01	MPSU51	50 min	1				50	10
	40	MPSU01A	MPSU51A	50 min	1				50	10
		MPSU45##	MPSU95##	4k min	1				10	
	60	MPSU05	MPSU55	60 min	0.25				50	10
	80	MPSU06	MPSU56	60 min	0.25				50	10
100	MPSU07	MPSU57	30 min	0.25				50	10	

## Darlington



STYLE 1:  
 PIN 1. BASE  
 2. EMITTER  
 CASE 3. COLLECTOR

CASE 1-07 — 40 mil pins (TO-204AA)

CASE 197A-03 — 60 mil pins (TO-204AE) (Used for high current types at end of table. See types w/dots.)

I <sub>C</sub> Cont Amps Max	V <sub>CEO</sub> (sus) Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
		4	200			MJ15018	MJ15019	30 min		
	250	MJ15020	MJ15021	30 min	1.0				20	150
5	450	MJ16002		5 min	5	3	0.3	3		125
	500	MJ16002A		5 min	5	3	0.3	3		125
	700	MJ8502		7.5 min	1	4	2	2.5		150

Device Numbers in **Bold** type are preferred

**TABLE 11 – METAL TO-204, TO-204AE (continued)**

I <sub>C</sub> Cont Amps Max	V <sub>CEO(sus)</sub> Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
5	800	MJ8503		7.5 min	1	4	2	2.5		150
	700*	<b>BU208A</b>		2.5 min	4.5	8 typ	0.4 typ	4.5	4 typ	90
	750*	<b>MJ12004</b>		2.5 min	4.5		1	4.5	4	100
6	100	<b>2N5758</b>		25/100	3	0.7 typ	0.5 typ	3	1	150
8	60	MJ1000##	MJ900##	1k min	3					90
		2N6055##	2N6053##	750/18k	4	1.5 typ	1.5 typ	4	4#	100
	80	<b>MJ1001##</b>	<b>MJ901##</b>	1k min	3					90
		<b>2N6056##</b>	<b>2N6054##</b>	750/18k	4	1.5 typ	1.5 typ	4	4#	100
	380	<b>MJ6308 ★</b>		5/20	8	2.3**	0.12**	5		125
	400		<b>MJ6503</b>	15 min	2	2	0.5	4		125
	450	<b>MJ16006</b>		5 min	8	2.5	0.25	5		150
	<b>MJ16008</b>		7 min	8	2.2	0.25	5		150	
	500	MJ16006A		5 min	8	3	0.4	5		150
	750*	<b>MJ12005</b>		5 min	5		1	5		100
10	40	2N6383##	2N6648##	1k/20k	5				20#	100
	60	2N3715	2N3791	30 min	3	0.3 typ	0.4 typ	5	4	150
		2N5877	2N5875	20/100	4	1	0.8	4	4	150
		MJ3000##	MJ2500##	1k min	5					150
	80	<b>2N3716</b> [C]	<b>2N3792</b> [C]	30 min	3	0.3 typ	0.4 typ	5	4	150
		<b>2N5878</b>	<b>2N5876</b>	20/100	4	1	0.8	4	4	150
<b>MJ3001##</b>		<b>MJ2501##</b>	1k min	5					150	
140	<b>2N3442</b>		20/70	4					117	

# I<sub>hfe</sub>l @ MHz, ## Darlington

(continued)

\*\* Inductive Switching

† D Suffix on this device signifies internal C-E Diode

★ New Product

[C] Available as preferred chip

\* V<sub>CES</sub> = 1500 V

Device Numbers in **Bold** type are preferred

**TABLE 11 – METAL TO-204, TO-204AE (continued)**

I <sub>C</sub> Cont Amps Max	V <sub>CEO(sus)</sub> Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
10	200	MJ410		30/90	1				2.5	100
	250	MJ15011	MJ15012	20/100	2					200
	300	MJ3041##		250 min	2.5					175
	325	MJ413 MJ423		20/80 30/90	0.5 1				2.5 2.5	125 125
	350	MJ13014 MJ10006##		8/20 30/300	5 5	2 1.5	0.5 0.5	5 5		150 150
	400	BU323A## MJ10007## MJ10012## MJ13015		150 min 30/300 100/2k 8/20	6 5 6 5	7.5 typ 1.5 15 2	5.2 typ 0.5 15 0.5	6 5 6 5		175 150 175 150
	600	MJ10014##		10/250	10	2.5	0.8	10		175
	800	MJ8505 MJ16018		7.5 min 4 min	1.5 5	4 4.5 typ	2 0.2 typ	5 5		175 150
	12	60	2N6057##	2N6050##	750/18k	6	1.6 typ	1.5 typ	6	4#
80		2N6058##	2N6051##	750/18k	6	1.6 typ	1.5 typ	6	4#	150
100		2N6059## [C]	2N6052## [C]	750/18k	6	1.6 typ	1.5 typ	6	4#	150
15	60	2N3055 [C] 2N3055A 2N6576## 2N5881	MJ2955 [C] MJ2955A 2N5879	20/70 20/70 2k/20k 20/100	4 4 4 6	0.7 typ 0.7 typ 2 1	0.3 typ 0.3 typ 7 0.8	4 4 10 6	2.5 0.8 10-200# 4	115 115 120 160
	80	2N5882 [C]	2N5880 [C]	20/100	6	1	0.8	6	4	160
	90	2N6577##		2k/20k	4	2	7	10	10-200#	120
	120	MJ15015 [C] 2N6578##	MJ15016	20/70 2k/20k	4 4	0.7 typ 2	0.3 typ 7	4 10	1 10-200#	180 120
	140	MJ15001	MJ15002	25/150	4				2	200
	150	MJ11018##	MJ11017##	100 min	15				3#	175
	200	BUX41 MJ11020##		8 min 100 min	8 15	1.5	0.4	8	8 3#	120 175
	250	MJ11022## [C]	MJ11019## [C]	100 min	15				3#	175
	300	2N6546	MJ11021##	6/30	10	4	0.7	10	6 to 24	175
	350	2N6251		6/50	10	3.5	1	10	2.5	175

# h<sub>FE</sub> @ MHz. ## Darlington

(continued)

[C] Available as preferred chip.

Device Numbers in **Bold** type are preferred

**TABLE 11 – METAL TO-204, TO-204AE (continued)**

I <sub>C</sub> Cont Amps Max	V <sub>CEO(sus)</sub> Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
15	400	<b>BUX48</b>		8 min	10	2	0.4	10	6 to 24	175
		<b>2N6547</b>		6/30	10	4	0.7	10		175
		<b>MJ16110</b>		6/20	15	0.8 typ	0.1 typ	10		175
	450	<b>BUX48A</b>		8 min	8	2	0.4	10	10	175
		<b>MJ16010</b>		5 min	15	1.2 typ	0.2 typ	10		175
		<b>MJ16012</b>		7 min	15	0.9 typ	0.15 typ	10		175
		<b>2N6836</b>		10/30	10	3	0.35	10		175
	500	<b>MJ16010A</b>		5 min	15	3	0.4	10		175
	16	120	<b>2N5630</b>	<b>2N6030</b>	20/80	8	1.2 typ	1.2 typ	8	1
140		<b>2N3773</b> [C]	<b>2N6609</b>	15/60	8	1.1 typ	1.5 typ	8	4	150
		<b>2N5631</b>	<b>2N6031</b> [C]	15/60	8	1.2 typ	1.2 typ	8	1	200
200		<b>MJ15022</b>	<b>MJ15023</b>	15/60	8				5	250
250	<b>MJ15024</b>	<b>MJ15025</b>	15/60	8				5	250	
18	160	<b>BUX41N</b>		8 min	12	1.2	0.25	12	8	120
20	60	<b>2N3772</b>		15/60	10				2	150
		<b>2N6282##</b>	<b>2N6285##</b>	750/18k	10	2.5 typ	2.5 typ	10	4#	160
	75	<b>2N5039</b>		20/100	10	1.5	0.5	10	60	140
	80	<b>2N5303</b>	<b>2N5745</b>	15/60	10	2	1	10	2	200
		<b>2N6283##</b>	<b>2N6286##</b>	750/18k	10	2.5 typ	2.5 typ	10	4#	160
	90	<b>2N5038</b> [C]		20/100	12	1.5	0.5	12	60	140
	100	<b>2N6284##</b> [C]	<b>2N6287##</b> [C]	750/18k	10	2.5 typ	2.5 typ	10	4#	160
	125	<b>BUX40</b>		8 min	15	1	0.25	15	8	120
	140	<b>MJ15003</b> [C]	<b>MJ15004</b> [C]	25/150	5				2	250
	160	<b>BUX11</b>		10 min	15	1.2	0.25	15	8	150
200	<b>BUV11</b>		10 min	12	1.8	0.4	12	8	150	
350	<b>MJ10000##</b>		40/400	10	3	1.8	10	10#	175	
	<b>MJ10004##</b>		40/400	10	1.5	0.5	10	10#	175	

# I<sub>hfe</sub> @ MHz, ## Darlington

(continued)

[C] Available as preferred chip

Device Numbers in **Bold** type are preferred

**TABLE 11 – METAL TO–204, TO–204AE (continued)**

I <sub>C</sub> Cont Amps Max	V <sub>CEO(sus)</sub> Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
20	400	MJ10001##		40/400	10	3	1.8	10	10#	175
		MJ10005##		40/400	10	1.5	0.5	10	10#	175
		MJ13333		10/60	5	4	0.7	10		175
	450	MJ10008##		30/300	10	2	0.6	10	8#	175
		MJ16014		5 min	20	2.7	0.35	20		250
		MJ16016		7 min	20	2.2	0.25	20		250
		2N6837		10/30	15	2.5	0.25	15		250
	500	MJ10009##		30/300	10	2	0.6	10	8#	175
		MJ13335		10/60	5	4	0.7	10		175
	750	MJ10024##		50/600	20	5	1.8	10		250
850	MJ10025##		50/600	20	5	1.8	10		250	
25	60	2N5885	2N5883	20/100	10	1	0.8	10	4	200
	80	2N5886 $\square$	2N5884 $\square$	20/100	10	1	0.8	10	4	200
			2N6436	30/120	10	1	0.25	10	40	200
	100	2N6338	2N6437	30/120	10	1	0.25	10	40	200
	120	2N6339 $\square$	2N6438 $\square$	30/120	10	1	0.25	10	40	200
	125	BUV10		10 min	20	1.2	0.25	20	8	150
	140	2N6340		30/120	10	1	0.25	10	40	200
150	2N6341		30/120	10	1	0.25	10	40	200	
28	400	BUT13##		20 min	20	2.6	0.8	18		175
30	40	2N3771		15/60	15				2	150
		2N5301	2N4398	15/60	15	2	1	10	2	200
	60	2N5302	2N4399	15/60	15	2	1	10	2	200
		MJ11012##	MJ11011##	1k min	20				4#	200
	90	BUX39		8 min	20	1	0.25	20	8	120
		MJ11014##	MJ11013##	1k min	20				4#	200
	100	2N6328		6/30	30				3	200
		MJ802	MJ4502	25/100	7.5				2	200
120	MJ11016## $\square$	MJ11015## $\square$	1k min	20				4#	200	
325	BUV23•		8 min	16	1.8	0.4	16	8	250	
400	BUS98•		8 min	20	2.3	0.4	20		250	
	BUX98•				3	0.8	20		250	
450	BUS98A•		8 min	16	2.3	0.4	16		250	
	BUX98A•				3	0.8	16		250	
	MJ16020•		5 min	30	1.8	0.2	20		250	
	MJ16022•		7 min	30	1.5	0.15	20		250	

# |h<sub>FE</sub>| @ MHz. ## Darlington

• Case 197A-03 (TO-204AE)

$\square$  Available as preferred chip

Device Numbers in **Bold** type are preferred

(continued)

**TABLE 11 – METAL TO-204, TO-204AE (continued)**

I <sub>C</sub> Cont Amps Max	V <sub>CEO(sus)</sub> Volts Min	Device Type		h <sub>FE</sub> Min/Max	@ I <sub>C</sub> Amp	Resistive Switching			f <sub>T</sub> MHz Min	P <sub>D</sub> (Case) Watts @ 25°C
		NPN	PNP			t <sub>s</sub> μs Max	t <sub>f</sub> μs Max	@ I <sub>C</sub> Amp		
		40	200			BUV21•		10 min		
	250	BUS52•		15 min	40					350
		BUV22•		10 min	20	1.1	0.35	20	8	250
	350	MJ10022•##		50/600	10	2.5	0.9	20		250
	400	MJ10023•##		50/600	10	2.5	0.9	20		250
	700	BUT35•##		15 min	24	4	1.2	24		250
50	60	2N5685•	2N5683•	15/60	25	0.5 typ	0.3 typ	25	2	300
		MJ11028•##	MJ11029•##	400 min	50					300
	80	2N5686• [C]	2N5684• [C]	15/60	25	0.5 typ	0.3 typ	25	2	300
			2N6377•	30/120	20	0.8	0.25	20	30	250
	90	MJ11030•##	MJ11031•##	400 min	50					300
	100	2N6274•	2N6378•	30/120	20	0.8	0.25	20	30	250
	120	2N6275•	2N6379•	30/120	20	0.8	0.25	20	30	250
		MJ11032•##	MJ11033•##	400 min	50					300
	125	BUV20•		10 min	50	1.2	0.25	50	8	250
		BUV60•		10 min	80	1.1	0.25	80		250
150	2N6277•		30/120	20	0.8	0.25	20	30	250	
200	BUS51•		15 min	50					350	
400	MJ10015•##		10 min	40	2.5	1	20		250	
500	BUT34•##		15 min	32	3	1.5	32		250	
	MJ10016•##		10 min	40	2.5	1	20		250	
56	400	BUT33•##		20 min	36	3.3	1.6	36		250
60	60	MJ14000•	MJ14001•	15/100	50					300
	80	MJ14002•	MJ14003•	15/100	50					300
	200	MJ10020•##		75 min	15	3.5	0.5	30		250
	250	MJ10021•## [C]		75 min	15	3.5	0.5	30		250
70	125	BUS50•		15 min	50					350
80	100	BUV18A•		10 min	80	1.1	0.25	80		250

# |h<sub>FE</sub>| @ MHz, ## Darlington

• Case 197A-03 (TO-204AE)

[C] Available as preferred chip

Device Numbers in **Bold** type are preferred