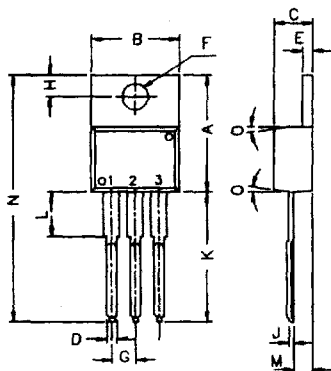
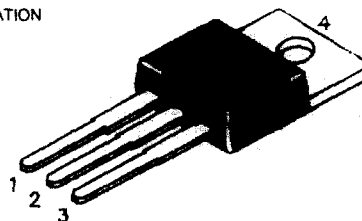


PIN CONFIGURATION

- 1. BASE
- 2. COLLECTOR
- 3. EMITTER
- 4. COLLECTOR



ALL DIMENSIONS ARE IN M.M.

DIM	MIN	MAX
A	14,42	16,51
B	9,63	10,67
C	3,56	4,83
D	—	0,90
E	1,15	1,40
F	3,75	3,88
G	2,29	2,79
H	2,54	3,43
J	—	0,56
K	12,70	14,73
L	—	6,35
M	2,03	2,92
N	—	31,24
O	7	DEG

### TO-220 Power Package Transistors (NPN)

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)													
Type No.	V <sub>CE0</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	P <sub>D</sub> (W) @Tc=25°C	I <sub>C</sub> (A)	I <sub>CBO</sub> (μA) Max	V <sub>CB</sub> (V) @ (V)	I <sub>CE(S)</sub> (μA) Max	V <sub>CE</sub> (V) @ (V)	h <sub>FE</sub>	β	I <sub>C</sub> & V <sub>CE</sub> (A) (A) (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min Max	I <sub>C</sub> (A)	C <sub>ob</sub> (pF) Max Typ	f <sub>t</sub> (MHz) Min Typ	β	I <sub>C</sub> (mA)
2N5294	80	70	7	36	4			*#500	50	30	120	0.5 4	1		0.5		0.8		200
2N5296	60	40	5	36	4			*#500	50	30	120	1 4	1		1		0.8		200
2N5298	80	60	5	36	4			*#500	50	20	80	1.5 4	1		1.5		0.8		200
2N6101	80	70	8	75	10			*2000	75	20	80	5 4 10 4	2.5		10				
2N6121	45	45	5	40	4	100	45	*100	45	25	100	1.5 2 10 4	0.6 1.4		1.5 4		2.5		1000
2N6122	60	60	5	40	4	100	60	*100	60	25	100	1.5 2 10 4	0.6 1.4		1.5 4		2.5		1000
2N6123	80	80	5	40	4	100	80	*100	80	20	80	1.5 2 7 4	0.6 1.4		1.5 4		2.5		1000
2N6288	40	30	5	40	7			*1000	40	30	150	3 4 2.3 7	1 3.5		3 7	250	4		500
2N6290	60	50	5	40	7			*100	60	30	150	2.5 4 2.3 7	1 3.5		2.5 7	250	4		500
2N6292	80	70	5	40	7			*100	75	30	150	2 4 2.3 7	1 3.5		2 7	250	4		500
2N6486	50	40	5	75	15			*500	45	20	150	5 4 5 15	1.3 3.5		5 15		5		1000
2N6487	70	60	5	75	15			*500	65	20	150	5 4 5 15	1.3 3.5		5 15		5		1000
2N6488	90	80	5	75	15			*500	85	20	150	5 4 5 15	1.3 3.5		5 15		5		1000

\* NOTE : I<sub>CEX</sub>  
#\* NOTE : I<sub>CER</sub>

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)															
Type No.	V <sub>CEO</sub> (V)	V <sub>CEQ</sub> (V)	V <sub>EBO</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CBO</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	@	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>i</sub> (MHz)	@	I <sub>C</sub> (mA)	
	Min	Min	Min	@Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max			Max	Min	Max	Max	Typ	Min	Typ	Max
2N6740	**650	400	8	100	8			* 100	650	10	40	5	3	1	1.6	5	300	15	60	200	
														2		8					
BD201	60	45	5	60	8			**200	30	30		3	2	1		3		7		300	
														1.5	2.0	6					
BD203	60	60	5	60	8			**200	30	30		2	2	1		3		7		300	
														1.5	2.0	6					
BD239	55	45	5	30	2			200	45	40		0.2	4	0.7		1		3		200	
										15		1	4								
BD239A	70	60	5	30	2			200	60	40		0.2	4	0.7		1		3		200	
										15		1	4								
BD239B	90	80	5	30	2			200	80	40		0.2	4	0.7		1		3		200	
										15		1	4								
BD239C	115	100	5	30	2			200	100	40		0.2	4	0.7		1		3		200	
										15		1	4								
BD241	## 55	45	5	40	3			200	45	25		1	4	1.2		3		3		500	
										10		3	4								
BD241A	## 70	60	5	40	3			200	60	25		1	4	1.2		3		3		500	
										10		3	4								
BD241B	## 90	80	5	40	3			200	80	25		1	4	1.2		3		3		500	
										10		3	4								
BD241C	##115	100	5	40	3			200	100	25		1	4	1.2		3		3		500	
										10		3	4								
BD243	45	45	5	65	6			400	45	30		0.3	4	1.5		6		3		500	
										15		3	4								
BD243A	60	60	5	65	6			400	60	30		0.3	4	1.5		6		3		500	
										15		3	4								
BD243B	80	80	5	65	6			400	80	30		0.3	4	1.5		6		3		500	
										15		3	4								
BD243C	100	100	5	65	6			400	100	30		0.3	4	1.5		6		3		500	
										15		3	4								
BD533	45	45	5	50	8	100	45	100	45	20		0.01	5	0.8		2		3		500	
										40		0.5	2								
										25		2	2								
BD533J	45	45	5	50	8	100	45	100	45	20		0.01	5	0.8		2		3		500	
										40		0.5	2								
										30	75	2	2								
										15		3	2								
BD533K	45	45	5	50	8	100	45	100	45	20		0.01	5	0.8		2		3		500	
										40		0.5	2								
										40	100	2	2								
										20		3	2								
BD535	60	60	5	50	8	100	60	100	60	20		0.01	5	0.8		2		3		500	
										40		0.5	2								
										25		2	2								
BD535J	60	60	5	50	8	100	60	100	60	20		0.01	5	0.8		2		3		500	
										40		0.5	2								
										30	75	2	2								
										15		3	2								

## NOTE : V<sub>CES</sub>  
 \* I<sub>CEV</sub>  
 \*\* V<sub>CEV</sub>  
 \$\$ I<sub>CEO</sub>

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)												
Type No.	V <sub>CEO</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EB0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Max	Max	Max	Min	Max	Max	Typ	Min
BD535K	60	60	5	50	8	100	60	100	60	20 40 40 20	0.01 0.5 2 3	5 2 2 2	0.8		2		3	500
BD537	80	80	5	50	8	100	80	100	80	15 40 15	0.01 0.5 2	5 2 2	0.8		2		3	500
BD537J	80	80	5	50	8	100	80	100	80	15 40 30 15	0.01 0.5 2 3	5 2 2 2	0.8		2		3	500
BD537K	80	80	5	50	8	100	80	100	80	15 40 40 20	0.01 0.5 2 3	5 2 2 2	0.8		2		3	500
BD905	45	45	5	90	15	500	45	**1000	30	40 15 5	250 150 10	0.5 5 4	4 4 4	1 3		5 2.5 10	3	500
BD907	60	60	5	90	15	500	60	**1000	30	40 15 5	250 150 10	0.5 5 4	4 4 4	1 3		5 2.5 10	3	500
BD909	80	80	5	90	15	500	90	**1000	80	40 15 5	250 150 10	0.5 5 4	4 4 4	1 3		5 2.5 10	3	500
BD911	100	100	5	90	15	500	100	**1000	50	40 15 5	250 150 10	0.5 5 4	4 4 4	1 3		5 2.5 10	3	500
BD949	60	60	5	40	5	50	60			40 20	0.5 2	4 4	1		2		3	500
BD951	80	80	5	40	5	50	80			40 20	0.5 2	4 4	1		2		3	500
BD953	100	100	5	40	5	50	100			40 20	0.5 2	4 4	1		2		3	500
BD955	120	120	5	40	5	50	120			40 20	0.5 2	4 4	1		2		3	500
BDX33	45	45	5	70	10	1000	45	**500	23	750	4	3	2.5		4	200	3	1000
BDX33A	60	60	5	70	10	1000	60	**500	30	750	4	3	2.5		4	200	3	1000
BDX33B	80	80	5	70	10	1000	80	**500	40	750	3	3	2.5		3	200	3	1000
BDX33C	100	100	5	70	10	1000	100	**500	50	750	3	3	2.5		3	200	3	1000
BDX53	45	45	5	60	8	200	45			750	3	3	2		2.5	3	300	
BDX53A	60	60	5	60	8	200	60			750	3	3	2		2.5	3	300	
BDX53B	80	80	5	60	8	200	80			750	3	3	2		2.5	3	300	
BDX53C	100	100	5	60	8	200	100			750	3	3	2		2.5	3	300	

\*\* I<sub>CEO</sub>

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)													
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EBO</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CB0</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	
	Min	Min	Min	@Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max		Max	Min	Max	Max	Typ	Min	Max
<b>BDX77</b>	100	80	5	60	8			<b>\$\$</b> 200	30	30	1	2	1		3			7	300
													1.5	2	6				
<b>BU407</b>	330	150	6	60	7			100	200				1	1.3	5	80		10	500
<b>BUX84</b>	<b>##</b> 800	400	5	40	2			200	800	30	0.1	5	1.5		0.3			20	200
													3	1.1	1				
<b>BUX84A</b>	<b>##</b> 800	400	5	40	2			200	800	30	0.1	5	0.8		0.3			20	200
													1	1.1	1				
<b>C44C8</b>	<b>##</b> 70	60	5	30	4			10	70	100	0.2	1	0.5		1	100		50	20
										20	2	1							
<b>C44C11</b>	<b>##</b> 90	80	5	30	4			10	90	100	0.2	1	0.5		1	100		50	20
										20	2	1							
<b>CD909</b>	100	90	5	90	15	500	100	<b>\$\$</b> 1000	40	60	0.5	4	1.0	1.5	5			3	500
										15	5	4	3.0	2.5	10				
										5	10	4							
<b>CD3968</b>	500	400	5	40	1			1000	500	30	0.3	10	1		1			10	200
										10	1	10							
<b>CSC1061</b>	50	50	4	25	3	100	20			35	0.1	4	1		2			8	500
										35	320	1	4						
<b>CSC1061A</b>	50	50	4	25	3	100	20			35	0.1	4	1		2			8	500
										35	70	1	4						
<b>CSC1061B</b>	50	50	4	25	3	100	20			35	0.1	4	1		2			8	500
										60	120	1	4						
<b>CSC1061C</b>	50	50	4	25	3	100	20			35	0.1	4	1		2			8	500
										100	200	1	4						
<b>CSC1061D</b>	50	50	4	25	3	100	20			35	0.1	4	1		2			8	500
										160	320	1	4						
<b>CSC1398</b>	70	50	5	15	2	1	40			30	0.1	5	1	1.5	2				
										50	220	1	5						
<b>CSC1398P</b>	70	50	5	15	2	1	40			30	0.1	5	1	1.5	2				
										50	100	1	5						
<b>CSC1398Q</b>	70	50	5	15	2	1	40			30	0.1	5	1	1.5	2				
										80	160	1	5						
<b>CSC1398R</b>	70	50	5	15	2	1	40			30	0.1	5	1	1.5	2				
										120	200	1	5						
<b>CSC2073</b>	150	150	5	25	1.5	10	120			40	0.5	10	1.5		0.5	35		4	500
<b>CSC2233</b>	200	60	5	40	4	10	170			30	1	5	1	1.5	4			8	500
										20	4	5							
<b>CSC2238</b>	160	160	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238A</b>	180	180	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238AO</b>	180	180	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238AY</b>	180	180	5	25	1.5	1	160			120	0.1	5	1.5		0.5	25		100	100
<b>CSC2238B</b>	200	200	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238BO</b>	200	200	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238BY</b>	200	200	5	25	1.5	1	160			120	0.1	5	1.5		0.5	25		100	100
<b>CSC2238O</b>	160	160	5	25	1.5	1	160			70	0.1	5	1.5		0.5	25		100	100
<b>CSC2238Y</b>	160	160	5	25	1.5	1	160			120	0.1	5	1.5		0.5	25		100	100

**##** V<sub>CES</sub>  
**\$\$** I<sub>CEO</sub>

# TO-220 Power Package Transistors (NPN)

**CDL**

Maximum Ratings					Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CB0</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EB0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CB0</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	β	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	β	I <sub>C</sub> (mA)	
	Min	Min	Min	@Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max	(A)	(V)	Max	Min	Max	Max	Typ	Min	Typ	Max
CSC2562	60	50	5	25	5	1	50			70	240	1	1	0.4	1.2	3	80	120		1000	
CSC2562O	60	50	5	25	5	1	50			30	140	3	1	0.4	1.2	3	80	120		1000	
CSC2562Y	60	50	5	25	5	1	50			120	240	3	1	0.4	1.2	3	80	120		1000	
CSC3039	500	400	7	50	7	10	400			15		0.8	5	1		1.5	4	80	20		800
CSC3968	400	400	7	20	2	10	400			8	50	4	5	1		1.5	1	30	10		500
CSC3968A	400	400	7	20	2	10	400			16	34	0.1	5	1		1.5	1	30	10		500
CSC3968B	400	400	7	20	2	10	400			25	50	0.1	5	1		1.5	1	30	10		500
CSD288	80	55	5	25	3	50	50			40	240	0.5	5	1							
CSD288O	80	55	5	25	3	50	50			70	140	0.5	5	1							
CSD288R	80	55	5	25	3	50	50			40	80	0.5	5	1							
CSD288Y	80	55	5	25	3	50	50	120	240	0.5	5	1	1								
CSD313	60	60	5	30	3	100	20			40		0.1	2	1			2		8		500
CSD313C	60	60	5	30	3	100	20			40	320	1	2	1			2		8		500
CSD313D	60	60	5	30	3	100	20			40		0.1	2	1			2		8		500
CSD313E	60	60	5	30	3	100	20			60	120	1	2	1			2		8		500
CSD313F	60	60	5	30	3	100	20			40		0.1	2	1			2		8		500
CSD362	150	70	8	40	5	20	100			160	320	1	2	1			2		8		500
CSD362N	150	70	8	40	5	20	100			20	140	5	5	1		1.5	5				
CSD362O	150	70	8	40	5	20	100			20	50	5	5	1		1.5	5		10		500
CSD362R	150	70	8	40	5	20	100			70	140	5	5	1		1.5	5		10		500
CSD363	300	120	8	40	6	1000	250			40	80	5	5	1		1.5	5		10		500
CSD363O	300	120	8	40	6	1000	250			40	240	1	5	1		1.5	1		10		500
CSD363R	300	120	8	40	6	1000	250			70	140	1	5	1		1.5	1		10		500
CSD363Y	300	120	8	40	6	1000	250			40	80	1	5	1		1.5	1		10		500
CSD401	200	150	5	25	2	50	150			120	240	1	5	1		1.5	1		10		500
CSD401G	200	150	5	25	2	50	150			40	400	0.4	10	1			0.5		5		400
CSD401O	200	150	5	25	2	50	150			200	400	0.4	10	1			0.5		5		400
CSD401R	200	150	5	25	2	50	150			70	140	0.4	10	1			0.5		5		400

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EBO</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	β	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	β	I <sub>C</sub> (mA)		
	Min	Min	Min	@Tc=25°C	(A)	Max	@ (V)	Max	@ (V)	Min	Max	(A)	(V)	Max	Min	Max	Max	Typ	Min	Typ	Max	
CSD401Y	200	150	5	25	2	50	150			120	240	0.4	10	1		0.5					5	400
CSD880	60	60	7	30	3	100	60			60	300	0.5	5	1		3	70				3	500
CSD880GR	60	60	7	30	3	100	60			150	300	0.5	5	1		3	70				3	500
CSD880O	60	60	7	30	3	100	60			60	120	0.5	5	1		3	70				3	500
CSD880Y	60	60	7	30	3	100	60			100	200	0.5	5	1		3	70				3	500
CSD1025	200	200	7	50	8	100	200			1500	30000	5	3	1.5	2	5						
CSD1133	70	50	5	40	4	1	50			35		0.1	4	1		2					7	500
										60	320	1	4									
CSD1133B	70	50	5	40	4	1	50			35		0.1	4	1		2					7	500
										60	120	1	4									
CSD1133C	70	50	5	40	4	1	50			35		0.1	4	1		2					7	500
										100	200	1	4									
CSD1133D	70	50	5	40	4	1	50			35		0.1	4	1		2					7	500
										160	320	1	4									
CSD1134	70	60	5	40	4	1	50			35		0.1	4	1		2					7	500
										60	320	1	4									
CSD1134B	70	60	5	40	4	1	50			35		0.1	4	1		2					7	500
										60	120	1	4									
CSD1134C	70	60	5	40	4	1	50			35		0.1	4	1		2					7	500
										100	200	1	4									
CSD1134D	70	60	5	40	4	1	50			35		0.1	4	1		2					7	500
										160	320	1	4									
CSD1163	300	120		40	7	5000	300			25		5	5	2	1.2	5						
CSD1163A	350	150		40	7	5000	350			25		5	5	1	1.2	5						
CSD2495	110	110	5	30	6	100	110			5000	30000	5	4	2.5	3	5	55				60	500
CSD24950/P	110	110	5	30	6	100	110			5000	20000	5	4	2.5	3	5	55				60	500
MJE3055T	70	60	5	75	10	1000	70			20	100	4	4	1.1		4					2	500
										5		10	4	8		10						
MJE15028	120	120	5	50	8	10	120	**100	120	40		0.1	2	0.5		1					30	500
										40		2	2									
										40		3	2									
										20		4	2									
MJE15030	150	150	5	50	8	10	150	**100	150	40		0.1	2	0.5		1					30	500
										40		2	2									
										40		3	2									
										20		4	2									
SJE1349	73	63	7	65	6	300	63	300	73	43		4	4	1.07		4					20	500
														3		10						
TIP29	40	40	5	30	1			200	40	40		0.2	4	0.7		1					3	200
										15		1	4									

\*\* I<sub>CEO</sub>

Maximum Ratings						Electrical Characteristics (T <sub>a</sub> =25°C, Unless Otherwise Specified)															
Type No.	V <sub>CEO</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EBO</sub> (V)	P <sub>d</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CE</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	β	I <sub>C</sub> (A)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	β	I <sub>C</sub> (mA)	
	Min	Min	Min	① T <sub>c</sub> =25°C		Max	②	Max	②	Min	Max			Max	Min	Max	Max	Typ	Min	Typ	Max
TIP29A	60	60	5	30	1			200	60	40		0.2	4	0.7		1			3		200
										15		1	4								
TIP29B	80	80	5	30	1			200	80	40		0.2	4	0.7		1			3		200
										15		1	4								
TIP29C	100	100	5	30	1			200	100	40		0.2	4	0.7		1			3		200
										15		1	4								
TIP31	40	40	5	40	3			200	40	10	50	3	4	1.2		3			3		500
										25		1	4								
TIP31A	60	60	5	40	3			200	60	10	50	3	4	1.2		3			3		500
										25		1	4								
TIP31B	80	80	5	40	3			200	80	10	50	3	4	1.2		3			3		500
										25		1	4								
TIP31C	100	100	5	40	3			200	100	10	50	3	4	1.2		3			3		500
										25		1	4								
TIP41	40	40	5	65	6			400	40	15	75	3	4	1.5		6			3		500
										30		0.3	4								
TIP41A	60	60	5	65	6			400	60	15	75	3	4	1.5		6			3		500
										30		0.3	4								
TIP41B	80	80	5	65	6			400	80	15	75	3	4	1.5		6			3		500
										30		0.3	4								
TIP41C	100	100	5	65	6			400	100	15	75	3	4	1.5		6			3		500
										30		0.3	4								
TIP47	350	250	5	40	1			1000	350	30	150	0.3	10	1		1			10		200
										10		1	10								
TIP48	400	300	5	40	1			1000	400	30	150	0.3	10	1		1			10		200
										10		1	10								
TIP49	450	350	5	40	1			1000	450	30	150	0.3	10	1		1			10		200
										10		1	10								
TIP50	500	400	5	40	1			1000	500	30	150	0.3	10	1		1			10		200
										10		1	10								
TIP100	60	60	5	80	8	50	60	**50	30	1000	20000	3	4	2		3	200				
										200		8	4	2.5		8					
TIP101	80	80	5	80	8	50	80	**50	40	1000	20000	3	4	2		3	200				
										200		8	4	2.5		8					
TIP102	100	100	5	80	8	50	100	**50	50	1000	20000	3	4	2		3	200				
										200		8	4	2.5		8					
TIP110	60	60	5	50	2	1000	30			1000		1	4	2.5		2					
										500		2	4								
TIP111	80	80	5	50	2	1000	40			1000		1	4	2.5		2					
										500		2	4								
TIP112	100	100	5	50	2	1000	50			1000		1	4	2.5		2					
										500		2	4								
TIP120	60	60	5	65	5	200	60			1000		0.5	3	2		3	200				
										1000		3	3	4		5					
TIP121	80	80	5	65	5	200	80			1000		3	3	2		3	200				
										1000		0.5	3	4		5					

\*\* I<sub>CEO</sub>



Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)															
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EBO</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CB0</sub> (μA)	V <sub>CB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	β	I <sub>C</sub> & V <sub>CE</sub> (A) (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (A)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	β	I <sub>C</sub> (mA)		
	Min	Min	Min	@ Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max		Max	Min	Max	Max	Typ	Min	Typ	Max	
TIP122	100	100	5	65	5	200	100			1000		3	3	2		3	200				
										1000		0.5	3	4		5					
TIP130	60	60	5	70	8	200	60	**500	30	500		1	4	2		4					
										1000	15000	4	4	3		6					
TIP131	80	80	5	70	8	200	80	**500	40	500		1	4	2		4					
										1000	15000	4	4	3		6					
TIP132	100	100	5	70	8	200	100	**500	50	500		1	4	2		4					
										1000	15000	4	4	3		6					

\*\* I<sub>CE0</sub>