



DIM	MIN	MAX
A	4,32	5,33
B	4,45	5,20
C	3,18	4,19
D	0,41	0,55
E	0,35	0,50
F	5 DEG	
G	1,14	1,40
H	1,14	1,53
K	12,70	-

ALL DIMENSIONS IN M.M.

Pin Configuration Available in TO-92

CDIL Code Style	Pin 1	Pin 2	Pin 3
TO-92	Collector	Base	Emitter
TO-92-1	Base	Collector	Emitter
TO-92-2	Base	Emitter	Collector
TO-92-3	Collector	Emitter	Base
TO-92-4	Emitter	Base	Collector

TO-92 Plastic Package Transistors (NPN)

Maximum Ratings					Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																								
Type No.	V <sub>CBO</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EBO</sub> (V) Min	P <sub>D</sub> (W) @Tc=25°C	I <sub>C</sub> (A) Max	I <sub>CBO</sub> (μA) Max	V <sub>CB</sub> (V) Max	I <sub>CES</sub> (μA) Max	V <sub>CE</sub> (V) Max	h <sub>FE</sub> @ Min	h <sub>FE</sub> @ Max	I <sub>C</sub> & V <sub>CE</sub> (mA) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>CE(SAT)</sub> (V) Min	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Typ	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Typ	f <sub>T</sub> (MHz) Max	I <sub>C</sub> (mA) Max	t <sub>on</sub> (ns) Max	N <sub>f</sub> (dB) Max	Q Freq (MHz) Max	C <sub>ie</sub> (pF) Max	CDIL Case Style		
2N2712	18	18	5	0.625	0.1	0.5	18			75	225	2	4.5				12		80		300	2							TO-92-1
2N2714	18	18	5	0.625	0.1	0.5	18			75	225	2	4.5	0.3	.6	1.2	50												TO-92-1
#2N2924	25	25	5	0.625	0.1	0.1	25			150	300	2	10				10												TO-92-1
2N3390	25	25	5	0.625	0.1	0.1	18			400	800	2	4.5				10												TO-92-1
2N3391A	25	25	5	0.625	0.1	0.1	18			250	500	2	4.5				10						5						TO-92-1
2N3395	25	25	5	0.625	0.1	0.1	18			150	500	2	4.5				10												TO-92-1
2N3396	25	25	5	0.625	0.1	0.1	18			90	500	2	4.5				10												TO-92-1
2N3397	25	25	5	0.625	0.1	0.1	18			55	500	2	4.5				10												TO-92-1
2N3398	25	25	5	0.625	0.1	0.1	18			55	800	2	4.5				10												TO-92-1
2N3414	25	25	5	0.6	0.5	0.1	25			75	225	2	4.5	0.3	.6	1.3	50												TO-92-1
2N3417	50	50	5	0.625	0.1	0.1	50			180	540	2	4.5	0.3	.6	1.3	50												TO-92-1
2N3564	30	15	4	0.625	0.05	0.05	15			20	200	15	10	0.3		0.97	20	3.5	400		1200	15							TO-92
2N3565	30	25	6	0.625	0.05	0.05	25			70 150		0.1 600	10 10	0.35		1		4	40		240	1							TO-92
2N3605		14		0.625	0.2	0.5	18			30		10	1	0.25		0.85	10	6	300			10	45						TO-92-1
2N3606		14		0.625	0.2	0.5	18			30		10	1	0.25		0.85	10	6	300			10	60						TO-92-1
2N3607		14		0.625	0.2	0.5	18			30		10	1	0.25		0.85	10	6	300			10	70						TO-92-1
2N3662	18	12	3	0.625	0.05	0.5	15			20		8	10				1.7	700			2100	5		6.5	60				TO-92-1
2N3663	30	12	3	0.625	0.05	0.5	15			20		8	10				1.7	700			2100	5		6.5	60				TO-92-1

# hFE values are hfe(min) and hfe(max) at 1.0 KHz.

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</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>CE0</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDL Case Style		
	Min	Min	Min	① Tc=25°C		Max	②	Max	Min	Max	Min	Max	Min	Max	Typ	Max	Min	Max	Max	Max	Max		
2N3683	45	45	4	0.625	0.5	0.05	35			40	160	10	10			3.5	200		10		4	TO-92	
2N3694	45	45	4	0.625	0.5	0.05	35			100	400	10	10			3.5	200		10		4	TO-92	
2N3704	50	30	5	0.625	0.6	0.1	20			100	300	50	2	0.6	100	12	100		50			TO-92-1	
2N3705	50	30	5	0.625	0.6	0.1	20			50	150	50	2	0.8	100	12	100		50			TO-92-1	
2N3708	30	30	6	0.625	0.25	0.1	20			45	660	1	5	1	10							TO-92-1	
2N3709		30		0.625	0.25	0.1	20			45	165	1	5	1	10							TO-92-1	
2N3710	30	30	6	0.625	0.25	0.1	20			90	330	1	5	1	10							TO-92-1	
#2N3721	18	18	5	0.625	0.1	0.5	18			60	660	2	10			12						TO-92-1	
2N3794	40	20	5	0.625	0.6	0.5	15			100	100	10	10	0.4	10	10	100		600	10		TO-92-1	
										100	600	10	10										
										35	1	10											
2N3825	30	15	4	0.625	0.1	0.1	15			20		2	10	0.25	2	3.5	200		800	2	5.5	1	TO-92-1
2N3827	60	45	4	0.625	0.5	0.1	30			100	400	10	10			3.5	200		800	10		TO-92-1	
2N3858	30	30	4	0.625	0.1	0.5	18			60	120	2	4.5			4	90		250	2		TO-92-1	
2N3858A	60	60	6	0.625	0.05	0.5	18			60	120	10	1			4	90		250	2		TO-92-1	
										45	1	1											
2N3859	30	30	4	0.625	0.1	0.5	18			100	200	2	4.5			4	90		250	2		TO-92-1	
2N3860	30	30	4	0.625	0.1	0.5	18			150	300	2	4.5			4	90		250	2		TO-92-1	
2N3877	70	70	4	0.625	0.05	0.5	70			20	250	2	4.5	0.5	0.9	10						TO-92-1	
2N3877A	85	85	4	0.625	0.05	0.5	70			20	250	2	4.5	0.5	0.9	10						TO-92-1	
2N3900	18	18	5	0.625	0.1	0.1	18			250	500	2	4.5				12					TO-92-1	
2N3900A	18	18	5	0.625	0.05	0.1	18			250	500	2	4.5				12				5	TO-92-1	
2N3901	18	18	5	0.625	0.05	0.1	15			350	700	2	4.5								5	TO-92-1	
2N3903	60	40	6	0.625	0.2			*0.05	30	20		0.1	1	0.2	0.65	0.85	10				6	TO-92	
										35	1	1		0.3		0.95	50						
										50	150	10	1										
										30	50	1											
										15	100	1											
2N3904	60	40	6	0.625	0.2			*0.05	30	40		0.1	1	0.2	0.65	0.85	10				5	TO-92	
										70	1	1		0.3		0.95	50						
										100	300	10	1										
										60	50	1											
										30	100	1											
2N4286	30	25	6	0.625	0.05	0.05	25	0.4	20	150	600	1	5	0.35	0.8	1	6	40		1		TO-92-1	
										100		0.1	5										
2N4287	45	45	7	0.625	0.05	0.01	30			150	600	1	5	0.35	0.8	1	6	40		1	5	TO-92-1	
										100		0.1	5										
2N4292	30	15	3	0.625	0.05	0.5	15			20		3	1	0.6		10	3.5	600		4	6	60	TO-92-1
2N4293	30	15	3	0.625	0.05	0.5	15			20		3	1	0.6		10	3.5	600		4	6	60	TO-92-1

# NOTE: HFE values are hfe(min) & hfe(max) at 1.00 kHz \* I<sub>CEX</sub>



Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																		
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>ES0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CBO</sub> (μA)	V <sub>CE</sub> (V)	I <sub>CEs</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>c</sub> (dB)	Freq (MHz)	C <sub>m</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Max	Max	Max	Max	Max	Typ	Max	Min	Typ	Max	Max	Max	Max	
2N4294	30	12	5	0.625	0.2	0.4	20			20	120	100	2	0.25	0.6	0.9	10	5	400	10	20			TO-92-1
2N4295	40	15	5	0.625	0.2	0.1	20			20	120	100	2	0.25	0.6	0.9	10	4	500	10	15			TO-92-1
2N4400	60	40	6	0.625	0.6			*0.1	35	20	500	2	0.4	0.75	0.95	150	6.5	200	20	255			TO-92	
										50	150	150	1	0.75	1.2	500								
										40	10	1	1											
										20	1	1	1											
2N4401	60	40	6	0.625	0.6			*0.1	35	40	500	2	0.4	0.75	0.95	150	6.5	250	20	255			TO-92	
										100	300	150	1	0.75	1.2	500								
										80	10	1	1											
										40	1	1	1											
										20	0.1	1	1											
2N4409	80	50	5	0.625	0.25	0.01	60			60	400	10	1	0.2	0.8	1	12	2	10	10			TO-92	
										60	1	1	1											
2N4424	40	40	5	0.625	0.1	0.1	25			180	540	2	4.5	0.3	0.6	1.3	50							TO-92-1
2N4944	80	40	5	0.625	0.6	0.05	40			40	120	150	1	0.25		150		60	900	50				TO-92
										40	30	1	1											
2N4946	80	40	5	0.625	0.6	0.05	40			100	300	150	1	0.25		150		60	900	50				TO-92
										100	30	1	1											
2N4951	60	30	5	0.625	0.6	0.05	40			60	200	150	10	0.3	1.3	150	8	250	20	400				TO-92-1
										40	10	10	10											
										20	1	10	10											
2N4952	60	30	5	0.625	0.6	0.05	40			100	300	150	10	0.3	1.3	150	8	250	20	400				TO-92-1
										75	10	10	10											
										50	1	10	10											
2N4953	60	30	5	0.625	0.6	0.05	40			200	600	150	10	0.3	1.3	150	8	250	20	400				TO-92-1
										150	10	10	10											
										75	1	10	10											
2N4954	40	30	5	0.625	0.6	0.05	30			60	600	150	10	0.3	1.3	150	8	250	20	400				TO-92-1
										40	10	10	10											
										20	1	10	10											
2N4966	50	40	6	0.625	0.05	0.025	25			40	200	0.01	5	0.4		10	6	40	1					TO-92
										50	10	5	5											
2N4967	50	40	6	0.625	0.05	0.025	25			100	600	0.01	5	0.4		10	6	40	1					TO-92
										120	10	5	5											
2N4968	30	25	6	0.625	0.05	0.05	25			40	200	0.01	5	0.4		10	6							TO-92
										50	10	5	5											
2N4969	60	30	5	0.6	0.5	0.01	50			20	500	10	10	0.4	1.3	150	8	250	20					TO-92
										20	150	1	1	1.6	2.6	500								
										40	120	150	10											
										35	10	10	10											
										25	1	10	10											
										20	120	0.1	10											
2N4970	50	30	5	0.6	0.5					100	350	150	10	0.4	0.6	1.2	150	8	200	20				TO-92
										70	10	10	10											
										50	350	150	1											
2N5030	30	12	4	0.625	0.2	0.25	20			30	10	1	1	0.25	0.72	0.87	10	4	400	10	30			TO-92-1

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

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EB0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CEB</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max	Max	Max
2N5088	35	30	5	0.625	0.05	0.05	20			300	10 5	0.5		10	4	50	1			3		TO-92
										350	1 5											
										300	900 0.1 5											
2N5127	20	12	3	0.625	0.05	0.05	10			15	300 2 10	0.3	1	10	3.5	150	2					TO-92
2N5128	15	12	3	0.6	0.5	0.05	10			35	350 50 10	0.25	1.1	150	10	200	800 50					TO-92
										20	10 10											
2N5129	15	12	3	0.6	0.5	0.05	10			35	350 50 10	0.25	1.1	150	10	200	800 50					TO-92
										20	10 10											
2N5130	30	12	1	0.625	0.05	0.05	10			15	250 8 10	0.6	1	10	1.7	450	8					TO-92
2N5131	20	15	3	0.625	0.1	0.05	10			35	500 10 1	1		10	6	100	10					TO-92
2N5132	20	20	3	0.625	0.1	0.05	10			30	400 10 10	2	0.9	10	3.5	200	10					TO-92
2N5133	20	18	3	0.625	0.05	0.05	15			60	1000 1 5	0.4		1	5							TO-92
2N5134	20	10	4	0.625	0.2	0.1	15			15	30 0.4	0.25	0.7	0.9 10	4	250	10	18				TO-92
										20	150 10 1											
2N5135	30	25	4	0.6	0.5	0.3	15			50	60 10 10	1	1	100	25	40	500 30					TO-92
										15	2 10											
2N5136	30	20	3	0.6	0.5	0.1	20			20	400 150 1	0.25	1.1	150	35	40	400 50					TO-92
										20	30 1											
2N5137	30	20	3	0.6	0.5	0.1	20			20	400 150 1	0.25	1.1	150	35	40	400 50					TO-92
										20	30 1											
2N5172	25	25	5	0.4	0.15	0.1	20			100	500 10 10	0.25		10	10							TO-92-1
2N5219	20	15	3	0.625	0.1	0.1	10			35	500 2 10	0.4	1	10	4	150	10					TO-92
2N5220	15	15	3	0.625	0.6	0.1	10			30	600 50 10	0.5	1.1	150	10	100	20					TO-92
										25	10 10											
2N5223	25	20	3	0.625	0.1	0.1	10			50	800 2 10	0.7	1.2	10	4	150	10					TO-92
2N5224	25	12	5	0.625	0.2	0.5	15			15	100 1 0.35	0.9		10	4	250	10					TO-92
										40	10 1											
2N5225	25	25	4	0.625	0.6	0.3	15			30	600 50 10	0.8	1	100	20	50	20					TO-92
										25	10 10											
2N5232		50		0.625	0.05	0.03	50			250	500 2 5	0.125		10	4							TO-92-1
2N5232A		50		0.625	0.05	0.03	50			250	500 2 5	0.125		10	4					5		TO-92-1
2N5449	50	30	5			0.1	20			100	300 100 2	0.6		100		5	50					TO-92-4
2N5550	160	140	6	0.5	0.6	0.1	100			20	50 5	0.15	1	10	6	100	300 10			10		TO-92
										60	250 10 5	0.25	1.2	50								
										60	1 5											
2N5551	180	160	6	0.5	0.6	0.05	120			30	50 5	0.15	1	10	6	100	300 10			8		TO-92
										80	250 10 5	0.2	1	50								
										80	1 5											
2N5772	40	15	5	0.625	0.3	0.5	20			15	300 1	0.2	0.75	0.95 30	5	350	30	28				TO-92
										25	100 0.5	0.28	0.75	1.2 100								
										30	120 30 0.4	0.5	0.75	1.7 300								

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																			
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</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>CE0</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>m</sub> (pF)	CDIL Case Style				
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Min	Max	Max	Max	Typ	Min	Typ	Max	Max	Max	Max	Max				
2N6515	250	250	6	0.625	0.5	0.05	150			35	1	10	0.3	0.75	10	6	40	200	10	3.5				TO-92		
											50	10	10	0.35	0.85										20	
											50	300	30	10	0.5										0.9	30
											45	220	50	10	1											50
											25		100	10												
2N6516	300	300	6	0.625	0.5	0.05	200			30	1	10	0.3	0.75	10	6	40	200	10	3.5				TO-92		
											45	10	10	0.35	0.85										20	
											45	270	30	10	0.5										0.9	30
											40	200	50	10	1											50
											20		100	10												
2N6517	350	350	6	0.625	0.5	0.05	250			20	1	10	0.3	0.75	10	6	40	200	10	3.5				TO-92		
											30	10	10	0.35	0.85										20	
											30	200	30	10	0.5										0.9	30
											20	200	50	10	1											50
											15		100	10												
BC168	30	20	5	0.3	0.1			0.015	30	120	800	2	5	0.6	1.05	100	3.5	6	150	250	10	10		TO-92-1		
											0.2	0.83	10													
BC168B	30	20	5	0.3	0.1			0.015	30	180	460	2	5	0.6	1.05	100	3.5	6	150	250	10	10		TO-92-1		
											0.2	0.83	10													
BC170	20	20	5	0.3	0.1	0.1	15			35	600	1	1	0.25	0.7	1	4		100	10			TO-92-4			
											0.4		30													
BC170A	20	20	5	0.3	0.1	0.1	15			35	100	1	1	0.25	0.7	1	4		100	10	10		TO-92-4			
											30	30	1	0.4		30										
BC170B	20	20	5	0.3	0.1	0.1	15			80	250	1	1	0.25	0.7	1	4		100	10	10		TO-92-4			
											60	30	1	0.4		30										
BC170C	20	20	5	0.3	0.1	0.1	15			200	600	1	1	0.25	0.7	1	4		100	10	10		TO-92-4			
											150	30	1	0.4		30										
BC172	30	25	6	0.35	0.1			0.015	35	120	800	2	5	0.25		10	4.5		150	10	10	100		TO-92-4		
											0.6		100													
BC172A	30	25	6	0.35	0.1			0.015	35	120	220	2	5	0.25		10	4.5		150	10	10	100		TO-92-4		
											0.6		100													
BC172C	30	25	6	0.35	0.1			0.015	35	380	800	2	5	0.25		10	4.5		150	10	10	100		TO-92-4		
											0.6		100													
BC174	80	65	6	0.35	0.1			0.015	70	120	450	2	5	0.25		10	4.5		150	10	10	100		TO-92-4		
											0.6		100													
BC174B	80	65	6	0.35	0.1			0.015	70	180	460	2	5	0.25		10	4.5		150	10	10	100		TO-92-4		
											0.6		100													
#BC182	60	50	6	0.35	0.1	0.015	50			40	0.01	5	0.6	1.2	100	5	150		10	10	0.001		TO-92-4			
											80	100	5	0.25		10										
											120	500	2	5												
#BC182A	60	50	6	0.35	0.1	0.015	50			40	0.01	5	0.25		10	5	150		10	10	0.001		TO-92-4			
											120	260	2	5	0.6	1.2	100									
											80	100	5													
#BC182B	60	50	6	0.35	0.1	0.015	50			40	0.01	5	0.25		10	5	150	200	10	4			TO-92-4			
											80	100	5	0.6	1.2	100										
											240	500	2	5												

# hFE values are hfe(min) & hfe(max) at 100 KHz.

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																		
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EB0</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>	β	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	β	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Q Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max	Max	Max	Max
#BC184	45	30	6	0.35	0.1	0.015	30			100		0.01 5	0.6	1.2	100	5	150		10		4	0.001		TO-92-4
										130		100 5	0.25		10									
										250	900	2 5												
#BC184B	45	30	6	0.35	0.1	0.015	30			100		0.01 5	0.6	1.2	100	5	150		10		4	0.001		TO-92-4
										130		100 5	0.25		10									
										240	500	2 5												
#BC184C	45	30	6	0.35	0.1	0.015	30			100		0.01 5	0.6	1.2	100	5	150		10		4	0.001		TO-92-4
										130		100 5	0.25		10									
										450	900	2 5												
#BC184L	45	30	6	0.350	0.1	0.015	30			100		0.01 5	0.25		10	5	150	280	0.5		4			TO-92-1
										240	900	2 5	0.6	1.2	100									
										130		100 5												
#BC184LB	45	30	6	0.35	0.1	0.015	30			100		0.01 5	0.25		10	5	150	280	0.5		4			TO-92-1
										240	500	2 5	0.6	1.2	100									
										130		100 5												
#BC184LC	45	30	6	0.35	0.1	0.015	30			100		0.01 5	0.25		10	5	150	280	0.5		4			TO-92-1
										450	900	2 5	0.6	1.2	100									
										130		100 5												
BC208B	25	20	5	0.2		0.015	20			200	450	2 5	0.25		10	6								TO-92-4
										40		0.01 5	0.6		100									
BC209C	25	20	5	0.2		0.015	20			420	800	2 5	0.25		10	6								TO-92-4
										100		0.01 5	0.6		100									
BC237	\$ 50	45	6	0.35	0.1			0.015	50	120	800	2 5	0.2	0.83	10	4.5	150	300	10		10	0.001		TO-92-4
													0.6	1.05	100									
BC237A	\$ 50	45	6	0.35	0.1			0.015	50	120	220	2 5	0.2	0.83	10	4.5	150	300	10		10	0.001		TO-92-4
													0.6	1.05	100									
BC237B	\$ 50	45	6	0.35	0.1			0.015	50	200	460	2 5	0.2	0.83	10	4.5	150	300	10		10	0.001		TO-92-4
													0.6	1.05	100									
BC238B	\$ 30	25	5	0.35	0.1			0.015	30	200	460	2 5	0.2	0.83	10	4.5	150	300	10		10	0.001		TO-92-4
													0.8	1.05	100									
BC317	50	45	6	0.35	0.15	0.03	20			110	450	2 5	0.6		100	4					6	0.001		TO-92
BC317A	50	45	6	0.35	0.15	0.03	20			110	220	2 5	0.6		100	4					6	0.001		TO-92
BC319	30	20	5	0.625	0.1	0.03	20			40		0.01 5	0.2	0.77	10	4					4			TO-92
										200	800	2 5	0.5		100									
										240	900	2 5												
BC320	50	45	6	0.625	0.15	0.03	20			110	450	2 5	0.5		100	3	4	250	10		6			TO-92
BC320A	50	45	6	0.625	0.15	0.03	20			110	220	2 5	0.5		100	3	4	250	10		6			TO-92
BC320B	50	45	5	0.625	0.15	0.03	20			40		0.01 5	0.5		100	3	4	250	10		6			TO-92
										200	450	2 5												
BC337	50	45	5	0.625	0.8	0.1	20	0.1	45	100	630	100 1	0.7		500	5	200	10						TO-92-4
										40		500 1												
BC337-16	50	45	5	0.625	0.8	0.1	20	0.1	45	100	250	100 1	0.7		500	5	200	10				35		TO-92-4
										40		500 1												
BC337-25	50	45	5	0.625	0.8	0.1	20			160	400	100 1	0.7		500	5	200	10						TO-92-4
										40		500 1												
BC337A	60	60	5	0.625	0.8	0.1	20			100	400	100 1	0.7		500	5	200	10				35		TO-92-4
										40		500 1												

\$ V<sub>CEs</sub>

# hFE values are hfe(min) & hfe(max) at 100 KHz.

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EB0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CE</sub> (V)	I <sub>CE0</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>off</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>ob</sub> (pF)	CDIL Case Style		
	Min	Min	Min	@Tc=25°C		Max		Max		Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max	Max		
BC338-25	30	25	5	0.625	0.8	0.1	20			160	400	100	1		5	200	10					TO-92-4	
BC368	25	20	5	0.8	1	10	25			50	5	10			27	65	10					TO-92-1	
BC413	45	30	5	0.35	0.1	0.015	30			180	800	2	5		2.5	250	10		2.5			TO-92-4	
BC414	50	45	5	0.35	0.1	0.015	30			180	800	2	5		2.5	250	10		2.5			TO-92-4	
BC414B	50	45	5	0.35	0.1	0.015	30			100	0.01	5			2.5	250	10		2.5			TO-92-4	
BC445	60	60	5	0.625	0.3	0.1	40			50	460	2	5		100	100	250	50				TO-92-4	
BC445A	60	60	5	0.625	0.3	0.1	40			120	220	2	5		100	100	50					TO-92-4	
BC447A	80	80	5	0.625	0.3	0.1	60			120	220	2	5		100	100	50					TO-92-4	
BC447B	80	80	5	0.625	0.3	0.1	60			180	460	2	5		100	100	50					TO-92-4	
BC485	45	45	5	0.625	1	0.1	30			15	1000	5			7	200	50					TO-92-4	
BC485A	45	45	5	0.625	1	0.1	30			40	10	2			7	200	50					TO-92-4	
BC485L	45	45	5	0.625	1	0.1	30			40	10	2			7	200	50					TO-92-4	
BC487A	60	60	5	0.625	1	0.1	40			40	10	2			7	200	50					TO-92-4	
BC487L	60	60	5	0.625	1	0.1	40			40	10	2			7	200	50					TO-92-4	
BC489L	80	80	5	0.625	1	0.1	60			40	10	2			7	200	50					TO-92-4	
BC546A	80	65	6	0.5	0.1			0.015	70	110	220	2	5		1.7	4.5	150	300	10	10	0.001		TO-92-4
BC546B	80	65	6	0.5	0.1			0.015	70	200	450	2	5		1.7	4.5	150	300	10	10	0.001		TO-92-4
BC546C	80	65	6	0.5	0.1			0.015	70	420	800	2	5		1.7	4.5	150	300	10	10			TO-92-4
BC547	50	45	6	0.5	0.1			0.015	50	110	800	2	5		1.7	4.5	150	300	10	10	0.001		TO-92-4

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																		
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</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>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>fall</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDL Case Style		
	Min	Min	Min	@Tc=25°C		Max		Max		Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max		Max		
BC547A	50	45	6	0.5	0.1			0.015	50	110	220	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC547B	50	45	6	0.5	0.1			0.015	50	200	450	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC547C	50	45	6	0.5	0.1			0.015	50	420	800	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC548	30	30	6	0.5	0.1			0.015	35	110	800	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC548A	30	30	6	0.5	0.1			0.015	35	110	220	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC548B	30	30	6	0.5	0.1			0.015	35	200	450	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC548C	30	30	6	0.5	0.1			0.015	35	420	800	2	5	0.25	10	1.7	4.5	150	300	10	10	0.001	TO-92-4	
BC549A	30	30	5	0.625	0.1	0.015	30			110	220	2	5	0.25	10	1.7	4.5	150	300	10	4	0.001	TO-92-4	
BC549B	30	30	5	0.625	0.1	0.015	30			200	450	2	5	0.25	10	1.7	4.5	150	300	10	4	0.001	TO-92-4	
BC549C	30	20	5	0.625	0.1	0.015	30			420	800	2	5	0.25	10	1.7	4.5	150	300	10	4	0.001	TO-92-4	
BC550C	50	45	5	0.625	0.1	0.015	30			420	800	2	5	0.25	10	2.5	4.5	150	300	10	4	0.001	TO-92-4	
BC635	45	45	5	0.8	1.0	0.1	30			25		5	2	0.5	500	7		200	10				TO-92-1	
BC635-10	45	45	5	0.8	1.0	0.1	30			25		5	2	0.5	500	7		200	50				TO-92-1	
BC637	60	60	5	0.8	1.0	0.1	30			40	160	150	2	0.5	500	7		200	10				TO-92-1	
BC637-16	60	60	5	0.8	1.0	0.1	30			25		5	2	0.5	500	7		200	50				TO-92-1	
BC639	80	80	5	0.8	1.0	0.1	30			40	160	150	2	0.5	500	7		200	10				TO-92-1	
BC639-16	80	80	5	0.8	1.0	0.1	30			25		5	2	0.5	500	7		200	50				TO-92-1	
BCX58	32	32	7	0.625	0.1			0.01	32	120	630	2	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4
BCX58-7	32	32	7	0.625	0.1			0.01	32	80	1000	10	1	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4
BCX58-8	32	32	7	0.625	0.1			0.01	32	40		0.01	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4





Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																			
Type No.	V <sub>CBO</sub> (V)	V <sub>CEO</sub> (V)	V <sub>EB0</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>	β	I <sub>C</sub> & (mA)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>c</sub> (ns)	N <sub>F</sub> (dB)	β Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style			
	Min	Min	Min	@ Tc=25°C	Max	Max	Max	Max	Max	Min	Max	Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max	Max			
BCX58-9	32	32	7	0.625	0.1			0.01	32	75	0.01	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001		TO-92-4		
										250	460	2													5	
										160	630	10													1	
										60	100	1														
BCX58-10	32	32	7	0.625	0.1			0.01	32	100	0.01	5	0.5	1	100	1.8	4.5	125	10	800	6			TO-92-4		
										380	630	2													5	
										240	1000	10													1	
										60	100	2														
BCX59	45	45	7	0.625	0.1			0.01	45	120	630	2	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4		
										80	1000	10	1													
										40	100	1														
										20		0.01	5													
BCX59-7	45	45	7	0.625	0.1			0.01	45	120	220	2	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4		
										80		10	1													
										40		100	1													
										20		0.01	5													
BCX59-8	45	45	7	0.625	0.1			0.01	45	40		0.01	5	0.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4		
										180	310	2	5													
										120	400	10	1													
										45		100	1													
BCX59-9	45	45	7	0.625	0.1			0.01	45	75		0.01	5	3.5	1	100	1.8	4.5	125	10	800	6	0.001	TO-92-4		
										250	460	2	5													
										160	630	10	1													
										60		100	1													
BCX59-10	45	45	7	0.625	0.1			0.01	45	100		0.01	5	0.5	1	100	1.8	4.5	125	10	800	6		TO-92-4		
										380	600	2	5													
										240	1000	10	1													
										60		100	2													
BF196	40	30	4	0.4	0.03	0.1	40			26		4	10												TO-92-2	
										6		12	7													
BF199	40	25	4	0.35	0.1	0.1	20			40		7	10													TO-92-2
BF237	45	30	4	0.35	0.1	0.1	20							0.25		10									TO-92-2	
BF238	45	30	4	0.35	0.1	0.1	20							0.25		10									TO-92-2	
BF240	40	40	4	0.35	0.03	0.1	20			65	220	1	10												TO-92-2	
BF241	40	40	4	0.35	0.03	0.1	20			35	125	1	10												TO-92-2	
BF254-3	30	20	5	0.35	0.1	0.1	10			65	125	1	10					260		1					TO-92-2	
BF393	300	300	6	0.625	0.5	0.1	200			25		1	10	2	2	20			50		1		2	TO-92		
										40		10	10													
BF420	300	300	5	0.8	0.5	0.01	200			50		25	20	0.5		2	20			60		10		1.6	TO-92-1	
BF422	250	250	5	0.8	0.5	0.01	200			50		25	20	0.5		2	20			60		10		1.6	TO-92-1	
BF494	30	20	5	0.3	0.03	0.1	20			67	220	1	10					1.5		120		260	1	1	TO-92-2	
BF494A	30	20	5	0.3	0.03	0.1	20			200	500	1	10					1.5		120		260	1	1	TO-92-2	
BF494B	30	20	5	0.3	0.03	0.1	20			100	220	1	10					1.5		120		260	1	1	TO-92-2	
BF495	30	20	5	0.3	0.03	0.1	20			35	125	1	10					1.5		120		260	1	1	TO-92-2	
BF495C	30	20	5	0.3	0.03	0.1	20			67	125	1	10					1.5		120		260	1	1	TO-92-2	
BF495D	30	20	5	0.3	0.03	0.1	20			35	76	1	10					1.5		120		260	1	1	TO-92-2	



Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)															
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</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> & V <sub>CE</sub> (mA, V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@ Tc=25°C	Max	Max	Max	Max	Min	Max	Max	Max	Max	Max	Typ	Max	Min	Typ	Max	Max	Max	Max
BF496	30	20	3	0.3	0.02	0.5	20			15	2 10 5 12 7					550						TO-92
BF959	30	20	3	0.625	0.1	0.1	20			35	5 10 40 20 10	1	1	30		700					0.7	TO-92-2
BSY95A	20	15	5	0.625	0.2	0.05	16			30	200 1 0.4 50 200 10 0.4	0.35	0.67	0.87	10	6	200					TO-92
CC337	50	45	5	0.625	0.8	0.1	20			40	500 1 100 600 100 1	0.7		500	5		200					TO-92-1
CC337-16	50	45	5	0.625	0.8	0.1	20			40	500 1 100 250 1000 1	0.7		500	5		200					TO-92-1
CC337-25	50	45	5	0.625	0.8	0.1	20			40	500 1 160 400 100 1	0.7		500	5		200					TO-92-1
CC338	25	25	5	0.625	0.8	0.1	20			40	500 1 100 600 100 1	0.7		500	5		200					TO-92-1
CC338-16	30	25	5	0.625	0.8	0.1	20			40	500 1 100 250 100 1	0.7		500	5		200					TO-92-1
CC338-25	30	25	5	0.625	0.8	0.1	20			40	500 1 160 400 100 1	0.7		500	5		200					TO-92-1
CC338-40	30	25	5	0.625	0.5	0.1	20			40	500 1 250 600 100 1	0.7		500	5		200					TO-92-1
CD50	500	400	5	0.625	0.3			0.5	400	30	150 100 10	1		100								TO-92-1
CD635	45	45	5	0.8	0.5	0.1	30			25	5 2 40 250 150 2 25 500 2	0.5		500	7		200					TO-92-4
CD637	60	60	5	0.8	0.5	0.1	30			25	5 2 40 160 150 2 25 500 2	0.5		500	7		200					TO-92-4
CD639	80	80	5	0.8	0.5	0.1	30			25	5 2 40 160 150 2 25 500 2	0.5		500	7		200					TO-92-4
CD965	40	20	7		5	0.1	10			180	600 500 2 150 2000 2	1.35		3	50		150					TO-92-1
CD965P	40	20	7		5	0.1	10			180	270 500 2 150 2000 2	1.35		3	50		150					TO-92-1
CD965Q	40	20	7		5	0.1	10			230	380 500 2 150 2000 2	1.35		3	50		150					TO-92-1
CD965R	40	20	7		5	0.1	10			340	600 500 2 150 2000 2	1.35		3	50		150					TO-92-1
CD2383	160	160	6	0.7	1	1	150			60	320 200 5	1.5		500	20	20	100					TO-92-1
CD2383O	160	160	6	0.7	1	1	150			100	200 200 5	1.5		500	20	20	100					TO-92-1
CD2383R	160	160	6	0.7	1	1	150			60	120 200 5	1.5		500	20	20	100					TO-92-1

# CDIL TO-92 PNP Transistors (PNP)

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>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>cap</sub> (ns)	N <sub>F</sub> (dB)	Q Freq (MHz)	C <sub>m</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@ Tc=25°C		Max	@	Max	@	Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max		Max	
CD2383Y	160	160	6	0.7	1	1	150			160	320	200	5	1.5		500	20	20	100	200			TO-92-1
CD8050B	30	25	6	1.0	2	0.5	20			85	160	100	1	0.5		1.2	800	20	150	100			TO-92
CD8050C	30	25	6	1.0	2	0.5	20			120	200	100	1	0.5		1.2	800	20	150	100			TO-92
CD8050D	30	25	6	1.0	2	0.5	20			160	300	100	1	0.5		1.2	800	20	150	100			TO-92
CD9011	50	30	5	0.4	0.1	0.05	18			29	273	1	5	0.3		10	3.5	250	10		4		TO-92
CD9011D	50	30	5	0.4	0.1	0.05	18			29	44	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011E	50	30	5	0.4	0.1	0.05	18			40	59	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011F	50	30	5	0.4	0.1	0.05	18			54	80	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011G	50	30	5	0.4	0.1	0.05	18			72	108	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011H	50	30	5	0.4	0.1	0.05	18			97	146	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011I	50	30	5	0.4	0.1	0.05	18			132	198	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9011J	50	30	5	0.4	0.1	0.05	18			182	273	1	5	0.3		10	3.5	250	10		4	0.001	TO-92
CD9013	40	30	5	0.625	0.5	0.1	25			64	465	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013D	40	30	5	0.625	0.5	0.1	25			64	91	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013E	40	30	5	0.625	0.5	0.1	25			78	112	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013F	40	30	5	0.625	0.5	0.1	25			96	135	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013G	40	30	5	0.625	0.5	0.1	25			118	166	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013H	40	30	5	0.625	0.5	0.1	25			144	202	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013I	40	30	5	0.625	0.5	0.1	25			182	305	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9013J	40	30	5	0.625	0.5	0.1	25			278	465	50	1	0.2	1	150	10	200	50		6	0.001	TO-92
CD9014	50	50	5	0.625	0.1	0.05	50			60	1000	1	5	0.3	1	100	3.5	125	10		4	0.001	TO-92
CD9014A	50	50	5	0.625	0.1	0.05	50			60	150	1	5	0.3	1	100	3.5	125	10		4	0.001	TO-92
CD9014B	50	50	5	0.625	0.1	0.05	50			100	300	1	5	0.3	1	100	3.5	125	10		4	0.001	TO-92
CD9014C	50	50	5	0.625	0.1	0.05	50			200	600	1	5	0.3	1	100	3.5	125	10		4	0.001	TO-92
CD9014D	50	50	5	0.625	0.1	0.05	50			400	1000	1	5	0.3	1	100	3.5	125	10		4	0.001	TO-92

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																			
Type No.	V <sub>CEO</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	P <sub>D</sub> (W) @ Tc=25°C	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA) Max	V <sub>CE</sub> (V) @ I <sub>C</sub>	I <sub>CES</sub> (μA) Max	V <sub>CE</sub> (V) @ I <sub>CES</sub>	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub> (mA, V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) @ V <sub>CE</sub>	C <sub>ob</sub> (pF) Typ	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Typ	f <sub>T</sub> (MHz) Max	I <sub>C</sub> (mA) @ f <sub>T</sub>	t <sub>on</sub> (ns) Max	N <sub>f</sub> (dB) Max	Q Freq (MHz)	C <sub>m</sub> (pF) Max	CDIL Case Style	
CD9014D1	50	50	5	0.625	0.1	0.05	50			400	630	1	5	0.3	1	100	3.5	125	10		4	0.001		TO-92	
CD9014D2	50	50	5	0.625	0.1	0.05	50			570	840	1	5	0.3	1	100	3.5	125	10		4	0.001		TO-92	
CD9014D3	50	50	5	0.625	0.1	0.05	50			760	1000	1	5	0.3	1	100	3.5	125	10		4	0.001		TO-92	
CD9014E	50	50	5	0.625	0.1	0.05	50			800		1	5	0.3	1	100	3.5	125	10		4	0.001		TO-92	
CD9016	30	20	4	0.4	0.03	0.1	30			28	198	1	5	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016D	30	20	4	0.4	0.03	0.1	30			28	45	1	10	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016E	30	20	4	0.4	0.03	0.1	30			39	60	1	10	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016F	30	20	4	0.4	0.03	0.1	30			54	80	1	10	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016G	30	20	4	0.4	0.03	0.1	30			72	108	1	5	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016H	30	20	4	0.4	0.03	0.1	30			97	146	1	10	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9016I	30	20	4	0.4	0.03	0.1	30			132	198	1	5	0.3		10	1.2	1.6	400	620	1	5		TO-92	
CD9018	30	15	5	0.4	0.03	0.05	15			29	273	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018D	30	15	5	0.4	0.03	0.05	15			28	45	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018E	30	15	5	0.4	0.03	0.05	15			39	60	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018F	30	15	5	0.4	0.03	0.05	15			54	80	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018G	30	15	5	0.4	0.03	0.05	15			72	108	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018H	30	15	5	0.4	0.03	0.05	15			97	146	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018I	30	15	5	0.4	0.03	0.05	15			132	198	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CD9018J	30	15	5	0.4	0.03	0.05	15			182	273	1	5	0.5		10	1.7	600		5	5	60		TO-92	
CDN368	25	20	5	0.625	1	0.05	25			50		5	10	0.2		1000								TO-92	
										85	375	500	1												
										60		1000	1												
CIL187	25	15	6	0.625	0.7	10	25			70		5	10	0.5		1000									TO-92-4
										100	300	300	1												
										50		1000	1												
CIL368	25	20	5	0.625	1	10	25			50		5	10	0.5		1000	27		60	10					TO-92
										85	375	500	1												
										60		1000	1												
CN1	12	12	5	0.4	0.15	1	10			50	700	2	5	0.25		10									TO-92-4
												0.65				100									
CN300	25	25	5	0.3		0.2	25			50	300	10	6	0.35		50	6	150		10					TO-92
												0.65	1.0	10											
CN301	35	35	5	0.3		0.2	35			50	300	10	6	0.25		50	6	150		10					TO-92
												0.65	1.0	10											
CN302	35	35	5	0.3		0.2	35			20		0.1	6	0.25		50	6	150		10					TO-92
										100	300	10	6												
										50		50	6												

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																					
Type No.	V <sub>CB0</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EBO</sub> (V) Min	P <sub>D</sub> (W) @ Tc=25°C	I <sub>C</sub> (A)	I <sub>CB0</sub> (μA) Max	V <sub>CB</sub> (V) @ I <sub>C</sub>	I <sub>CES</sub> (μA) Max	V <sub>CE</sub> (V) @ I <sub>CES</sub>	h <sub>FE</sub> Min	@ I <sub>C</sub> & V <sub>CE</sub> Max	I <sub>C</sub> (mA) Max	V <sub>CE</sub> (V) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Typ	f <sub>T</sub> (MHz) Min	@ I <sub>C</sub> Typ	I <sub>C</sub> (mA) Max	t <sub>on</sub> (ns) Max	N <sub>F</sub> (dB) Max	@ Freq (MHz)	C <sub>in</sub> (pF) Max	CDIL Case Style		
CN303	45	45	5	0.3		0.2	45			50	300	10	6	0.35	0.65	1.0	50	6	150		10						TO-92
CN304	70	70	5	0.3		0.2	70			50	300	10	6	0.35	0.65	1.0	50	6	150		10						TO-92
CN450	60	45	5	0.75	1	0.1	45			100	300	150	10	0.25		1.1	150	15	150		50						TO-92
CN451	80	60	5	0.75	1	0.1	60			50	150	150	10	0.35		1.1	150	15	150		50						TO-92
CN452	100	80	5	0.75	1	0.1	80			40	150	150	10	0.7		1.3	150	15	150		50						TO-92
CN453	120	100	5	0.75	1	0.1	100			40	200	150	10	0.7		1.3	150	15	150		50						TO-92
CN454	140	120	5	0.75	1	0.1	120			100	300	150	10	0.7			150	15	100		50						TO-92
CN455	160	140	5	0.75	1	0.1	140			100	300	150	10	0.7			150	15	100		50						TO-92
CN649	35	25	5	0.75	2	0.1	30			70		50	2	0.3	1.25	1000		50	150		100						TO-92
										100	300	1000	2	0.6		2000											
										75		2000	2														
										10		6000	2														
CN650	60	45	5	0.75	2	0.1	45			70		50	2	0.3	1.25	1000		30	140		100						TO-92
										100	300	500	2	0.5		2000											
										80		1000	2														
										40		2000	2														
CN651	80	60	5	0.75	2	0.1	60			70		50	2	0.3	1.25	1000		30	140		100						TO-92
										100	300	500	2	0.5		2000											
										80		1000	2														
										40		2000	2														
CN652	100	80	5	0.75	2	0.1	80			70		50	2	0.3	1.25	1000		30	140		100						TO-92
										100	300	500	2	0.5		2000											
										55		1000	2														
										25		2000	2														
CN653	120	100	5	0.75	2	0.1	100			70		50	2	0.3	1.25	1000		30	140		100						TO-92
										100	300	500	2	0.5		2000											
										55		1000	2														
										25		2000	2														
CN654	125	125	5	0.75	1	0.1	100			50		10	5	0.5	1.1	500		20	30		10						TO-92
										50		500	5	0.5		1000											
										20		1000	5														
CN655	150	150	5	0.75	1	0.1	125			50		10	5	0.5	1.1	500		20	30		10						TO-92
										50		500	5	0.5		1000											
										20		1000	5														
CN656	200	200	5	0.75	0.5	0.1	160			40		10	5	0.5	1.0	100		20	30		10						TO-92
										50		100	5														
CN657	300	300	5	0.75	0.5	0.1	200			40		10	5	0.5	1.0	100		20	30		10						TO-92
										50		100	5														
CSC383TM	50	45	4	0.3	0.05	0.1	50			20	100	12.5	12.5	0.2		1.5	15	2	300		13						TO-92-1
CSC388ATM	30	25	4	0.3	0.05	0.1	30			20	200	12.5	12.5	0.2		1.5	15	2	300		13						TO-92-1
CSC458	30	30	5	0.2	0.1	0.5	18			100	500	2	12	0.2		10		3.5					10	0.001			TO-92-1

Maximum Ratings					Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																			
Type No.	V <sub>CEO</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EBO</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>CES</sub> (μA) Max	V <sub>CE</sub> (V) @ (V)	h <sub>FE</sub> @	I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) @ (mA)	C <sub>ob</sub> (pF) Typ	f <sub>t</sub> (MHz) Min	f <sub>t</sub> (MHz) Typ	f <sub>t</sub> (MHz) Max	t <sub>on</sub> (ns) Max	N <sub>F</sub> (dB) Max	Freq (MHz) @ (MHz)	C <sub>in</sub> (pF) Max	CDIL Case Style	
CSC458B	30	30	5	0.2	0.1	0.5	18			100	200	2	12	0.2	10	3.5	230	2		10	0.001		TO-92-1	
CSC458C	30	30	5	0.2	0.1	0.5	18			160	320	2	12	0.2	10	3.5	230	2		10	0.001		TO-92-1	
CSC458D	30	30	5	0.2	0.1	0.5	18			250	500	2	12	0.2	10	3.5	230	2		10	0.001		TO-92-1	
CSC460	30	30	5	0.2	0.1	0.5	18			35	200	2	12	1.1	10	3.5	230	2		5	1		TO-92-1	
CSC460A	30	30	5	0.2	0.1	0.5	18			35	70	2	12	1.1	10	3.5	230	2		5	1		TO-92-1	
CSC460B	30	30	5	0.2	0.1	0.5	18			60	120	2	12	1.1	10	3.5	230	2		5	1		TO-92-1	
CSC460C	30	30	5	0.2	0.1	0.5	18			100	200	2	12	1.1	10	3.5	230	2		5	1		TO-92-1	
CSC535	30	20	4	0.1	0.02					35	200	1	6	0.25	20	1.2	450	940	5		5.5	100		TO-92-1
CSC536	40	30	5	0.4	0.1	0.1	35			60	960	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536D	40	30	5	0.4	0.1	0.1	35			60	120	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536E	40	30	5	0.4	0.1	0.1	35			100	200	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536F	40	30	5	0.4	0.1	0.1	35			160	320	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536G	40	30	5	0.4	0.1	0.1	35			280	560	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536H	40	30	5	0.4	0.1	0.1	35			480	960	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536K	55	50	5	0.4	0.1	0.1	35			60	960	1	6	0.5	50	3.5	100	100	1					TO-92-1
CSC536KD	55	50	5	0.4	0.1	1	35			60	120	1	6	0.5	50	3.5	100		1					TO-92-1
CSC536KE	55	50	5	0.4	0.1	1	35			100	200	1	6	0.5	50	3.5	100		1					TO-92-1
CSC536KF	55	50	5	0.4	0.1	1	35			160	320	1	6	0.5	50	3.5	100		1					TO-92-1
CSC536KG	55	50	5	0.4	0.1	1	35			280	560	1	6	0.5	50	3.5	100		1					TO-92-1
CSC536KH	55	50	5	0.4	0.1	1	35			480	960	1	6	0.5	50	3.5	100		1					TO-92-1
CSC752GTM	40	15	5	0.4	0.2	0.1	40			70	240	10	1	0.3	1.3	20	6	200	400	10				TO-92-1
CSC752GTMO	40	15	5	0.4	0.2	0.1	40			70	140	10	1	0.3	1	20	4	6	200	400	10			TO-92-1
CSC752GTMY	40	15	5	0.4	0.2	0.1	40			120	240	10	1	0.3	1	20	6	4	200	400	10			TO-92-1
CSC763	25	12	3		0.02	0.5	12			20	300	1	6			1.5	400		1					TO-92
CSC945	60	50	5	0.25	0.1	0.1	60			50		0.1	6	0.3	1	100	3	4	150	250	450	10	15	TO-92-1
CSC945K	60	50	5	0.25	0.1	0.1	60			50		0.1	6	0.3	1	100	3	4	150	250	450	10	15	TO-92-1
CSC945P	60	50	5	0.25	0.1	0.1	60			50		0.1	6	0.3	1	100	3	4	250	150	450	10	15	TO-92-1
CSC945Q	60	50	5	0.25	0.1	0.1	60			50		0.1	6	0.3	1	100	3	4	150	250	450	10	15	TO-92-1
CSC945R	60	50	5	0.25	0.1	0.1	60			50		0.1	6	0.3	1	100	3	4	150	250	450	10	15	TO-92-1
CSC1008	80	60	8	0.8	0.7	0.1	60			40	400	50	2	0.4	1.1	500	8		30	50		50		TO-92
CSC1008G	80	60	8	0.8	0.7	0.1	60			200	400	50	2	0.4	1.1	500	8		30	50		50		TO-92
CSC1008O	80	60	8	0.8	0.7	0.1	60			70	140	50	2	0.4	1.1	50	8		30	50		50		TO-92

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EBO</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) @ I <sub>C</sub>	I <sub>CES</sub> (μA) Max	V <sub>CE</sub> (V) @ I <sub>CES</sub>	h <sub>FE</sub> @ I <sub>C</sub> & V <sub>CE</sub> Min Max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) @ V <sub>BE(SAT)</sub>	C <sub>ob</sub> (pF) Typ Max	f <sub>T</sub> (MHz) Min Typ Max	t <sub>on</sub> (ns) Max	N <sub>F</sub> (dB) Max	@ Freq (MHz)	C <sub>re</sub> (pF) Max	CDIL Case Style	
CSC1008R	80	60	8	0.8	0.7	0.1	67			40 80	50 2		0.4	1.1	500	8	30 50	50					TO-92
CSC1187	30	20	4	0.25	0.03	0.1	20			40 240	2 10						400	3					TO-92
CSC1187D	30	20	4	0.25	0.03	0.1	20			70 140	2 10						400	3					TO-92
CSC1187R	30	20	4	0.25	0.03	0.1	20			40 80	2 10						400	3					TO-92
CSC1187Y	30	20	4	0.25	0.03	0.1	20			120 240	2 10						400	3					TO-92
CSC1213	35	35	4	0.4	0.5	0.5	20			60 320	10 3		0.6	1.5									TO-92-1
CSC1213A	50	50	4	0.4	0.5	0.5	20			60 320	10 3		0.6	1.2	150	7	60 120	10					TO-92-1
CSC1213AB	50	50	4	0.4	0.5	0.5	20			60 120	10 3		0.6	1.2	150	7	60 120	10					TO-92-1
CSC1213AC	50	50	4	0.4	0.5	0.5	20			100 200	10 3		0.6	1.2	150	7	60 120	10					TO-92-1
CSC1213AD	50	50	4	0.4	0.5	0.5	20			160 320	10 3		0.6	1.2	150	7	15 120	10					TO-92-1
CSC1213B	35	35	4	0.4	0.5	0.5	20			60 120	10 3		0.6	1.5									TO-92-1
CSC1213C	35	35	4	0.4	0.5	0.5	20			100 200	10 3		0.6	1.5									TO-92-1
CSC1213D	35	35	4	0.4	0.5	0.5	20			160 320	10 3		0.6	1.5									TO-92-1
CSC1393	30	30	4	0.25	0.02	0.1	20			40 180	2 10						400	700	3	3	200	0.5	TO-92-3
CSC1393D	30	30	4	0.25	0.02	0.1	20			60 140	2 10						400	700	3	3	200	0.5	TO-92-3
CSC1393R	30	30	4	0.25	0.02	0.1	20			40 80	2 10						400	700	3	3	200	0.5	TO-92-3
CSC1393Y	30	30	4	0.25	0.02	0.1	20			90 180	2 10						400	700	3	3	200	0.5	TO-92-3
CSC1394	30	30	4	0.25	0.02	0.1	20			40 180	2 10		0.7	1.0			400	700	3	3.5	200	0.5	TO-92-3
CSC1394D	30	30	4	0.25	0.02	0.1	20			60 140	2 10		0.7	1.0			400	700	3	3.5	200	0.5	TO-92-3
CSC1394R	30	30	4	0.25	0.02	0.1	20			40 80	2 10		0.7	1.0			400	700	3	3.5	200	0.5	TO-92-3
CSC1394Y	30	30	4	0.25	0.02	0.1	20			90 180	2 10		0.7	1.0			400	700	3	3.5	200	0.5	TO-92-3
CSC1395	30	15	4	0.25		0.1	12			40 240	5 10		0.5	1.0		1.5	600	5					TO-92-3
CSC1674	30	20	4	0.25	0.02	0.1	30			40 240	1 6		0.5	1.0			400	600	1				TO-92
CSC1674D	30	20	4	0.25	0.02	0.1	30			70 140	1 6		0.5	1.0			400	600	1				TO-92
CSC1674R	30	20	4	0.25	0.02	0.1	30			40 80	1 6		0.5	1.0			400	600	1				TO-92
CSC1674Y	30	20	4	0.25	0.02	0.1	30			120 240	1 6		0.5	1.0			400	600	1				TO-92
CSC1675	50	30	5	0.25	0.05	0.1	50			40 240	1 6		0.3	1.0		2.5	150 260	1					TO-92
CSC1675D	50	30	5	0.25	0.05	0.1	50			70 140	1 6		0.3	1.0		2.5	150 260	1					TO-92
CSC1675R	50	30	5	0.25	0.05	0.1	50			40 80	1 6		0.3	1.0		2.5	150 260	1					TO-92
CSC1675Y	50	30	5	0.25	0.05	0.1	50			120 240	6 1		0.3	1.0		2.5	150 260	1					TO-92
CSC1684	30	25	7	0.4	0.1	1	10			160 460	2 10		0.5	1.00	3.5		150	2					TO-92-1
										90	100 2												

Maximum Ratings							Electrical Characteristics (T <sub>a</sub> =25°C, Unless Otherwise Specified)																	
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</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>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style		
	Min	Min	Min	@ T <sub>c</sub> =25°C		Max	@ (V)	Max	@ (V)	Min	Max	Max	Min	Max	Typ	Min	Typ	Max	Max	Max	Max	Max		
CSC1684Q	30	25	7	0.4	0.1	1	10			160	260	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1684R	30	25	7	0.4	0.1	1	10			90	100	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1684S	30	25	7	0.4	0.1	1	10			290	460	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1685	60	50	7	0.4	0.1	1	10			90	100	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1685Q	60	50	7	0.4	0.1	1	10			160	260	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1685R	60	50	7	0.4	0.1	1	10			90	100	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1685S	60	50	7	0.4	0.1	1	10			290	460	2	10	0.5		100	3.5		150	2			TO-92-1	
CSC1730	30	15	5	0.25	0.05	0.1	12			40	240	5	10	0.5		10	1.5	800		5			TO-92-1	
CSC1730O	30	15	5	0.25	0.05	0.1	12			70	240	5	10	0.5		10	1.5	800		5			TO-92-1	
CSC1730R	30	15	5	0.25	0.05	0.1	12			40	80	5	10	0.5		10	1.5	800		5			TO-92-1	
CSC1730Y	30	15	5	0.25	0.05	0.1	12			120	240	5	10	0.5		10	1.5	800		5			TO-92-1	
CSC1740	50	40	5	0.3	0.1	0.5	30			120	820	1	6	0.4		1	50	2	3.5	180	2	10	TO-92-1	
CSC1740S	50	40	5	0.3	0.1	0.5	30			25	150	6	6	0.4		1	50	2	3.5	180	2	10	TO-92-1	
CSC1815	60	50	5	0.4	0.15	0.1	60			70	700	2	6	0.25		1	100	3.0	80		1	10	0.001	TO-92-1
CSC1815BL	60	50	5	0.4	0.15	0.1	60			25	150	6	6	0.25		1	100	3.0	80		20	10	0.001	TO-92-1
CSC1815GR	60	50	5	0.4	0.15	0.1	60			200	400	2	6	0.25		1	100	3	80		1	10	0.001	TO-92-1
CSC1815O	60	50	5	0.4	0.15	0.1	60			25	150	6	6	0.25		1	100	3	80		1	10	0.001	TO-92-1
CSC1815Y	60	50	5	0.4	0.15	0.1	60			120	240	2	6	0.25		1	100	3	80		1	10	0.001	TO-92-1
CSC1906	30	19	2	0.3	0.05	0.5	10			40		10	10	1		20	1.2	600	1000		10			TO-92-1
CSC1906Y	30	19	2	0.3	0.05	0.5	10			120	240	10	10	1		20	1.2	600	1000		10			TO-92-1
CSC1959	35	30	5	0.5	0.5	0.1	35			70	240	100	1	0.25		100	7		300	20			TO-92-1	
CSC1959O	35	30	5	0.5	0.5	0.1	35			25	400	6	6	0.25		100	7		300	20			TO-92-1	
CSC1959Y	35	30	5	0.5	0.5	0.1	35			120	240	100	1	0.25		100	7		300	20			TO-92-1	
CSC2002	60	60	5	0.5	0.3	0.1	60			90	400	50	1	0.6		1.2	300	7	15	50	140	10		TO-92-1
CSC2002K	60	60	5	0.5	0.3	0.1	60			30	300	2	1	0.6		1.2	300	7	15	50	140	10		TO-92-1
CSC2002L	60	60	5	0.5	0.3	0.1	60			200	400	50	1	0.6		1.2	300	7	15	50	140	10		TO-92-1
CSC2002L	60	60	5	0.5	0.3	0.1	60			30	270	50	1	0.6		1.2	300	7	15	50	140	10		TO-92-1



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>CBO</sub> (μA)	V <sub>CE(sat)</sub> (V)	I <sub>CE(sat)</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(sat)</sub> (V)	V <sub>BE(sat)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	I <sub>off</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>m</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@ Tc=25°C		Max	@	Max	@	Min	Max	Max	Max	@	Typ	Max	Min	Typ	Max	Max	Max	Max	
CSC2002M	60	60	5	0.5	0.3	0.1	60			90	180	50	1	0.6	1.2	300	7	15	50	140	10		TO-92-1
CSC2003	80	80	5	0.5	0.3	0.1	80			90	400	50	1	0.6	1.2	300	7	15	50	140	10		TO-92-1
CSC2003K	80	80	5	0.5	0.3	0.1	80			200	400	50	1	0.6	1.2	300	7	15	50	140	10		TO-92-1
CSC2003L	80	80	5	0.5	0.3	0.1	80			135	270	50	1	0.6	1.2	300	7	15	50	140	10		TO-92-1
CSC2003M	80	80	5	0.5	0.3	0.1	80			90	180	50	1	0.6	1.2	300	7	15	50	140	10		TO-92-1
CSC2120	35	30	5	0.6	0.8	0.1	35			100	320	100	1	0.5	500	13		120	10			TO-92-1	
CSC21200	35	30	5	0.6	0.8	0.1	35			100	200	100	1	0.5	500	13		120	10			TO-92-1	
CSC2120Y	35	30	5	0.6	0.8	0.1	35			160	320	100	1	0.5	500	13		120	10			TO-92-1	
CSC2216	50	45	4	0.3	0.05	0.1	50			40	100	12.5	12.5	0.2	1.5	15	2	300		13		TO-92-3	
CSC2229Y	200	150	5	0.625	0.5	0.1	200			120	360	10	5	0.5	1	10	3.5	5	120	10		TO-92-1	
CSC2240	120	120	5	0.3	0.1	0.1	120			200	700	2	6	0.3		10	3.0		100	1	6	TO-92	
CSC2240BL	120	120	5	0.3	0.1	0.1	120			350	700	2	6	0.3		10	3.0		100	1	6	TO-92	
CSC2240GR	120	120	5	0.3	0.1	0.1	120			200	400	2	6	0.3		10	3.0		100	1	6	TO-92-1	
CSC2271	300	300	6	0.9	0.1	1	200			40	200	10	10	0.6	1	20	7.5		50	10		TO-92-1	
CSC2271C	300	300	6	0.9	0.1	1	200			40	80	10	10	0.6	1	20	7.5		50	10		TO-92-1	
CSC2271D	300	300	6	0.9	0.1	1	200			60	120	10	10	0.6	1	20	7.5		50	10		TO-92-1	
CSC2271E	300	300	6	0.9	0.1	1	200			100	200	10	10	0.6	1	20	7.5		50	10		TO-92-1	
CSC2274D	100	80	5	0.6	0.5	1	40			60	120	50	5	0.6	1.2	400	5		120	10		TO-92-1	
CSC2274E	100	80	5	0.6	0.5	1	40			100	200	50	5	0.6	1.2	400	5		120	10		TO-92-1	
CSC2274F	100	80	5	0.6	0.5	1	40			160	320	50	5	0.6	1.2	400	5		120	10		TO-92-1	
CSC2274K	100	80	5	0.6	0.5	1	40			60	320	50	5	0.6	1.2	400	5		120	10		TO-92-1	
CSC2309	55	50	5	0.2	0.1	0.5	18			250	1200	2	12	0.2		10	3.5		150	230	2	TO-92-1	
CSC2309D	55	50	5	0.2	0.1	0.5	18			250	500	2	12	0.2		10	3.5		150	230	2	TO-92-1	
CSC2309E	55	50	5	0.2	0.1	0.5	18			400	800	2	12	0.2		10	3.5		150	230	2	TO-92-1	
CSC2309F	55	50	5	0.2	0.1	0.5	18			600	1200	2	12	0.2		10	3.5		150	230	2	TO-92-1	
CSC2328A	30	30	5	1	1.5	0.1	30			100	320	500	2	2		1500	30		120	500		TO-92-1	
CSC2328AO	30	30	5	1	1.5	0.1	30			100	200	500	2	2		1500	30		120	500		TO-92-1	

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																	
Type No.	V <sub>CB0</sub> (V)	V <sub>CE0</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>	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>m</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@ Tc=25°C		Max		Max	Max	Min	Max	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max		Max	
CSC2328AY	30	30	5	1	1.5	0.1	30			160	320	500	2	2		1500	30	120						TO-92-1
CSC2458	50	50	5	0.2	0.15	0.1	50			70	700	2	6	0.25		100	3.5	80			10			TO-92-1
CSC2458BL	50	50	5	0.2	0.2	0.1	50			350	700	2	6	0.25		100	3.5	80			10			TO-92-1
CSC2458GR	50	50	5	0.2	0.15	0.1	50			200	400	2	6	0.25		100	3.5	80			10			TO-92-1
CSC2458O	50	50	5	0.2	0.15	0.1	50			70	140	2	6	0.25		100	3.5	80			10			TO-92-1
CSC2458Y	50	50	5	0.2	0.15	0.1	50			120	240	2	6	0.25		100	3.5	80			10			TO-92-1
CSC3114	60	50	7	0.4	0.15	0.1	40			100	560	1	6	0.5		50	3	100						TO-92-1
CSC3114R	60	50	7	0.4	0.15	0.1	40			100	200	1	6	0.5		50	3	100						TO-92-1
CSC3114S	60	50	7	0.4	0.15	0.1	40			140	280	1	6	0.5		50	3	100						TO-92-1
CSC3114T	60	50	7	0.4	0.15	0.1	40			200	400	1	6	0.5		50	3	100						TO-92-1
CSC3114U	60	50	7	0.4	0.15	0.1	40			280	560	1	6	0.5		50	3	100						TO-92-1
CSC3197	30	25	4	0.3	0.05	0.1	30			20	200	12.5	12.5	0.2		1.5	13	0.8	2	300				TO-92-1
CSC3198	60	50	5	0.625	0.15	0.1	60			70	700	2	6	0.25		1	100	2	3.5	80		10		TO-92-1
CSC3198BL	60	50	5	0.625	0.15	0.1	60			25	150	6												TO-92-1
CSC3198GR	60	50	5	0.625	0.15	0.1	60			350	700	2	6	0.25		1	100	2	3.5	80		10		TO-92-1
CSC3198O	60	50	5	0.625	0.15	0.1	60			25	150	6												TO-92-1
CSC3198Y	60	50	5	0.625	0.15	0.1	60			200	400	2	6	0.2		1	100	2	3.5	80		10		TO-92-1
CSC3199	50	50	5	0.4	0.15	0.1	50			70	700	2	6	0.25		100	2	3.5	80			10		TO-92-1
CSC3199BL	50	50	5	0.4	0.15	0.1	50			25	150	6												TO-92-1
CSC3199GR	50	50	5	0.4	0.15	0.1	50			350	700	2	6	0.25		100	2	3.5	80			10		TO-92-1
CSC3199O	50	50	4	0.4	0.15	0.1	50			200	400	2	6	0.25		100	2	3.5	80			10		TO-92-1
CSC3199Y	50	50	5	0.4	0.15	0.1	50			70	140	2	6	0.25		100	2	3.5	80			10		TO-92-1
CSC3331	60	50	6	0.5	0.2	1	40			120	240	2	6	0.25		100	2	3.5	80			10		TO-92-1
CSC3331R	60	50	6	0.5	0.2	1	40			70		0.1	6	0.3		1	100	3.5		200				TO-92-1
CSC3331S	60	50	6	0.5	0.2	1	40			100	800	1	6											TO-92-1
CSC3331T	60	50	6	0.5	0.2	1	40			70	200	1	6	0.3		1	100	3.5		200				TO-92-1
CSC3331U	60	50	6	0.5	0.2	1	40			140	280	1	6	0.3		1	100	3.5		200				TO-92-1
CSC3331U	60	50	6	0.5	0.2	1	40			70		0.1	6	0.3		1	100	3.5		200				TO-92-1
CSC3331U	60	50	6	0.5	0.2	1	40			200	400	1	6											TO-92-1
CSC3331U	60	50	6	0.5	0.2	1	40			70	280	0.1	6	0.3		1	100	3.5		200				TO-92-1

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																	
Type No.	V <sub>CB0</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>CB0</sub> (μA) @ (V) Max	V <sub>CB</sub> (V) @ (V)	I <sub>CES</sub> (μA) @ (V) Max	V <sub>CE</sub> (V) @ (V)	h <sub>FE</sub> @ Min	I <sub>C</sub> & (mA) Max	V <sub>CE</sub> (V) @ (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) @ (mA) Max	I <sub>C</sub> (mA) @ (mA)	C <sub>ob</sub> (pF) Typ	f <sub>i</sub> (MHz) Min	@ Typ	I <sub>C</sub> (mA) Max	t <sub>on</sub> (ns) Max	N <sub>F</sub> (dB) @ (MHz) Max	C <sub>re</sub> (pF) Max	CDIL Case Style	
CSC3331V	60	50	6	0.5	0.2	1	40			70	0.1	6	0.3	1	100	3.5	200		10					TO-92-1
CSC3355	20	12	3	0.6		0.1	15			50	300	20	10			1			6500	20		3	1000	TO-92
CSC9022	50	40	5	0.3	0.1	0.5	30			82	820	1	6	0.4		50	2	3.5	180		2			TO-92-1
CSD261	40	20	5	0.5	0.5	0.1	25			40	400	100	1	0.4		1.3	500							TO-92
CSD261G	40	20	5	0.5	0.5	0.1	25			200	400	100	1	0.4		1.3	500							TO-92
CSD261O	40	20	5	0.5	0.5	0.1	25			70	140	100	1	0.4		1.3	500							TO-92
CSD261R	40	20	5	0.5	0.5	0.1	25			40	80	100	1	0.4		1.3	500							TO-92
CSD261Y	40	20	5	0.5	0.5	0.1	25			120	240	100	1	0.4		1.3	500							TO-92
CSD471A	40	30	5	0.8	1	0.1	30			70	400	100	1	0.5		1.2	1000	16		130		10		TO-92-1
CSD471AG	40	30	5	0.8	1	0.1	30			200	400	100	1	0.5		1.2	1000	16		130		10		TO-92-1
CSD471AO	40	30	5	0.8	1	0.1	30			70	140	100	1	0.5		1.2	1000	16		130		10		TO-92-1
CSD471AY	40	30	5	0.8	1	0.1	30			120	240	100	1	0.5		1.2	1000	16		130		10		TO-92-1
CSD545	25	25	5	0.6	1	1	20			60	560	50	2	0.3		1.2	500	15		180		50		TO-92-1
CSD545D	25	25	5	0.6	1	1	20			60	120	50	2	0.3		1.2	500	15		180		50		TO-92-1
CSD545E	25	25	5	0.6	1	1	20			100	200	50	2	0.3		1.2	500	15		180		50		TO-92-1
CSD545F	25	25	5	0.6	1	1	20			160	320	50	2	0.3		1.2	500	15		180		50		TO-92-1
CSD545G	25	25	5	0.6	1	1	20			280	560	50	2	0.3		1.2	500	15		180		50		TO-92-1
CSD786	50	40	5	0.25	0.3	0.5	30			120	560	10	6	0.5		50			100		10			TO-92-1
CSD786Q	50	40	5	0.25	0.3	0.5	30			120	270	10	6	0.5		50			100		10			TO-92-1
CSD786R	50	40	5	0.25	0.3	0.5	30			180	390	10	6	0.5		50			100		10			TO-92-1
CSD786S	50	40	5	0.25	0.3	0.5	30			270	560	10	6	0.5		50			100		10			TO-92-1
CSD1468	30	15	5	0.4	1	0.5	20			120	560	100	3	0.4		500	30		50		50			TO-92-1
CSD1468Q	30	15	5	0.4	1	0.5	20			120	270	100	3	0.4		500	30		50		50			TO-92-1
CSD1468R	30	15	5	0.4	1	0.5	20			180	390	100	3	0.4		500	30		50		50			TO-92-1
CSD1468S	30	15	5	0.4	1	0.5	20			270	560	100	3	0.4		500	30		50		50			TO-92-1
D100	&60	50	5	0.5	1	0.05	40			50	280	150	1	0.6		150								TO-92-4
MPS650	60	40	5	0.625	2	0.1	60			75	50	2	0.5		2000				75		50			TO-92
										75	500	2	0.3		1	1000								
										75	1000	2												
										40	2000	2												

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EB0</sub> (V)	P <sub>D</sub> (W)	I <sub>C</sub> (A)	I <sub>CEO</sub> (μA)	V <sub>CE0</sub> (V)	I <sub>CES</sub> (μA)	V <sub>CE</sub> (V)	h <sub>FE</sub>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>on</sub> (ns)	N <sub>r</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style	
	Min	Min	Min	@Tc=25°C		Max	@	Max	@	Min	Max	Max	Min	Max	Typ	Max	Min	Max	Max	Max	Max	
MPS651	80	60	5	0.625	2	0.1	80			75	50 2	0.5		2000		75	50					TO-92
										75	500 2	0.3		1.2 1000								
										75	1000 2											
										40	2000 2											
MPS706	25	15	3	0.625	0.2	0.5	15			20	10 1	0.6	0.9	10	6	200	10	75				TO-92
												0.4		50								
MPS834	40		5	0.625	0.2	0.5	20	0.01	30	25	10 1	0.25	0.9	10	4	350	10	30				TO-92
												0.4	0.9	50								
MPS2222	60	30	5	0.625	0.6	0.01	50			35	0.1 10	0.4	1.3	150	8	250	20					TO-92
										50	1 10	1.6	2.6	500								
										75	10 10											
										100	300 150 10											
										50	150 1											
										30	500 10											
MPS2222A	75	40	6	0.625	0.6	0.01	60			35	0.1 10	0.3	0.6	1.2 150	80	300	20					TO-92
										50	1 10	1	2	500								
										75	10 10											
										100	300 150 10											
										50	150 1											
										40	500 10											
MPS2713	18	15	5	0.625	0.2	0.5	18			30	90 2 4.5	0.3		1.3 50								TO-92
MPS2714	18	15	5	0.625	0.2	0.5	18			75	225 2 4.5	0.3	0.6	1.3 50								TO-92
MPS3393	25	25	5	0.625		0.1	18			90	180 2 4.5				10							TO-92
MPS3394	25	25	5	0.625	0.1	0.1	18			55	110 2 4.5				10							TO-92
MPS3395	25	25	5	0.625	0.1	0.1	18			150	500 2 4.5				10							TO-92
MPS3396	25	25	5	0.625	0.1	0.1	18			90	500 2 4.5				10							TO-92
MPS3397	25	25	5	0.625	0.1	0.1	18			55	500 2 4.5				10							TO-92
MPS3398	25	25	5	0.625	0.1	0.1	18			55	800 2 4.5				10							TO-92
MPS3563	30	12	2	0.625	0.05	0.05	15			20	200 8 10				1.7	600	1500	8				TO-92
MPS3646	40	15	5	0.625	0.3			0.5	20	15	300 1	0.2	0.75	0.95 30	5	350	30	28				TO-92
										25	100 0.5	0.28		1.2 100								
										30	120 30 0.4	0.5		1.7 300								
MPS3693	45	45	4	0.625		0.05	35			40	160 10 10				3.5	200	10	4	1			TO-92
MPS3694	45	45	4	0.625		0.05	35			100	400 10 10				3.5	200	10	4	1			TO-92
MPS3705	50	30	5	0.625	0.6	0.1	20			50	150 50 2	0.8		100	12	100	50					TO-92
MPS3706	40	20	5	0.625	0.6	0.1	20			30	600 50 2	1		100	12	100	50					TO-92
MPS3707	30	30	6	0.625	0.05	0.1	20			100	400 0.1 5	1		10				5				TO-92
MPS3708	30	30	6	0.625	0.05	0.1	20			45	660 1 5	1		10								TO-92
MPS3709	30	30	6	0.625	0.05	0.1	20			45	165 1 5	1		10								TO-92
MPS3710	30	30	6	0.625	0.05	0.1	20			90	330 1 5	1		10								TO-92
MPS3711	30	30	6	0.625	0.05	0.1	20			180	660 1 5	1		10								TO-92
MPS3903	60	40	6	0.625	0.2			*0.05	30	20	0.1 1	0.2	65	0.85 10	4	150	10	6				TO-92
										35	1 1	0.3		1 50								
										50	150 10 1											
										30	50 1											
										15	100 1											

\* NOTE : ICEX

Maximum Ratings						Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																		
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</sub> (V)	V <sub>EB0</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>	I <sub>C</sub> & I <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style			
	Min	Min	Min	@ Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max	Max	Max	@ (mA)	Typ	Max	Max	Max	Max	Max	Max			
MPS3904	60	40	6	0.625	0.2			*0.05	30	40	0.1	1	0.2	65	0.85	10	4	200				5	TO-92	
										70	1	1	0.3	1	50									
										100	300	10	1											
										60	50	1												
										30	100	1												
MPS4123	40	30	5	0.625	0.2	0.05	20			50	150	2	1	0.3	0.95	50	4	100				6	TO-92	
										25	50	1												
MPS4124	30	25	5	0.625	0.2	0.05	20			120	360	2	1	0.3	0.95	50	4	170					TO-92	
										60	50	1												
MPS5172	25	25	5	0.625	0.1	0.1	25			100	500	10	10	0.25		10	10						TO-92	
MPS6507	\$30	20	3	0.625	0.05	0.05	15			25		2	10				2.5	700					TO-92	
MPS6511	\$30	20		0.625	0.05	0.05	15			25		10	10				2.5						TO-92	
MPS6512	40	30	4	0.625	0.1	0.05	30			50	100	2	10	0.5		50	3.5						TO-92	
										30	100	10	10											
MPS6521	40	25	4	0.625	0.1	0.05	30			300	600	2	10	0.5		50	3.5				3	0.01	TO-92	
										150		0.1	10											
MPS6530	60	40	5	0.625	0.8	0.05	40			25	500	10	10	0.5	1	100	5						TO-92	
										40	120	100	1											
										30	10	1												
MPS6531	60	40	5	0.625	0.8	0.05	40			50	500	10	10	0.3	1	100	7						TO-92	
										90	270	100	1											
										60	10	1												
MPS6532	50	30	5	0.625	0.6	0.1	30			30	100	1	10	0.5	1.2	100	5						TO-92	
MPS6539	20	20		0.35		0.05	15			20	4	10					0.7	500			4	4.5	100	TO-92-3
MPS6540	30	30	4	0.35	0.1	0.1	25			25	2	10		0.5		10	0.7	350			2		TO-92-3	
MPS6541		20	4	0.625	0.05	0.05	15			25	4	10					1.7	600	1500		4		TO-92	
MPS6542	\$30	20		0.35	0.1	0.05	15			25	2	10					1.5	700			10		TO-92-3	
MPS6543	35	20	3	0.35	0.1	0.1	25			25	4	10		0.35	0.95	10	1	750			4		TO-92-3	
MPS6546	35	25	3	0.35	0.1	0.1	25			20	2	10		0.35		10	0.5	600			2		TO-92-3	
MPS6547	35	25	3	0.35	0.1	0.1	25			20	2	5		0.35		10	0.4	600			2		TO-92-3	
MPS6548	30	25	3	0.35		0.1	25			25	4	10		0.5	0.95	4	0.7	650			4		TO-92-3	
MPS6560	25	25	4	0.625	0.5	0.1	20			35	10	1		0.5	1.2	500	30	60			10		TO-92	
										50	100	1												
										50	200	500	1											
MPS6561	20	20	4	0.625	0.5	0.1	20			35	10	1		0.5	1.2	350	30	60			10		TO-92	
										50	100	1												
										50	200	350	1											
MPS6564		45	5	0.625	0.1	0.5	40			25	10	5		0.5		10	4						TO-92	
MPS6565	60	45	4	0.625	0.1	0.1	30			40	160	10	10	0.4		10	3.5						TO-92	
MPS6566	60	45	4	0.625		0.1	30			100	400	10	10	0.4		10	3.5	200			10		TO-92	
MPS6567		40	5	0.35		0.5	35			25	10	5		0.5		10	0.7						TO-92-3	
MPS6568A	20	20	3	0.625	0.05	0.05	10			20	200	4	5	0.3	0.96	10	0.7	375		800	4	3.3	200	TO-92-3
MPS6569	20	20	3	0.625	0.05	0.05	10			20	200	4	5	3	0.96	10	0.5	300		800	4	6	45	TO-92-3

\$ NOTE: V<sub>CEs</sub>

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																			
Type No.	V <sub>CBO</sub> (V)	V <sub>CEO</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> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	@ Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style				
	Min	Min	Min	@ Tc=25°C		Max	@ (V)	Max	@ (V)	Min	Max	Max	Min	Max	Typ	Max	Min	Typ	Max	Max		Max				
MPS6570	20	20	3	0.625	0.05	0.05	10			20	200	4	5	3	0.96	10		0.5	300	800	4		6	45	TO-92-3	
MPS6571	20	20	3	0.625	0.05	0.05	20			250	1000	0.1	5	0.5		10		4.5	50		1				TO-92	
MPS6573		35		0.625	0.1	0.1	35			100		0.1	5	0.5		10		12	100	300	10				TO-92	
MPS6574		35		0.625	0.1	0.1	35			100	300	1	5	0.5		10		12	100	300	10				TO-92	
MPS6575		45		0.625	0.1	0.1	45			100		0.1	5	0.5		10		12	100	300	10				TO-92	
MPS6576		45	4	0.625	0.1	0.1	45			100	300	1	5	0.5		10		12	100	350	10				TO-92	
MPSA05	60	60	4	0.625	0.5	0.1	60			100		10	1	0.25		100			100		10				TO-92	
MPSA06	80	80	4	0.625	0.5	0.1	80			100		10	1	0.25		100			50		100				TO-92	
MPSA10		40	4	0.625	0.1	0.1	30			40	400	5	10					4	50		5				TO-92	
*MPSA13	30	\$30	10	0.625	0.5	0.1	30			5		10	5	1.5		100	5		125	200	10		2	0.001	TO-92	
MPSA42	300	300	6	0.625	0.5	0.1	200			25		1	10	0.5		0.9	20	3	50		1				TO-92	
MPSA43	200	200	6	0.625	0.5	0.1	160			25		1	10	0.4		0.9	20	4	50		10				TO-92	
MPSA44	500	400	6	0.625	0.3	0.1	400	0.5	400	40		1	10	0.4		1	7								TO-92	
MPSH11	30	25	3	0.35		0.1	25			60		4	10	0.5		4			650		4				TO-92-3	
MPSH19	30	25	3	0.35		0.1	15			45		4	10					0.7	300		4				TO-92-3	
MPSH20	40	30	4	0.35	0.1	0.05	15			25		4	10					0.7	400		4				TO-92-3	
MPSH24	40	30	4	0.35	0.1	0.05	15			30		8	10					0.4	400		8				TO-92-3	
MPSH30	20	20	3	0.625	0.05	0.05	10			20	200	4	5	3	0.96	10		0.7	300	800	4		6	45	TO-92-3	
MPSH31	20	20	3	0.625	0.05	0.05	10			20	200	4	5	0.3	0.96	10		0.7	300	800	4		6	45	TO-92-3	
MPSH32	40	30	4	0.625		0.05	10			27	200	4	5	3	1.2	10		0.2	300		4				TO-92-3	
MPSH34	45	45	4	0.35	0.1	0.05	30			15		20	2	0.5		20		0.3	500		15				TO-92-3	
MPSH37		40	5	0.35	0.1	0.5	35			25		5	10	0.5		10		0.7	300		5				TO-92-3	
P2N2222A	75	40	6	0.625	0.8	0.01	80			35		0.1	10	0.3	0.6	1.2	150	8	300		20			100	TO-92-4	
PBF259	300	300	5	0.625	0.5	0.05	250			25		1	10	1		30		3	40		1				TO-92	
PBF259S	300	300	5	0.625	0.5	0.05	250			25		30	10	0.5		30		3	40		10				TO-92	
PN918	30	15	3	0.625	0.05	0.01	15			20		3	1	0.4		1	10	1.7	600		4		6	60	TO-92	
PN930	45	45	5	0.625	0.05	0.01	45				600	10	5	1	0.6	1	10	8	30		1		3		TO-92	
										150		0.5	5													
										100	300	0.01	5													

\* NOTE : hFE values are K.

\$ V<sub>CES</sub>

Maximum Ratings							Electrical Characteristics (Ta=25°C, Unless Otherwise Specified)																
Type No.	V <sub>CEO</sub> (V)	V <sub>CE0</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>	I <sub>C</sub> & V <sub>CE</sub> (mA)	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style		
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Max	Max	Max	Max	Typ	Min	Max	Max	Max	Max	Max		
PN2221	60	30	5	0.625	0.6	0.01	50			20	500	10	0.4	1.3	150	8	250	20					TO-92
										20	150	1	1.6	2.6	500								
										40	120	150	10										
										35	10	10											
										25	1	10											
PN2221A	75	40	6	0.625	0.6	0.01	60			25	500	10	0.3	6	1.2	150	8	250	20	285			TO-92
										20	150	1	1	2	500								
										40	120	150	10										
										35	10	10											
										25	1	10											
PN2222	60	30	5	0.625	0.6	0.01	50			30	500	10	0.4	1.3	150	8	250	20				TO-92	
										50	150	1	1.6	2.6	500								
										100	300	150	10										
										75	10	10											
										50	1	1											
PN2222A	75	40	6	0.625	0.8	0.01	60			40	500	10	0.3	.6	1.2	150	8	300	20	285	4	0.001	TO-92
										50	150	1	1	2	500								
										100	300	150	10										
										75	10	10											
										50	1	10											
PN3564	30	15	4	0.625	0.05	0.05	15			20	500	15	10	0.3	0.97	20	3.5	400	1200	15			TO-92
										15	500	10	0.22	150									
PN3641	60	30	5	0.6	0.5		50	0.05	50	40	120	150	10	0.22	150	8	150	50				TO-92	
										25	500	10	0.22	150									
PN3643	60	30	5	0.6	0.5		50	0.05	50	100	300	150	10	0.22	150	8	250	50				TO-92	
										100	400	10	1										
PN3694	45	45	4	0.625	0.1	0.05	30			100	400	10	1		6	200	10					TO-92	
PN4140	60	30	5	0.6	0.5					20	500	10	0.4	1.3	150	8	250	20	310			TO-92	
										20	150	1	1.6	2.6	500								
										40	120	150	10										
										35	10	10											
										25	1	10											
PN4141	60	30	5	0.6	0.5					30	500	10	0.4	1.3	150	8	250	20	310			TO-92	
										50	150	1	1.6	2.6	500								
										100	300	150	10										
										75	10	10											
										50	1	10											
PN4274	30	12	5	0.625	0.2	0.5	20			18	100	1	0.2	0.7	0.85	10	4	400	10	12			TO-92
										30	30	0.4	0.25	1.15	30								
										35	120	10	1	0.5	1.6	100							
PN4275	\$ 40	15	5	0.625	0.2	0.5	20			18	100	1	0.2	0.72	0.85	10	4	400	10	12			TO-92
										30	30	0.4	0.25	1.15	30								
										35	120	10	1	0.5	1.6	100							
PN5127	20	12	3	0.625	0.1	0.05	10			15	300	2	10	0.3	1	10	3.5	150	2			TO-92	
PN5128	15	12	3	0.625	0.5	0.05	10			35	350	50	10	0.25	1.1	150	10	150	800	50		TO-92	
PN5129	15	12	3	0.625	0.5	0.05	10			35	350	50	10	0.25	1.1	150	10	150	800	50		TO-92	
PN5130	30	12	1	0.625	0.05	0.05	10			15	250	8	10	0.6	1	10	1.7	450	8			TO-92	

\$ NOTE: V<sub>CEs</sub>

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>	I <sub>C</sub> & V <sub>CE</sub>	V <sub>CE(SAT)</sub> (V)	V <sub>BE(SAT)</sub> (V)	I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>t</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>on</sub> (ns)	N <sub>F</sub> (dB)	Freq (MHz)	C <sub>in</sub> (pF)	CDIL Case Style
	Min	Min	Min	@Tc=25°C	Max	Max	Max	Max	Min	Max	Min	Max	Max	Max	Typ	Max	Min	Typ	Max	Max	Max	Max
PN5131	20	15	3	0.625	0.1	0.05	10			35	500	10	1		6	100	10					TO-92
PN5132	20	20	3	0.625	0.1	0.05	10			30	400	10	10	2	3.5	200	10					TO-92
PN5133	20	18	3	0.625	0.05	0.05	15			60	1000	1	5	0.4	5	40	240	1				TO-92
PN5135	30	25	4	0.625	0.5	0.3	15			50	60	10	10	1	25	2	15	30				TO-92
PN5136	30	20	3	0.6	0.5	0.1	20			20	400	150	1	0.25	35	2	20	50				TO-92
PN5137	30	20	3	0.6	0.5	0.1	20			20	400	150	1	0.25	35	2	20	50				TO-92
PN5179	20	15	3	0.35		0.002	15			25	250	3	1	0.4	1	900	2000	5	4.5	200		TO-92-3
PN5449	50	30	5	0.625	0.6	0.1	20			100	300	50	2	0.6	100	100	50					TO-92
PN5816	50	40	5	0.625	0.6	0.1	25			100	200	2	2	0.75	500	100	50					TO-92
PN7055	220	220	7	0.625	0.5	0.1	150			20		1	20	1	3.5	50	15					TO-92
										40	10	20										
										40	30	20										
TIS86	30	30		0.35	0.1	0.1	15			40	200	4	10	0.5	0.5	500	4		5	200		TO-92-2
TIS87	45	45		0.35	0.1	0.1	15			30	150	12	12	0.5	0.5	500	12					TO-92-2
TIS90	40	40	5	0.625	0.6	0.1	20			100	300	50	2	0.25	0.6	1	50					TO-92-1
TIS92	40	40	5	0.625	0.6	0.1	20			100	300	50	2	0.25	0.6	1	50					TO-92-4
TIS97		40		0.625	0.1	0.01	40			250	700	0.1	5						3			TO-92-4
TIS98		60		0.625	0.05	0.01	40			100	300	1	5	0.5	100	2	10					TO-92-4
TIS99		65		0.625	0.5	0.01	40			55	300	100	5	0.5	100	2	10					TO-92-4