National Semiconductor

Consumer Series

Type No.	Case Style	V_{CES}* V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) Max @	V_{CB} (V)	H_{FE} Min	H_{FE} Max @	I_C & (mA)	V_{CE} (V)	$V_{CE(SAT)}$ (V) & Max	$V_{BE(SAT)}$ $V_{BE(ON)}$* (V) Min	$V_{BE(SAT)}$ $V_{BE(ON)}$* (V) Max @	I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	f_T (MHz) Max @	I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Condition	Process No.
CS9011	TO-92 (92)	40	30	5	100	30	39	198	1	5	0.3		0.75	10	3.5	150		1		4	(Note 4)	23
CS9012	TO-92 (92)	40	25	5	100	25	64	202	50	1	0.6		1.2	300								68
CS9013	TO-92 (92)	40	25	5	100	25	64	202	50	1	0.6		1.2	300								10
CS9014	TO-92 (92)	50	40	5	50	30	60	600	1	5	0.3		1	10	4.5	100		10		10	(Note 5)	07
CS9015	TO-92 (92)	50	40	5	50	30	60	600	1	5	0.3		1	10	6.0	100		10		10	(Note 5)	62
CS9016	TO-92 (92)	30	20	5	50	20	28	146	1	5	0.3		1	10	1.6	300		1		5	(Note 6)	49
CS9018	TO-92 (92)	30	15	5	50	20	28	146	1	5	0.3		1	10	1.7	400		2				43
ED1402	TO-92 (92)	35	30	4	10	10	110	810	2	5										10	(Note 7)	11
ED1502	TO-92 (92)	25	20	4	10	10	36	210	1	10						350		5				49
ED1602	TO-92 (92)	35	30	4	10	10	70	475	2	5										10	(Note 7)	69
ED1702	TO-92 (92)	30*	25	5	100*	20	40 106	 300	0.5A 100	1 1	0.4			500								37
ED1802	TO-92 (92)	30*	25	5	100*	20	40 106	 300	0.5A 100	1 1	0.4			500								77
SA733	TO-92 (94)	60	50	50	100	50	90	600	1	6	0.3			100	6	150		10		20		69
SA1015	TO-92 (94)	50	50	5	100	40	70 25	400	2 150	6 6	0.3			100	7					10		69

Consumer Series

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Consumers Series (Continued)

Type No.	Case Style	V_{CES}* V_{CBO} (V) Min	V_{CEO} (V) Min	V_{EBO} (V) Min	I_{CES}* I_{CBO} (nA) Max	@ V_{CB} (V)	H_{FE} @ I_C & V_{CE} Min	Max	(I_C mA)	(V_{CE} V)	$V_{CE(SAT)}$ (V) & Max	$V_{BE(SAT)}$ $V_{BE(ON)}$* (V) Min	Max	@ I_C (mA)	C_{ob} (pF) Max	f_T (MHz) Min	Max	@ I_C (mA)	t_{off} (ns) Max	NF (dB) Max	Test Condition	Process No.
SC945	TO-92 (94)	60	50	5	100	50	90	600	1	6	0.3			100	4	150		10		20		11
SC1815	TO-92 (94)	60	50	5	100	50	70 25	400	2 150	6 6	0.3			100	4					10		11
NA11	TO-92 *	25	20	5	1μA	20	30	350	100	3	0.5		1.0	400	4.5	50		100			(Note 2)	10
NA12	TO-92 *	25	20	5	1μA	20	30	350	100	3	0.5		1.0	400	7	50		100			(Note 2)	68
NA31	TO-92 *	35	30	5	1μA	30	30	350	300	5	0.5		1.2	1.2A	10	20		300			(Note 2)	37
NA32	TO-92 *	35	30	5	1μA	30	30	350	300	5	0.5		1.2	1.2A	17	20		300			(Note 2)	77
NB111	TO-92 *	40	35	6	100	35	100	350	15	5	0.4		0.95	20	4	100		15			(Note 3)	11
NB121	TO-92 *	40	35	6	100	35	100	350	15	5	0.4		0.95	20	6	100		15			(Note 3)	69
NR421	TO-92 (96)	35	30	3	100	30	20	240	2	5	0.3		0.95	10	1.3	450		2			(Note 1)	42
NR431	TO-92 *	18	15	3	100	15	20	240	1	5	0.3		0.95	10	1.7	350		1			(Note 1)	43
SS8050	TO-92 (92)	40	25	6	100	35	45 85 40	300	5 100 800	1 1 1	0.5		1.2	800	9	100		50				37
SS8550	TO-92 (92)	40	25	6	100	35	45 85 40	300	5 100 800	1 1 1	0.5		1.2	800	15	100		50				77

*Case style means available in EBC or ECB pinouts.

TEST CONDITIONS:

Note 1: $I_C/I_B = 20$
Note 2: $I_C/I_B = 40$
Note 3: $I_C/I_B = 50$
Note 4: $I_C = 1$ mA, $f = 1$ MHz
Note 5: $I_C = 100$ μA, $f = 5$ kHz
Note 6: $I_C = 1$ mA, $f = 100$ MHz
Note 7: $I_C = 200$ μA, $f = 2$ kHz

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Consumers Series (Continued)

H_{FE} Bins

	A	B	C	D	E	F	G	H	I	K	L	M	N
CS9011					39–60*	54–80	72–108	97–146	132–198				
CS9012				64–91*	78–112	96–135	118–166	144–202*					
CS9013				64–91*	78–112	96–135	118–166	144–202*					
CS9014	60–150	100–300	200–600										
CS9015	60–150	100–300	200–600										
CS9016				28–45*	39–60	54–80	72-108	97–146*					
CS9018				28–45*	39–60	54–80	72-108	97–146*					
ED1402	110–165*	150–225	202–318	290-450	410–810*								
ED1502	36–55*	48–75	66–100	84–127	105–210*								
ED1602	70–105*	90–140*	125–190	170–260	223–475*								
ED1702										106–150*	132–188	170–233	213–300*
ED1802										106–150*	132–188	170–233	213–300*

*Orders must contain at least two adjacent bins.

H_{FE} Bins

	OR	YE	GR		B	C	D
SA1015	70–140*	120–240	200–400				
SC1815	70–140*	120–240	200–400				
SS8050					85–160	120–200	160–300*
SS8550					85–160	120–200	160–300*

*Orders must contain at least two adjacent bins.

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Consumers Series (Continued)

	H_{FE} Bins											
	R	Q	P	K		G	H	I	J		X	Y
SA733	90–180	135–270	200–400	300–600								
SC945	90–180	135–270	200–400	300–600								
NA11						68–110*	100–160	140–240	200–350*		30–110	100–350
NA12						68–110*	100–160	140–240	200–350*		30–110	100–350
NA31						68–110	100–160	140–240*			30–110	100–350
NA32						68–110	100–160	140–240*			30–110	100–350
NA111							100–160	140–240	200–350			100–350
NA121							100–160	140–240	200–350			100–350

*Orders must contain at least two adjacent bins.

	H_{FE} Bins							
	E	F	G	H		R	S	T
NR421	30–50*	45–75	68-110	100–160*		20–50*	45–110	100-240*
NR431	30–50	45–75	68-110	100–160*		20–50*	45–110	100-240*

*Orders must contain at least two adjacent bins.