

6501130 NATL SEMICOND, (DISCRETE)

28C 35511 D

T-29-01

Pro Electron Series

PRO ELECTRON SERIES (Bipolar—see page 5-37 for JFET)

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>BE0</sub> <sup>*</sup> (V) Min	I <sub>CE0</sub> <sup>*</sup> (mA) Max	V <sub>CB</sub> <sup>*</sup> (V)	HFE I <sub>fe</sub> 1 kHz <sup>*</sup> Min	HFE I <sub>fe</sub> 1 kHz <sup>*</sup> Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC107	TO-18	45	6	50	15 <sup>*</sup>	50	40	0.01	0.6	0.55	100	4.5	150	10		10	1	04
BC107A	TO-18	45	6	50	15 <sup>*</sup>	50	125	500 <sup>*</sup>	0.2	0.55	10	4.5	150	10		10	1	04
BC107B	TO-18	45	6	50	15 <sup>*</sup>	50	40	0.01	0.6	0.55	100	4.5	150	10		10	1	04
BC108	TO-18	20	5	30	15 <sup>*</sup>	30	40	0.01	0.6	0.55	100	4.5	150	10		10	1	04
BC108A	TO-18	20	5	30	15 <sup>*</sup>	30	125	260 <sup>*</sup>	0.2	0.55	100	4.5	150	10		10	1	04
BC108B	TO-18	20	5	30	15 <sup>*</sup>	30	40	0.01	0.6	0.55	100	4.5	150	10		10	1	04
BC108C	TO-18	20	5	30	15 <sup>*</sup>	30	40	0.01	0.6	0.55	100	4.5	150	10		10	1	04
BC109	TO-18	20	5	30	15 <sup>*</sup>	30	100	0.01	0.6	0.55	100	4.5	150	10		4	1	04
BC109B	TO-18	20	5	30	15 <sup>*</sup>	30	240	500 <sup>*</sup>	0.2	0.55	10	4.5	150	10		4	1	04
BC109C	TO-18	20	5	30	15 <sup>*</sup>	30	100	0.01	0.6	0.55	100	4.5	150	10		4	1	04
BC140	TO-39	40	7	80	100 <sup>*</sup>	60	40	250	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC140-6	TO-39	40	7	80	100 <sup>*</sup>	60	40	100	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC140-10	TO-39	40	7	80	100 <sup>*</sup>	60	63	160	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC140-16	TO-39	40	7	80	100 <sup>*</sup>	60	100	250	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC141	TO-39	60	7	100 <sup>*</sup>	100 <sup>*</sup>	60	40	250	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC141-6	TO-39	60	7	100 <sup>*</sup>	100 <sup>*</sup>	60	40	100	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14
BC141-10	TO-39	60	7	100 <sup>*</sup>	100 <sup>*</sup>	60	63	160	1.0	1.8 <sup>*</sup>	1A	25	50	50	850		2	14

6501130 NATL SEMICOND, (DISCRETE)

28C 35512

D



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	IC <sub>ES</sub> <sup>*</sup> IC <sub>BO</sub> (mA) Max	H <sub>FE</sub> h <sub>FE</sub> @ 1 kHz Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min Max	IC (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC143	TO-5	60	60	5	50	20	1.5	1.5	500	20	60				63
BC146-1	TO-92 (94)	20	20	4	50	80	1.5	1.5	500	20	60				04
BC146-2	TO-92 (94)	20	20	4	50	140	1.5	1.5	500	20	60				04
BC146-3	TO-92 (94)	20	20	4	50	280	1.5	1.5	500	20	60				04
BC160	TO-39	40*	5	40	100	40	1.0	1.7*	1A	30	50	650		2	67
BC160-6	TO-39	40*	5	40	100	40	1.0	1.7*	1A	30	50	650		2	67
BC160-10	TO-39	40*	5	40	100	63	1.0	1.7*	1A	30	50	650		2	67
BC160-16	TO-39	40*	5	40	100	100	1.0	1.7*	1A	30	50	650		2	67
BC161	TO-39	60*	5	60	100	40	1.0	1.7*	1A	30	50	650		2	67
BC161-6	TO-39	60*	5	60	100	40	1.0	1.7*	1A	30	50	650		2	67
BC161-10	TO-39	60*	5	60	100	63	1.0	1.7*	1A	30	50	650		2	67
BC161-16	TO-39	60*	5	60	100	100	1.0	1.7*	1A	30	50	650		2	67
BC167	TO-92 (94)	60*	45	6	15*	110	0.2	0.55	10	4.5	150		10	1	04
BC167A	TO-92 (94)	60*	45	6	15*	125	0.6	0.55	100	4.5	150		10	1	04
BC167B	TO-92 (94)	60*	45	6	15*	110	0.2	0.55	10	4.5	150		10	1	04
BC168	TO-92 (94)	20	20	5	15*	110	0.2	0.55	10	4.5	150		10	1	04
BC168A	TO-92 (94)	20	20	5	15*	125	0.6	0.55	100	4.5	150		10	1	04
BC168B	TO-92 (94)	20	20	5	15*	110	0.2	0.55	10	4.5	150		10	1	04

**TEST CONDITIONS:**  
 (1) IC = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) IC = 100 mA, V<sub>CE</sub> = 20V, IB<sup>1</sup> = IB<sup>2</sup> = 5 mA. (3) IC = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) IC = 100 mA, V<sub>CE</sub> = 10V, IB<sup>1</sup> = IB<sup>2</sup> = 10 mA. (5) IC = 10 mA, V<sub>CE</sub> = 3V, IB<sup>1</sup> = IB<sup>2</sup> = 1 mA. (6) IC = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) IC = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) IC = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) IC = 150 mA, V<sub>CE</sub> = 6V, IB<sup>1</sup> = IB<sup>2</sup> = 15 mA. (10) IC = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35513 D

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	VCES* VCBO (V) Min	VCEO (V) Min	VEBO (V) Min	ICES* ICBO (mA) Max	HFE hfe 1 kHz* Min Max	VCE(SAT) (V) Max	VBE(SAT) & VBE(ON)* (V)		Cob (pF) Max	fT (MHz) Min Max	toff (ns) Max	NF (dB) Max	Test Conditions	Process No.
								Min	Max						
BC168C	TO-92 (94)		20	5	15*	110 450	0.2 0.6	0.55	0.70* 2	4.5	150		10	1	04
BC169	TO-92 (94)		20	5	15*	110 240	0.2 0.6	0.55	0.70* 2	4.5	150		4	1	04
BC169B	TO-92 (94)		20	5	15*	110 240	0.2 0.6	0.55	0.70* 2	4.5	150		4	1	04
BC169C	TO-92 (94)		20	5	15*	110 450	0.2 0.6	0.55	0.70* 2	4.5	150		4	1	04
BC177	TO-18	50	45	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC177A	TO-18	50	45	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC177B	TO-18	50	45	5	100	110 240	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC177VI	TO-18	50	45	5	100	110 75	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC178	TO-18	30	25	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC178A	TO-18	30	25	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC178B	TO-18	30	25	5	100	110 240	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		10	1	71
BC179	TO-18	25	20	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		4	1	71
BC179A	TO-18	25	20	5	100	110 125	0.18		0.78 10 0.75* 2 1.0* 100	4.5	150		4	1	71

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28C 35514

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE5</sub> <sup>*</sup> V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EBO</sub> (V) Min	I <sub>CE5</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	HFE h <sub>fe</sub> @ 1 kHz Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min Max	I <sub>C</sub> (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC179B	TO-18	25	20	5	100	110 240	2 500* 2	0.18	0.78 0.75* 1.0*	10	4.5	150		4	1	71
BC182	TO-92 (97)	60	50	5	15	40 80 125	0.01 100 500* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC182A	TO-92 (97)	60	50	5	15	40 80 125	0.01 100 260* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC182B	TO-92 (97)	60	50	5	15	40 80 240	0.01 100 500* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC182L	TO-92 (94)	60	50	5	15	40 80 125	0.01 100 500* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC182LA	TO-92 (94)	60	50	5	15	40 80 125	0.01 100 260* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC182LB	TO-92 (94)	60	50	5	15	40 80 240	0.01 100 500* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC183	TO-92 (97)	45	30	5	15	40 80 125	0.01 100 900* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC183A	TO-92 (97)	45	30	5	15	40 80 125	0.01 100 260* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC183B	TO-92 (97)	45	30	5	15	40 80 240	0.01 100 500* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04
BC183C	TO-92 (97)	45	30	5	15	40 80 450	0.01 100 900* 2	0.6 0.25	1.2 0.55 0.70*	10	5	150		10	1	04

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35515 D

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Pro Electron Series

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> * V <sub>CB0</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE</sub> * I <sub>CB0</sub> (nA) Max	V <sub>CB</sub> (V)	H <sub>FE</sub> h <sub>FE</sub> @ 1 kHz*		I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)*</sub> (V)		I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) @ Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Min	Max			Min	Max								
BC183L	TO-92 (94)	45	30	5	15	30	40 80 125	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			10	1	04
BC183LA	TO-92 (94)	45	30	5	15	30	40 80 125	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			10	1	04
BC183LB	TO-92 (94)	45	30	5	15	30	40 80 240	0.01 100 500*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			10	1	04
BC183LC	TO-92 (94)	45	30	5	15	30	40 80 450	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			10	1	04
BC184	TO-92 (97)	45	30	5	15	30	100 130 240	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC184B	TO-92 (97)	45	30	5	15	30	100 130 240	0.01 100 500*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC184C	TO-92 (97)	45	30	50	15	30	100 130 450	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC184L	TO-92 (94)	45	30	50	15	30	100 130 240	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC184LB	TO-92 (94)	45	30	50	15	30	100 130 240	0.01 100 500*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC184LC	TO-92 (94)	45	30	50	15	30	100 130 450	0.01 100 900*	5 5 5	0.6 0.25	1.2 0.55	100 10 2	5	150	10			4	1	04
BC204	TO-92 (92)	50	45	5	50	45	50	450	2	5	0.3	10						10	1	71
BC207	TO-92 (92)	50	45	5	15	40	110	450	2	5	0.25 0.6	10 100	6					10	1	04
BC212	TO-92 (97)	60	50	5	15	30	60	400*	2	5	0.6 0.25	1.1 0.6	10 10 2	200	10			10	1	63

6501130 NATL SEMICOND, (DISCRETE)

28C 35516

T-29-01



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> * V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE</sub> * I <sub>CB0</sub> (mA) Max	HFE h <sub>FE</sub> 1 kHz* Min	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)*</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC212A	TO-92 (97)	60	50	5	15	100	300* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC212B	TO-92 (97)	60	50	5	15	200	400* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC212L	TO-92 (94)	60	50	5	15	40 60 60*	0.01 2 5 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC212LA	TO-92 (94)	60	50	5	15	40 60 100	0.01 2 5 300* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC212LB	TO-92 (94)	60	50	5	15	40 60 200	0.01 2 5 400* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213	TO-92 (97)	45	30	5	15	40 60 80	0.01 2 5 600* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213A	TO-92 (97)	45	30	5	15	40 60 100	0.01 2 5 300* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213B	TO-92 (97)	45	30	5	15	40 60 200	0.01 2 5 400* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213C	TO-92 (97)	45	30	5	15	40 60 350	0.01 2 5 600* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213L	TO-92 (94)	45	30	5	15	40 80 80*	0.01 2 5 400 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63
BC213LA	TO-92 (94)	45	30	5	15	40 80 100	0.01 2 5 300* 2 5	0.6 0.25	1.1 0.72*	100 10 2	10	200	10		10	1	63

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

D

Pro Electron Series

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**Pro Electron Series**

6501130 NATL SEMICOND, (DISCRETE)

28C 35517 D

T-29-01

**PRO ELECTRON SERIES (Continued)**

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V)		V <sub>BE0</sub> (V)	I <sub>CE0</sub> <sup>*</sup> (mA)		H <sub>FE</sub> h <sub>FE</sub> @ 1 kHz <sup>*</sup>	I <sub>C</sub> & V <sub>CE</sub> (mA, V)	V <sub>CE(SAT)</sub> (V)		V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V)		I <sub>C</sub> (mA)	C <sub>ob</sub> (pF)	f <sub>T</sub> (MHz)	I <sub>C</sub> (mA)	t <sub>off</sub> (ns)	NF (dB)	Test Conditions	Process No.
		Min	Max		Min	Max			Min	Max	Min	Max								
BC213LB	TO-92 (94)	45	30	5	15	30	40 200	0.01 400*	5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC213LC	TO-92 (94)	45	30	5	15	30	40 80 350	0.01 2 600*	5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214	TO-92 (97)	45	30	5	15	30	40 80 140	0.01 2 600*	5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214A	TO-92 (97)	45	30	5	15	30	40 80 100	0.01 2 300*	5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214B	TO-92 (97)	45	30	5	15	30	40 80 200	0.01 2 400*	5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214C	TO-92 (97)	45	30	5	15	30	40 80 350	0.01 2 600*	5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214L	TO-92 (94)	45	30	5	15	30	100 140 120 140*	0.01 2 100 2	5 5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214LB	TO-92 (94)	45	30	5	15	30	100 140 120 200	0.01 2 100 400*	5 5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC214LC	TO-92 (94)	45	30	5	15	30	100 140 120 350	0.01 2 100 600*	5 5 5 5	0.6 0.25	1.1 0.6	0.72* 0.72* 2	100 10	10	200	10	10	2	1	63
BC237-92	TO-92 (97)	50	45	6	50	20	100 140 120 125	0.01 2 100 500*	5 5 5 5	0.25	0.77* 0.6	0.70* 0.70* 2	10 100	4.5				10	1	04
BC237A-92	TO-92 (97)	50	45	6	50	20	100 140 120 125	0.01 2 100 500*	5 5 5 5	0.25	0.77* 0.6	0.70* 0.70* 2	10 100	4.5				10	1	04

6501130 NATL SEMICOND, (DISCRETE)

28C 35518  
T-24-01

PRO ELECTRON SERIES (Continued)

Type No.	Case Style	VCES* V <sub>CE0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	ICES* I <sub>CB0</sub> (mA) Max	HFE		V <sub>CE(SAT)</sub> & V <sub>BE(ON)*</sub> (V)		V <sub>BE(SAT)</sub> & V <sub>BE(ON)*</sub> (V)		C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) @ Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.	
						h <sub>FE</sub> 1 kHz	h <sub>FE</sub> 1 kHz	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(ON)*</sub> (V) Min	V <sub>BE(SAT)</sub> (V) Min	V <sub>BE(ON)*</sub> (V) Max								I <sub>C</sub> (mA) Min
BC237B-92	TO-92 (97)	50	45	6	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	500*	2	5	0.55	0.70*	2							
BC238-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	900*	2	5	0.55	0.70*	2							
BC238A-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	260*	2	5	0.55	0.70*	2							
BC238B-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	500*	2	5	0.55	0.70*	2							
BC238C-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	900*	2	5	0.55	0.70*	2							
BC239-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	900*	2	5	0.55	0.70*	2							
BC239B-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	500*	2	5	0.55	0.70*	2							
BC239C-92	TO-92 (97)	30	20	5	50	20	100	0.01	5	0.25	0.77*	4.5			10		1	04	
				140	2	5	100	5			0.6	100							
				120	100	5	900*	2	5	0.55	0.70*	2							
BC261A	TO-18		45		50	45	100	0.01	5	0.25	0.9	4.5			6		3	71	
							140	2	5	0.6	100								

TEST CONDITIONS:  
 (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

Pro Electron Series

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35519 D

T-29-01

PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> <sup>*</sup> (V) Min	V <sub>CE</sub> <sup>*</sup> (V) Min	V <sub>EB</sub> <sup>*</sup> (V) Min	I <sub>CE</sub> <sup>*</sup> I <sub>CB</sub> <sup>*</sup> (mA) Max	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Min	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC261B	TO-18		45		50	100	0.01	5	0.25	0.9	10					6	3	71
BC262A	TO-18		20	5	50	100	0.01	5	0.25	0.9	10					6	3	71
BC262B	TO-18		20	5	50	100	0.01	5	0.25	0.9	10					6	3	71
BC263A	TO-18		20	5	50	100	0.01	5	0.25	0.9	10					2.5	3	71
BC263B	TO-18		20	5	50	100	0.01	5	0.25	0.9	10					2.5	3	71
BC307-92	TO-92 (97)		45	5	100	100	0.01	5	0.18	0.78	10					10	1	71
BC307A-92	TO-92 (97)		45	5	100	100	0.01	5	0.18	0.78	10					10	1	71
BC307B-92	TO-92 (97)		45	5	100	100	0.01	5	0.18	0.78	10					10	1	71
BC308-92	TO-92 (97)		25	5	100	100	0.01	5	0.18	0.78	10					10	1	71
BC308A-92	TO-92 (97)		25	5	100	100	0.01	5	0.18	0.78	10					10	1	71

6501130 NATL SEMICOND, (DISCRETE)

28C 35520

T-29-01

PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE0</sub> <sup>*</sup> (mA) Max	I <sub>CB0</sub> <sup>*</sup> (mA) Max	HFE		I <sub>C</sub> & V <sub>CE</sub>		V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V)		I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Min	Max	Min	Max		Min	Max								
BC308B-92	TO-92 (97)	25	30	5	100	20	100	140	0.01	5	0.18	0.78	10						10	1	71
BC308C-92	TO-92 (97)	25	30	5	100	20	100	120	0.01	5	0.18	0.75*	10						10	1	71
BC309-92	TO-92 (97)	20	25	5	100	20	100	140	0.01	5	0.18	0.78	10						4	1	71
BC309B-92	TO-92 (97)	20	25	5	100	20	100	120	0.01	5	0.18	0.75*	10						4	1	71
BC309C-92	TO-92 (97)	20	25	5	100	20	100	240	0.01	5	0.8	0.78	10						4	1	71
BC317	TO-92 (92)	45	50	6	30	20	110	125	0.01	5	0.2	0.77*	10	4					6	1	04
BC317A	TO-92 (92)	45	50	6	30	20	110	125	0.01	5	0.2	0.77*	10	4					6	1	04
BC317B	TO-92 (92)	45	50	6	30	20	200	240	0.01	5	0.2	0.77*	10	4					6	1	04
BC318	TO-92 (92)	20	30	5	30	20	110	125	0.01	5	0.2	0.77*	10	4					6	1	04
BC318A	TO-92 (92)	20	30	5	30	20	110	125	0.01	5	0.2	0.77*	10	4					6	1	04

TEST CONDITIONS:  
 (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35521 D

Pro Electron Series

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>s</sup> V <sub>CB</sub> <sup>s</sup> (V) Min	V <sub>CE</sub> <sup>s</sup> (V) Min	V <sub>EB</sub> <sup>s</sup> (V) Min	I <sub>CB</sub> <sup>s</sup> (mA) Max	V <sub>CB</sub> <sup>s</sup> (V)	HFE h <sub>FE</sub> 1 kHz Min	HFE h <sub>FE</sub> 1 kHz Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	V <sub>BE(ON)</sub> (V) Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Mfin	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC318B	TO-92 (92)	30	20	5	30	20	200	450	2 5	0.2	0.77*	10	100	4				6	1	04
BC318C	TO-92 (92)	30	20	5	30	20	100	800	2 5	0.2	0.77*	10	100	4				6	1	04
BC319	TO-92 (92)	30	20	5	30	20	40	800	2 5	0.2	0.77*	10	100	4				4	1	04
BC319B	TO-92 (92)	30	20	5	30	20	200	800	2 5	0.2	0.77*	10	100	4				4	1	04
BC319C	TO-92 (92)	30	20	5	30	20	240	900*	2 5	0.2	0.77*	10	100	4				4	1	04
BC327	TO-92 (97)	50†	45	5	100†	45	100	600	1 1	0.7	12*	500	300	4				4	1	67
BC327-10	TO-92 (97)	50†	45	5	100†	45	40	300	1 1	0.7	1.2*	500	300	4				4	1	67
BC327-16	TO-92 (97)	50†	45	5	100†	45	63	160	100 1	0.7	1.2*	500	300	4				4	1	67
BC327-25	TO-92 (97)	50†	45	5	100†	45	100	250	100 1	0.7	1.2*	500	300	4				4	1	67
BC328	TO-92 (97)	30†	25	5	100†	25	40	400	100 1	0.7	1.2*	500	300	4				4	1	67
BC328-10	TO-92 (97)	30†	25	5	100†	25	40	300	100 1	0.7	1.2	500	300	4				4	1	67
BC328-16	TO-92 (97)	30†	25	5	100†	25	63	160	100 1	0.7	1.2	500	300	4				4	1	67
BC328-25	TO-92 (97)	30†	25	5	100†	25	100	250	100 1	0.7	1.2	500	300	4				4	1	67
BC337	TO-92 (97)	50†	45	5	100†	45	40	400	100 1	0.7	1.2*	500	300	4				4	1	14
BC337-10	TO-92 (97)	50†	45	5	100†	45	40	300	100 1	0.7	1.2*	500	300	4				4	1	14
BC337-16	TO-92 (97)	50†	45	5	100†	45	63	160	100 1	0.7	1.2*	500	300	4				4	1	14
BC337-25	TO-92 (97)	50†	45	5	100†	45	100	250	100 1	0.7	1.2*	500	300	4				4	1	14

T-29-01

6501130 NATL SEMICOND, (DISCRETE)

28C 35522

T-29-01



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>BE0</sub> (V) Min	I <sub>CB0</sub> <sup>*</sup> (mA) Max	h <sub>FE</sub> @ 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min Max	I <sub>C</sub> (mA) Min Max	C <sub>cb</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC338	TO-92 (97)	30†	5	100†	40 100	300 100	0.7	1.2*	500 300	4			4	1	14
BC338-10	TO-92 (97)	30†	5	100†	40 63	300 100	0.7	1.2*	500 300	4			4	1	14
BC338-16	TO-92 (97)	30†	5	100†	40 100	300 100	0.7	1.2*	500 300	4			4	1	14
BC338-25	TO-92 (97)	30†	5	100†	40 160	300 100	0.7	1.2*	500 300	4			4	1	14
BC415	TO-92 (97)	45	5	15	40 120	0.01 800	0.25 0.6		10 100				2	10	71
BC415A	TO-92 (97)	45	5	15	40 120	0.01 220	0.25 0.6		10 100				2	10	71
BC415B	TO-92 (97)	45	5	15	100 180	0.01 460	0.25 0.6		10 100				2	10	71
BC415C	TO-92 (97)	45	5	15	100 380	0.01 800	0.25 0.6		10 100				2	10	71
BC485	TO-92 (97)	45	5	100	15 40	1A 10	0.5	1.2*	500 300	4			4	1	14
BC485A	TO-92 (97)	45	5	100	15 40	1A 10	0.5	1.2*	500 300	4			4	1	14
BC485B	TO-92 (97)	45	5	100	15 40	1A 10	0.5	1.2*	500 300	4			4	1	14
BC485L	TO-92 (97)	45	5	100	15 40	1A 10	0.5	1.2*	500 300	4			4	1	14
BC547	TO-92 (97)	50	6	10	125	500*	0.25 0.6	0.77* 0.55 0.70*	10 100	4.5			10	1	04
BC547A	TO-92 (97)	50	6	10	125	260*	0.25 0.6	0.77* 0.55 0.70*	10 2	4.5			10	1	04

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35523 D

T-29-01

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>EB</sub> (V) Min	I <sub>CE</sub> <sup>*</sup> I <sub>CB</sub> (mA) Max	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Max	V <sub>CE</sub> (SAT) (V) Max	V <sub>BE</sub> (SAT) & V <sub>BE</sub> (ON) <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC547B	TO-92 (97)	50	45	6	10	240	500*	0.25 0.6	0.77*	10	4.5				10	1	04
BC547C	TO-92 (97)	50	45	6	10	450	900*	0.25 0.6	0.77*	10	4.5				10	1	04
BC548	TO-92 (97)	30	20	5	10	125	900*	0.25 0.6	0.77*	10	4.5				10	1	04
BC548A	TO-92 (97)	30	20	5	10	125	260*	0.25 0.6	0.77*	10	4.5				10	1	04
BC548B	TO-92 (97)	30	20	5	10	240	500*	0.25 0.6	0.77*	10	4.5				10	1	04
BC548C	TO-92 (97)	30	20	5	10	450	900*	0.25 0.6	0.77*	10	4.5				10	1	04
BC549	TO-92 (97)	30	20	5	10	240	900*	0.25 0.6	0.77*	10	4.5				4	1	04
BC549B	TO-92 (97)	30	20	5	10	240	500*	0.25 0.6	0.77*	10	4.5				4	1	04
BC549C	TO-92 (97)	30	20	5	10	450	900*	0.25 0.6	0.77*	10	4.5				4	1	04
BC550	TO-92 (97)	50	45	5	10	240	900*	0.25 0.6	0.77*	10					3	1	04
BC550B	TO-92 (97)	50	45	5	10	240	500*	0.25 0.6	0.77*	10					3	1	04
BC550C	TO-92 (97)	50	45	5	10	450	900*	0.25 0.6	0.77*	10					3	1	04
BC557	TO-92 (97)	50	45	5	100	75	260*	0.3 0.65	0.82* 0.6	10 0.75*					10	1	71

6501130 NATL SEMICOND, (DISCRETE)

28C 35524

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> * VCBO (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE</sub> * I <sub>CB0</sub> (mA) Max	HFE h <sub>FE</sub> @ 1 kHz*	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)*</sub> (V) Min Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BC557A	TO-92 (97)	50	45	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC557B	TO-92 (97)	50	45	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC558	TO-92 (97)	30	25	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC558A	TO-92 (97)	30	25	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC558B	TO-92 (97)	30	25	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC558C	TO-92 (97)	30	25	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					10	1	71
BC559	TO-92 (97)	25	20	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					4	1	71
BC559A	TO-92 (97)	25	20	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					4	1	71
BC559B	TO-92 (97)	25	20	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					4	1	71
BC559C	TO-92 (97)	25	20	5	100	20	0.3 0.65	0.82* 0.6 0.75* 2	10 100					4	1	71
BC560	TO-92 (97)	50	45	5	100	45	0.3 0.65	0.82* 0.6 0.75* 2	10 100					2	1	71

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CC</sub> = 20V, I<sub>B</sub> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CC</sub> = 10V, I<sub>B</sub> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CC</sub> = 3V, I<sub>B</sub> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CC</sub> = 6V, I<sub>B</sub> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35525 D

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>CE0</sub> <sup>*</sup> (V) Max	V <sub>BE0</sub> (V) Min	V <sub>BE0</sub> (V) Max	I <sub>CE0</sub> <sup>*</sup> (mA) Max	I <sub>CE0</sub> <sup>*</sup> (mA) Min	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	V <sub>BE(SAT)</sub> (V) Max	I <sub>C</sub> (mA) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	I <sub>C</sub> (mA) Min	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.	
																						HFE h <sub>FE</sub> 1 kHz
BC560A	TO-92 (97)	45	50	5	45	100	100	0.3 0.65	0.82*	10	2	100								2	1	71
BC560B	TO-92 (97)	45	50	5	45	100	100	0.3 0.65	0.82*	10	2	100								2	1	71
BC560C	TO-92 (97)	45	50	5	45	100	100	0.3 0.65	0.82*	10	2	100								2	1	71
BCX58	TO-92 (97)	32	32	7	32	10	10				2	2		125		10	10	800	6	3/4	04	
BCX58-7	TO-92 (97)	32	32	7	32	10	10				2	2		125		10	10	800	6	3/4	04	
BCX58-8	TO-92 (97)	32	32	7	32	10	10				2	2		125		10	10	800	6	3/4	04	
BCX58-9	TO-92 (97)	32	32	7	32	10	10				2	2		125		10	10	800	6	3/4	04	
BCX58-10	TO-92 (97)	32	32	7	32	10	10				2	2		125		10	10	800	6	3/4	04	
BCX59	TO-92 (97)	45	50	7	45	100	100	0.5	1.0	100	2	100		125		10	10	800		5	04	
BCX59-7	TO-92 (97)	45	50	7	45	100	100	0.5	1.0	100	2	100		125		10	10	800		5	04	
BCX59-8	TO-92 (97)	45	50	7	45	100	100	0.5	1.0	100	2	100		125		10	10	800		5	04	
BCX59-9	TO-92 (97)	45	50	7	45	100	100	0.5	1.0	100	2	100		125		10	10	800		5	04	

6501130 NATL SEMICOND, (DISCRETE)

28C 35526

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE</sub> <sup>*</sup> (V) Min	V <sub>EB</sub> (V) Min	I <sub>CE</sub> <sup>*</sup> I <sub>CB</sub> (mA) Max	H <sub>FE</sub> h <sub>FE</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE</sub> (SAT) (V) Max	V <sub>BE</sub> (SAT) (V) Min Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BCX59-10	TO-92 (97)		45	7		100 380 240 60	0.01 2 10 100	0.5	1.0	100		125	800		5	04
BCX78	TO-92 (97)		32	5		120 80 40	2 10 100	0.6	1.0	100						71
BCX78-7	TO-92 (97)		32	5		120 80 40	2 10 100	0.6	1.0	100						71
BCX78-8	TO-92 (97)		32	5		30 180 120 45	0.01 2 10 100	0.6	1.0	100						71
BCX78-9	TO-92 (97)		32	5		40 250 160 60	0.01 2 10 100	0.6	1.0	100						71
BCX78-10	TO-92 (97)		32	5		100 380 240 60	0.01 2 10 100	0.6	1.0	100						71
BCX79	TO-92 (97)		45	5		80 40	10 100	0.6	1.0	100						71
BCX79-7	TO-92 (97)		45	5		120 60	2 100	0.6	1.0	100						71
BCX79-8	TO-92 (97)		45	5		120 45 30 180	2 100 0.01 2	0.6	1.0	100						71
BCX79-9	TO-92 (97)		45	5		160 60 40 250	10 100 0.01 2	0.6	1.0	100						71

T-29-01

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub> = I<sub>C</sub> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub> = I<sub>C</sub> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub> = I<sub>C</sub> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub> = I<sub>C</sub> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series



Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>+</sup> V <sub>CB</sub> (V) Min	V <sub>CE0</sub> <sup>+</sup> (V) Min	V <sub>EBO</sub> (V) Min	I <sub>CS</sub> <sup>+</sup> I <sub>CB</sub> (mA) Max	HFE h <sub>FE</sub> 1 kHz* Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min Max	I <sub>C</sub> (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BCX79-10	TO-92 (97)		45	5		240 60 100 380	1000 100 0.01 630	1 1 5 5	0.6	1.0 100							71
BCY56	TO-18	45	45	5	100	40 100 125 40	10 2 500* 0.01	5 5 2 5	0.6	0.7* 2					5	1	04
BCY57	TO-18	25	20	5	100	200 200 240 100	10 5 2 0.01	5 5 5 5	0.6	0.7* 2					5	1	04
BCY58	TO-18		32	7	10 <sup>†</sup>	40 80 125	100 10 700*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY58-7	TO-18		32	7	10 <sup>†</sup>	40 80 175	100 10 350*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY58-8	TO-18		32	7	10 <sup>†</sup>	40 80	100 10	1 1	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY58-9	TO-18		32	7	10 <sup>†</sup>	40 80 250	100 10 500*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY58-10	TO-18		32	7	10 <sup>†</sup>	40 80 350	100 10 700*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY59	TO-18		45	7	10 <sup>†</sup>	40 80 125	100 10 700*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY59-7	TO-18		45	7	10 <sup>†</sup>	40 80 125	100 10 250*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY59-8	TO-18		45	7	10 <sup>†</sup>	40 80 175	100 10 350*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04
BCY59-9	TO-18		45	7	10 <sup>†</sup>	40 80 250	100 10 500*	1 1 2	0.35 0.7	0.85 1.2 0.7* 2	6	125	10	800	6	4/1	04

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28C 35528

7-33-01

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE5</sub> <sup>*</sup> V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE5</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V)		V <sub>BE(SAT)</sub> (V)		C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
								Max	Min	Min	Max						
BCY59-10	TO-18		45	7	10 <sup>†</sup>	40 80 350 700 <sup>*</sup>	100 10 2	0.35 0.7	0.6 0.75	0.85 1.2	10 100	6	125	800	6	4/1	04
BCY70	TO-18		40	5	10	40 45 50 15	0.1 1 10 50	0.25	0.6 0.9	10 10	6	250	420	6	5/6	71	
BCY71	TO-18	45	45	5	500	40 80 90 100	0.01 0.1 1 10	0.25	0.6 0.9	10 50	6	200	420	2	6	71	
BCY71A	TO-18	45	45	5	500	40 80 90 100	0.01 0.1 1 10	0.25	0.6 0.9	10 50	6	300	420	2	6	71	
BCY72	TO-18	25	25	5	500	40 50	1 10	0.25	1.2	50	6	200	420	6	5/6	71	
BD135	TO-126	45	45	5	100	25 40	500 250	0.5	1.2 1.0 <sup>*</sup>	50 500		50	420	6	5/6	37	
BD135-6	TO-126	45	45	5	100	40 25	150 500	0.5	1.2	500		50	420			37	
BD135-10	TO-126	45	45	5	100	63 25	150 500	0.5	1.2	500		50	420			37	
BD135-16	TO-126	45	45	5	100	100 25	150 500	0.5	1.2	500		50	420			37	
BD136	TO-126	45	45	5	100	40 25	150 500	0.5	1.2	500		50	420			77	
BD136-6	TO-126	45	45	5	100	40 25	150 500	0.5	1.2	500		50	420			77	
BD136-10	TO-126	45	45	5	100	63 25	150 500	0.5	1.2	500		50	420			77	
BD136-16	TO-126	45	45	5	100	100 25	150 500	0.5	1.2	500		50	420			77	
BD137	TO-126	60	60	5	100	40 25	150 500	0.5	1.2	500		50	420			38	

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CC</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CC</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CC</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CC</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

D

Pro Electron Series

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35529 D

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EBO</sub> (V) Min	I <sub>CB</sub> <sup>*</sup> I <sub>CB</sub> @ (mA) Max	V <sub>CB</sub> (V) Min	H <sub>FE</sub> h <sub>FE</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V) Min Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD137-6	TO-126	60	60	5	100	30	40 100	150 2	0.5		500		50	50				38
BD137-10	TO-126	60	60	5	100	30	63 160	150 2	0.5		500		50	50				38
BD138	TO-126	60	60	5	100	30	40 160	150 2	0.5		500		50	50				78
BD138-6	TO-126	60	60	5	100	30	40 100	150 2	0.5		500		50	50				78
BD138-10	TO-126	60	60	5	100	30	63 160	150 2	0.5		500		50	50				78
BD139	TO-126	80	80	5	100	30	25 500	500 2	0.5	1.0*	500		50	50	420	6	5/6	39
BD139-6	TO-126	80	80	5	100	30	40 160	50 2	0.5	1.0*	500		50	50				39
BD139-10	TO-126	80	80	5	100	30	40 160	50 2	0.5	1.0*	500		50	50				39
BD140	TO-126	80	80	5	100	30	25 500	500 2	0.5	1.0*	500		50	50	420	6	5/6	79
BD157	TO-126		250		100	275	30 240	50 10										36
BD158	TO-126		300		100	325	30 240	50 10										36
BD159	TO-126		350		100	325	30 240	50 10										36
BD185	TO-126		30		100	40	40 500	2A 2	1.0	1.2*	2A							4F
BD186	TO-126		30		100	40	40 500	2A 2	1.0	1.5*	2A							5F
BD187	TO-126		45		100	55	40 500	2A 2	1.0	1.5*	2A							4F
BD188	TO-126		45		100	55	40 500	2A 2	1.0	1.5*	2A							5F
BD189	TO-126		60		100	70	40 500	2A 2	1.0	1.5*	2A							4F
BD190	TO-126		60		100	70	40 500	2A 2	1.0	1.5*	2A							5F
BD201	TO-220	60	45	5	10	40	30 3A	2A 2	1.0	1.5*	3A		3	300	420	6	5/6	4A
BD202	TO-220	60	45	5	10	40	30 3A	2A 2	1.0	1.5*	3A		3	300	420	6	5/6	5A

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28C 35530

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> * V <sub>CB</sub> (V) Min	V <sub>CE</sub> (V) Min	V <sub>EB</sub> (V) Min	I <sub>CB</sub> * (mA) Max	H <sub>FE</sub> h <sub>FE</sub> 1 kHz* Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE</sub> (SAT) (V) Max	V <sub>BE</sub> (SAT) & V <sub>BE</sub> (ON)* (V) Min Max	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD203	TO-220	60	60	5		30 30	2 1 2	1.0		3A		3	300				4A
BD204	TO-220	60	60	5	10 μA	30 30 30	2A 1A 1	1.0	1.5*	3A							5A
BD220	TO-220	70	70			30 30 30	120 1A 4	1.0	1.1*	500							4F
BD221	TO-220	40	40			30 30 30	120 1A 4	1.0	1.3*	1A							4F
BD222	TO-220	60	60			20 20 20	80 1.5A 4	1.0	1.5*	1.5A							4F
BD223	TO-220	70	70			30 30 30	120 300 4	1.0	1.1*	500							5F
BD224	TO-220	40	40			30 30 30	120 1A 4	1.0	1.3*	1A							5F
BD225	TO-220	60	60			20 20 20	80 1.5A 4	1.0	1.5*	1.5A							5F
BD233	TO-126	45	45		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	4F
BD234	TO-126	45	45		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	5F
BD235	TO-126	60	60		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	4F
BD236	TO-126	60	60		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	5F
BD237	TO-126	80	80		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	4F
BD238	TO-126	80	80		100 μA	25 40 40	1A 2 150 2	0.6	1.3*	1A		3	250	420	6	5/6	5F
BD239	TO-220	45	45		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	4F
BD239A	TO-220	60	60		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	4F
BD239B	TO-220	80	80		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	4F
BD239C	TO-220	100	100		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	4F
BD240	TO-220	45	45		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	5F
BD240A	TO-220	80	80		200 μA*	15 40 40	1A 4 200 4	0.7	1.3*	1A		3	200	420	6	5/6	5F

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35531 D

T-33-01

Pro Electron Series

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> <sup>*</sup> I <sub>CB0</sub> @ (mA) Max	HFE h <sub>FE</sub> @ 1 kHz Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Min Max	V <sub>CE(SAT)</sub> (V) & V <sub>BE(ON)</sub> <sup>*</sup> (V) Max Min	I <sub>C</sub> (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD240B	TO-220	80	80		200 μA <sup>*</sup> 80	15 40	1A 4 200 4	0.7 1.3 <sup>*</sup> 1A	200		3	420	6	5/6	5F
BD240C	TO-220	80	100		200 μA <sup>*</sup> 100	15 40	1A 4 200 4	0.7 1.3 <sup>*</sup> 1A	200		3	420	6	5/6	5F
BD241	TO-220	80	45		200 μA <sup>*</sup> 45	10 25	3A 4 1A 4	1.3 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	4F
BD241A	TO-220	80	60		200 μA <sup>*</sup> 60	10 25	3A 4 1A 4	1.3 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	4F
BD241B	TO-220	80	80		200 μA <sup>*</sup> 80	10 25	3A 4 1A 4	1.3 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	4F
BD241C	TO-220	80	100		200 μA <sup>*</sup> 100	10 25	3A 4 1A 4	1.3 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	4F
BD242	TO-220	80	45		200 μA <sup>*</sup> 45	10 25	3A 4 1A 4	1.2 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	5E
BD242A	TO-220	80	60		200 μA <sup>*</sup> 60	10 25	3A 4 1A 4	1.2 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	5E
BD242B	TO-220	80	80		200 μA <sup>*</sup> 80	10 25	3A 4 1A 4	1.2 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	5E
BD242C	TO-220	80	100		200 μA <sup>*</sup> 100	10 25	3A 4 1A 4	1.2 1.8 <sup>*</sup> 3A	500		3	420	6	5/6	5E
BD243	TO-220		45		400 μA <sup>*</sup> 45	30 15	300 4 3A 4		500		3				4A
BD243A	TO-220		60		400 μA <sup>*</sup> 60	30 15	300 4 3A 4		500		3				4A
BD243B	TO-220		80		400 μA <sup>*</sup> 80	30 15	300 4 3A 4		500		3				4A
BD243C	TO-220		100		400 μA <sup>*</sup> 100	30 15	300 4 3A 4		500		3				4A
BD244	TO-220		45		400 μA <sup>*</sup> 45	30 15	300 4 3A 4								4A
BD244A	TO-220		60		400 μA <sup>*</sup> 60	30 15	300 4 3A 4								5A
BD244B	TO-220		80		400 μA <sup>*</sup> 80	30 15	300 4 3A 4		500		3				5A
BD244C	TO-220		100		400 μA <sup>*</sup> 100	30 15	300 4 3A 4		500		3				5A
BD344	TO-126	60	60	5	500 60	60 40	50 1 200 1	0.4	200 50	20	50				78

6501130 NATL SEMICOND, (DISCRETE)

28C 35532

D Pro Electron Series



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE</sub> <sup>*</sup> I <sub>CE0</sub> (mA) Max	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V) Max	V <sub>CE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) & (V) Max Min		I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max		t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							V <sub>CE(SAT)</sub> Max	V <sub>BE(ON)</sub> Min			f <sub>T</sub> Min	f <sub>T</sub> Max				
BD345	TO-126	60	5	500	60	50	0.4	200	20	50	50				38	
BD346	TO-220	60		10 μA	40	140			200	4	250				5A	
BD347	TO-220	60		10 μA	40	140			200	4	250				4A	
BD348	TO-126	80	5	500	60	100	0.5	250	17	50	50				79	
BD349	TO-126	80		500	50	250	0.5	250	15	50	50				39	
BD370A	TO-237 (91)	45		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370A-10	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370A-16	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370A-25	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370B	TO-237 (91)	60		100	40	400	0.7	1A	30	50	200	420	6	5/6	78	
BD370B-10	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370B-16	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370B-25	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370C	TO-237 (91)	80		100	63	160	0.7	1A	30	50	200	420	6	5/6	78	
BD370C-6	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370C-10	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	
BD370C-16	TO-237 (91)	80		100	25	500	0.7	1A	30	50	200	420	6	5/6	78	

T-33-01

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35533 D

T-33-01

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE</sub> <sup>*</sup> (V) Min	V <sub>EB</sub> (V) Min	I <sub>CB</sub> <sup>*</sup> (mA) Max	HFE h <sub>fe</sub> 1 kHz Min	HFE h <sub>fe</sub> 1 kHz Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE</sub> (SAT) (V)		V <sub>BE</sub> (SAT) & V <sub>BE</sub> (ON) <sup>*</sup> (V)		I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
									Max	Min	Min	Max								
BD370D	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	79		
BD370D-6	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	79		
BD370D-10	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	79		
BD371A	TO-237 (91)	80	45		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371A-10	TO-237 (91)	80	45		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371A-16	TO-237 (91)	80	45		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371A-25	TO-237 (91)	80	45		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371B	TO-237 (91)	80	60		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371B-10	TO-237 (91)	80	60		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371B-16	TO-237 (91)	80	60		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371B-25	TO-237 (91)	80	60		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371C	TO-237 (91)	80	80		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371C-6	TO-237 (91)	80	80		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371C-10	TO-237 (91)	80	80		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371C-16	TO-237 (91)	80	80		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	38		
BD371D	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	39		
BD371D-6	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	39		
BD371D-10	TO-237 (91)	80	100		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	39		
BD372A	TO-237 (90)	80	45		100	25	500	2	0.7	1.2*	1A	30	50	200	420	6	5/6	78		

6501130 NATL SEMICOND, (DISCRETE)

28C 35534

T-33-01



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CE</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	I <sub>CB</sub> @ V <sub>CB</sub> (V)	H <sub>FE</sub> I <sub>hfe</sub> @ 1 kHz <sup>*</sup>		I <sub>C</sub> & V <sub>CE</sub> (V)		V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Min	Max	I <sub>C</sub> (mA)	V <sub>CE</sub> (V)									
BD372A-10	TO-237 (90)	80	45		100	45	25 63	500 100	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372A-16	TO-237 (90)	80	45		100	45	25 100	500 250	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372A-25	TO-237 (90)	80	45		100	45	25 160	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372B	TO-237 (90)	80	60		100	60	25 40	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372B-10	TO-237 (90)	80	60		100	60	25 63	500 160	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372B-16	TO-237 (90)	80	60		100	60	25 100	500 250	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372B-25	TO-237 (90)	80	60		100	60	25 160	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372C	TO-237 (90)	80	80		100	80	25 40	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372C-6	TO-237 (90)	80	80		100	80	25 40	500 100	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372C-10	TO-237 (90)	80	80		100	80	25 63	500 160	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372C-16	TO-237 (90)	80	100		100	100	25 100	500 250	2 1	0.7	1.2*	1A	30	50	420	6	5/6	78	
BD372D	TO-237 (90)	80	100		100	100	25 40	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	79	
BD372D-6	TO-237 (90)	80	100		100	100	25 40	500 100	2 1	0.7	1.2*	1A	30	50	420	6	5/6	79	
BD372D-10	TO-237 (90)	80	100		100	100	25 63	500 160	2 1	0.7	1.2*	1A	30	50	420	6	5/6	79	
BD373A	TO-237 (90)	80	45		100	45	25 40	500 400	2 1	0.7	1.2*	1A	30	50	420	6	5/6	38	
BD373A-10	TO-237 (90)	80	45		100	45	25 63	500 160	2 1	0.7	1.2*	1A	30	50	420	6	5/6	38	
BD373A-16	TO-237 (90)	80	45		100	45	25 100	500 250	2 1	0.7	1.2*	1A	30	50	420	6	5/6	38	

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = 100 kHz.



Pro Electron Series



6501130 NATL SEMICOND, (DISCRETE)

28C 35535 D

Pro Electron Series

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> * V <sub>CB0</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	ICES* IC <sub>BO</sub> @ (mA) Max	HFE h <sub>FE</sub> 1 kHz* Min	HFE h <sub>FE</sub> 1 kHz* Max	IC & V <sub>CE</sub> (mA) & (V) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> * (V) Min	IC (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
8D373A-25	TO-237 (90)	80	45		100	25	160	500 2 400 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373B	TO-237 (90)	80	80		100	25	40	500 2 400 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373B-10	TO-237 (90)	80	60		100	25	63	500 2 160 1	0.7	1.2*	1A	30	50	200	420	6	5/8	38
8D373B-16	TO-237 (90)	80	60		100	25	100	500 2 250 1	0.7	1.2*	1A	30	50	200	420	6	5/8	38
8D373B-25	TO-237 (90)	80	60		100	25	160	500 2 400 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373C	TO-237 (90)	80	80		100	25	40	500 2 400 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373C-6	TO-237 (90)	80	80		100	25	40	500 2 100 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373C-10	TO-237 (90)	80	80		100	25	63	500 2 160 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373C-16	TO-237 (90)	80	80		100	25	100	500 2 250 1	0.7	1.2*	1A	30	50	200	420	6	5/6	38
8D373D	TO-237 (90)	80	100		100	25	40	500 2 400 1	0.7	1.2*	1A	30	50	200	420	6	5/6	39
8D373D-6	TO-237 (90)	80	100		100	25	40	500 2 100 1	0.7	1.2*	1A	30	50	200	420	6	5/6	39
8D373D-10	TO-237 (90)	80	100		100	25	63	500 2 160 1	0.7	1.2*	1A	30	50	200	420	6	5/6	39
8D375	TO-126	50	45		2 μA	20	40	1A 2 375 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	38
8D375-6	TO-126	50	45		2 μA	20	40	1A 2 100 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	38
8D375-10	TO-126	50	45		2 μA	20	63	1A 2 160 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	38
8D375-16	TO-126	50	45		2 μA	20	100	1A 2 250 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	38
8D375-25	TO-126	50	45		2 μA	20	150	1A 2 375 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	38
8D376	TO-126	50	45		2 μA	20	40	1A 2 375 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	78
8D376-6	TO-126	50	45		2 μA	20	40	1A 2 100 150 2	1.0	1.5*	1A	30	50	200	420	6	5/6	78

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6501130 NATL SEMICOND, (DISCRETE)

28C 35536

D

PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE</sub> (V) Min	V <sub>EBO</sub> (V) Min	I <sub>CB</sub> <sup>*</sup> (mA) Max	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V)	V <sub>CE</sub> (SAT) & V <sub>BE</sub> (ON) <sup>*</sup> (V)		C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz)		t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
								Max	Min		Min	Max				
BD376-10	TO-126	50	45		2 μA	20 63	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD376-16	TO-126	50	45		2 μA	100 200	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD376-25	TO-126	50	45		2 μA	20 150	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD377	TO-126	75	60		2 μA	40 375	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	38
BD377-6	TO-126	75	60		2 μA	20 100	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	38
BD377-10	TO-126	75	60		2 μA	20 160	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	38
BD377-16	TO-126	75	60		2 μA	20 250	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	38
BD377-25	TO-126	75	60		2 μA	20 375	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	38
BD378	TO-126	75	60		2 μA	40 375	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD378-6	TO-126	75	60		2 μA	20 100	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD378-10	TO-126	75	60		2 μA	20 160	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD378-16	TO-126	75	60		2 μA	100 250	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD378-25	TO-126	75	60		2 μA	20 375	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	78
BD379	TO-126	100	80		2 μA	40 375	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	39
BD379-6	TO-126	100	80		2 μA	20 100	1A 150 2	1.0	1.5*	30	50	200	420	6	5/6	39

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TEST CONDITIONS: (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

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6501130 NATL SEMICOND, (DISCRETE)

28C 35537 D

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> <sup>*</sup> (mA) Max	V <sub>CB</sub> (V)	H <sub>FE</sub> h <sub>FE</sub> 1 kHz <sup>*</sup> Min	H <sub>FE</sub> h <sub>FE</sub> 1 kHz <sup>*</sup> Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V) Min	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD379-10	TO-126	100	80		2 μA	80	20	160	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	39
BD379-16	TO-126	100	80		2 μA	80	20	250	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	39
BD379-25	TO-126	100	80		2 μA	80	20	375	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	39
BD380	TO-126	100	80		2 μA	80	20	375	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	79
BD380-6	TO-126	100	80		2 μA	80	20	100	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	79
BD380-10	TO-126	100	80		2 μA	80	20	160	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	79
BD380-16	TO-126	100	80		2 μA	80	20	250	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	79
BD380-25	TO-126	100	80		2 μA	80	20	375	1A 2	1.0	1.5*	1A	30	50	200	420		6	5/6	79
BD433	TO-126	22†	22	5	100 μA	22	50	475	2A 1	0.5	1.1*	2A		3	250	420		6	5/6	4E
BD434	TO-126	22†	22	5	100 μA	22	50	475	2A 1	0.5	1.1*	2A	30	3	250	420		6	5/6	5E
BD435	TO-126	32†	32	5	100 μA	32	50	475	2A 1	0.5	1.1*	2A	30	3	250	420		6	5/6	4E
BD436	TO-126	32†	32	5	100 μA	32	50	475	2A 1	0.5	1.1*	2A	30	3	250	420		6	5/6	5E
BD437	TO-126	45†	45	5	100 μA	45	40	236	2A 1	0.6	1.2*	2A	30	3	250	420		6	5/6	4E
BD438	TO-126	45†	45	5	100 μA	45	40	236	2A 1	0.6	1.2*	2A	30	3	250	420		6	5/6	5E
BD439	TO-126	60†	60	5	100 μA	60	25	236	2A 1	0.8	1.5*	2A	30	3	250	420		6	5/6	4E

6501130 NATL SEMICOND, (DISCRETE)

28C 35538

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PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> * V <sub>CB0</sub> (V) Min	V <sub>CEO</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> * (mA) Max	V <sub>CB</sub> (V) Max	H <sub>FE</sub> h <sub>FE</sub> @ 1 kHz*	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Max	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)*</sub> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD440	TO-126	60†	60	5	100 μA	60	25 40 20	2A 500 10	0.8	1.5*	2A	80	3	250	420	6	5/6	5E
BD441	TO-126	80†	80	5	100 μA	80	15 40 15	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	4E
BD442	TO-126	80†	80	5	100 μA	80	15 40 15	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	5E
BD533	TO-220	80†	45	5	100 μA	45	25 40 20	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	4E
BD534	TO-220	80†	45	5	100 μA	45	25 40 20	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	5E
BD535	TO-220	80†	60	5	100 μA	60	25 40 20	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	4E
BD536	TO-220	80†	60	5	100 μA	60	25 40 20	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	5E
BD537	TO-220	80†	80	5	100 μA	80	15 40 15	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	4E
BD538	TO-220	80†	80	5	100 μA	80	15 40 15	2A 500 10	0.8	1.5*	2A	30	3	250	420	6	5/6	5E
BD633	TO-220	45	45	5	200 μA†	45	25 40	1A 25	0.6	1.3*	1A	30	3	250	420	6	5/6	4F
BD634	TO-220	45	45	5	200 μA†	45	25 40	1A 25	0.6	1.3*	1A	30	3	250	420	6	5/6	5F
BD635	TO-220	60	60	5	200 μA†	60	25 40	1A 25	0.6	1.3*	1A	30	3	250	420	6	5/6	4F

TEST CONDITIONS:  
 (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V.  
 I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 μA.  
 V<sub>CE</sub> = 5V, f = WB.

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6501130 NATL SEMICOND, (DISCRETE)

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> <sup>*</sup> (V) Min	V <sub>CE</sub> <sup>*</sup> (V) Min	V <sub>EB</sub> <sup>*</sup> (V) Min	I <sub>CB</sub> <sup>*</sup> I <sub>BO</sub> <sup>*</sup> (mA) Max	V <sub>CB</sub> (V)	HFE h <sub>FE</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE</sub> (SAT) (V) Max	V <sub>BE</sub> (SAT) (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BD636	TO-220	60	60	5	200 μA†	60	25 40	1A 25	0.6	1.3*	1A	30	3	250	420	6	5/6	5F
BD637	TO-220	100	80	5	200 μA†	100	25 40	1A 25	0.6	1.3*	1A	30	3	250	420	6	5/6	4F
BD638	TO-220	100	80	5	200 μA†	100	25 40	1A 25	0.6	1.3	1A	30	3	250	420	6	5/6	5F
BD675	TO-126		45		200 μA	45	750	1.5A 3	2.5	2.5*	1.5A		1	1.5A				4J
BD675A	TO-126		45		200 μA	45	750	2A 3	2.8	2.5*	2A		1	1.5A				4J
BD676	TO-126		45		200 μA	45	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				5J
BD676A	TO-126		45		200 μA	45	750	2A 3V	2.8	2.5*	2A		1	1.5A				5J
BD677	TO-126		60		200 μA	60	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				4J
BD677A	TO-126		60		200 μA	60	750	2A 3V	2.8	2.5*	2A		1	1.5A				4J
BD678	TO-126		60		200 μA	60	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				5J
BD678A	TO-126		60		200 μA	60	750	2A 3V	2.8	2.5*	2A		1	1.5A				5J
BD679	TO-126		80		200 μA	80	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				4J
BD679A	TO-126		80		200 μA	80	750	2A 3V	2.8	2.5*	2A		1	1.5A				4J
BD680	TO-126		80		200 μA	80	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				4J
BD680A	TO-126		80		200 μA	80	750	2A 3V	2.8	2.5*	2A		1	1.5A				4J
BD681	TO-126		100		200 μA	100	750	1.5A 3V	2.5	2.5*	1.5A		1	1.5A				5J
BD682	TO-126		100		200 μA	100	750	2A 3V	2.5	2.5*	1.5A		1	1.5A				5J
BD733	TO-220	25	25	5	200 μA†	25	50 40	2A 20	0.6	1.1*	2A		1	1.5A				4F
BD734	TO-220	25	25	5	200 μA†	25	50 40	2A 20	0.6	1.1*	2A		1	1.5A				5E
BD735	TO-220	35	35	5	200 μA†	35	40	2A	0.6	1.1*	2A		1	1.5A				4F
BD736	TO-220	35	35	5	200 μA†	35	40	2A	0.6	1.1*	2A		1	1.5A				5E
BD737	TO-220	45	45	5	200 μA†	45	40	2A	0.8	1.1*	2A		1	1.5A				4F
BD738	TO-220	45	45	5	200 μA†	45	40	2A	0.8	1.1*	2A		1	1.5A				5E
BD795	TO-220		45		100	45	40	2A	0.8	1.1*	2A		1	1.5A				4E
BD796	TO-220		45		100	45	25	1A	1.0	1.6*	3A	3	3	250				5E
BD797	TO-220		60		100 μA	60	40 25	1A 3A	1.0	1.6*	3A	3	3	250				4E

6501130 NATL SEMICOND, (DISCRETE)

28C 35540

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PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE0</sub> (V) Min	V <sub>EB0</sub> (V) Min	I <sub>CS</sub> <sup>*</sup> I <sub>CB0</sub> (mA) Max	h <sub>FE</sub> h <sub>FE</sub> @ 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) & (V) Max Min		I <sub>C</sub> (mA) Min Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
								V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(ON)</sub> (V) Min							
BD798	TO-220		60		100 μA	40	1A 2	1.0	1.6*	3A		3				5E
BD799	TO-220		80		100 μA	30	1A 2	1.0	1.6*	3A		3				4E
BD800	TO-220		80		100 μA	15	3A 2	1.0	1.6*	3A		3				5E
BD801	TO-220		100		100 μA	15	3A 2	1.0	1.6*	3A		3				4E
BD802	TO-220		100		100 μA	30	1A 2	1.0	1.6*	3A		3				5E
BD895	TO-220		45		200 μA	750	3A 3		2.5*	3A		1				4K
BD895A	TO-220		45		200 μA	45	4A 3		2.5*	4A		1				4K
BD896	TO-220		45		200 μA	750	3A 3		2.5*	3A		1				5K
BD896A	TO-220		45		200 μA	45	4A 3		2.5*	4A		1				5K
BD897	TO-220		60		200 μA	750	3A 3		2.5*	3A		1				4K
BD897A	TO-220		60		200 μA	45	4A 3		2.5*	4A		1				4K
BD898	TO-220		60		200 μA	750	3A 3		2.5*	3A		1				5K
BD898A	TO-220		60		200 μA	45	4A 3		2.5*	4A		1				5K
BD899	TO-220		80		200 μA	750	3A 3		2.5*	3A		1				4K
BD899A	TO-220		80		200 μA	45	4A 3		2.5*	4A		1				4K
BD900	TO-220		80		200 μA	750	3A 3		2.5*	3A		1				5K
BD900A	TO-220		80		200 μA	45	4A 3		2.5*	4A		1				5K
BD901	TO-220		100		200 μA	750	3A 3		2.5*	3A		1				4K
BD902	TO-220		100		200 μA	45	4A 3		2.5*	4A		1				4K
BDX33	TO-220		45		1 mA	750	4A 3		2.5*	4A		20				4K
BDX33A	TO-220		60		1 mA	45	4A 3		2.5*	4A		20				4K
BDX33B	TO-220		80		1 mA	750	3A 3		2.5*	3A		20				4K
BDX33C	TO-220		100		1 mA	45	3A 3		2.5*	3A		20				4K
BDX33D	TO-220		120		1 mA	750	3A 3		2.5*	3A		20				4K
BDX34	TO-220		45		1 mA	45	4A 3		2.5*	4A		20				5K
BDX34A	TO-220		60		1 mA	750	4A 3		2.5*	4A		20				5K
BDX34B	TO-220		80		1 mA	45	3A 3		2.5*	3A		20				5K

TEST CONDITIONS:  
 (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

Pro Electron Series

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6501130 NATL SEMICOND, (DISCRETE)

28C 35541 D

7-31-01

Pro Electron Series

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE</sub> <sup>*</sup> V <sub>CB</sub> (V) Min	V <sub>CE</sub> <sup>*</sup> (V) Min	ICES <sup>*</sup> I <sub>CB</sub> (mA) Max	HFE h <sub>fe</sub> 1 kHz <sup>*</sup> Min Max	I <sub>C</sub> & V <sub>CE</sub> (mA) (V) Max	V <sub>CE</sub> (SAT) (V) & V <sub>BE</sub> (ON) <sup>*</sup> (V)		V <sub>BE</sub> (SAT) (V) & V <sub>BE</sub> (ON) <sup>*</sup> (V)		C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz)		I <sub>C</sub> (mA) @ Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
							Max	Min	Max	Min		Max	Min					
BDX34C	TO-220	100	100	1 mA	750	3A 3	2.5 <sup>*</sup>	3A	1A			20	1A					5K
BDX34D	TO-220	120	120	1 mA	750	3A 3	2.5 <sup>*</sup>	3A	1A			20	1A					5K
BF167	TO-72 (28)	40	30	100 <sup>†</sup>	26	4 10	0.84 <sup>*</sup>	4										45
BF180	TO-72 (25)	30	20	100	13	2 10												41
BF181	TO-72 (25)	30	20	100	13	2 10												41
BF194	TO-92 (98)	Same as BF254, see page 5-33 for explanation																
BF195	TO-92 (98)	Same as BF255, see page 5-33 for explanation																
BF196	TO-92 (98)	Same as BF198, see below for explanation																
BF197	TO-92 (98)	Same as BF199, see below for explanation																
BF198	TO-92 (98)	40	30	100	26	4 10	0.88 <sup>*</sup>	4										45
BF199	TO-92 (98)	40	25	100	36	7 10						1100 typ	7					47
BF200	TO-72 (25)	30	20	100	15	3 10												41
BF233-2	TO-92 (96)	30	30	100	40	70 10	0.65	0.74 <sup>*</sup>	1	1.0		150	1					49
BF233-3	TO-92 (96)	30	30	100	60	100 10	0.65	0.74 <sup>*</sup>	1	1.0		150	1					49
BF233-4	TO-92 (96)	30	30	100	90	150 10	0.65	0.74 <sup>*</sup>	1	1.0		150	1					49
BF233-5	TO-92 (96)	30	30	100	140	220 10	0.65	0.74 <sup>*</sup>	1	1.0		150	1					49
BF237	TO-92 (98)	45	30	100			0.25		10									47
BF238	TO-92 (98)	45	30	100			0.25		10									47
BF240	TO-92 (98)	40	40	100	67	222 10	0.65	0.74 <sup>*</sup>	1	0.34			1			3.5	7	47
BF241	TO-92 (98)	40	40	100	36	125 10	0.65	0.74 <sup>*</sup>	1	0.34			1			3.5	7	47

6501130 NATL SEMICOND, (DISCRETE)

28C 35542

D

PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE</sub> * V <sub>CE0</sub> (V)		V <sub>BE0</sub> (V)		I <sub>CE</sub> * I <sub>CE0</sub> (mA)		h <sub>FE</sub> h <sub>FE</sub> @ 1 kHz*		I <sub>C</sub> & V <sub>CE</sub> (V)		V <sub>CE(SAT)</sub> (V) & V <sub>BE(ON)</sub> * (V)		f <sub>T</sub> (MHz)		t <sub>off</sub> (ns)		NF (dB)		Test Conditions	Process No.
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
BF254	TO-92 (98)	30	20	5	20	100	20	67	220	1	10	0.65	0.74*	1				3.5		7	46
BF255	TO-92 (98)	30	20	5	20	100	20	36	125	1	10	0.65	0.74*	1				3.5		7	46
BF257	TO-39	100	100	5	100	50	100	25	30	30	10	1.0	0.74*	30				3.5		7	48
BF258	TO-39	250	250	5	200	50	200	25	30	30	10	1.0	0.74*	30				3.5		7	48
BF259	TO-39	300	300	5	250	50	250	25	30	30	10	1.0	0.74*	30				3.5		7	48
BF457	TO-126	100	100	5	100	50	100	25	30	30	10	1.0	0.74*	30				3.5		7	48
BF458	TO-126	250	200	5	200	50	200	25	30	30	10	1.0	0.74*	30				3.5		7	48
BF459	TO-126	300	300	5	250	50	250	25	30	30	10	1.0	0.74*	30				3.5		7	48
BFX13	TO-18	20	15	5	15	50	15	10	100	2	2	0.2	0.78	1	150			10		8	66
BFX29	TO-5	20	15	5	50	50	50	40	150	10	10	0.4	1.3	150						9	63
BFX30	TO-5	65	65	5	50	50	50	100	100	5	0.4	0.9	30							4	63
BFX37	TO-18	60	60	6	50	20†	50	100	1	5	0.4	1.0	50							1	62
BFX65	TO-18	45	45	6	40	10*	40	100	0.1	5	0.25	0.9	10							1	62

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TEST CONDITIONS: (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub> = I<sub>C</sub> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub> = I<sub>C</sub> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub> = I<sub>C</sub> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub> = I<sub>C</sub> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

Pro Electron Series

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Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35543 D  
T-31-01

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V)		V <sub>BE0</sub> (V)		I <sub>CE0</sub> <sup>*</sup> (mA)		H <sub>FE</sub> @ 1 kHz <sup>*</sup>		I <sub>C</sub> & V <sub>CE</sub> (V)		V <sub>CE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V)		I <sub>C</sub> (mA)		C <sub>ob</sub> (pF)		f <sub>T</sub> (MHz)		t <sub>off</sub> (ns)	NF (dB)	Test Conditions	Process No.
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Max	Max		
BFX84	TO-39	45	45	6	6	500	100	15	20	1A	10	0.15	1.2	10	12	50	360					9	14
BFX85	TO-39	45	45	6	6	50	80	15	30	1A	10	0.15	1.2	10	12	50	360					9	14
BFX86	TO-39	45	45	6	6	50	30	15	30	1A	10	0.15	1.2	10	12	50	360					9	14
BFX87	TO-5	45	50	6	6	50	40	25	40	500	10	0.4	1.3	150	12	100	150					9	63
BFX88	TO-5	45	40	6	6	50	30	25	40	500	10	0.4	1.3	150	12	100	150					9	63
BFY39	TO-18	45	25	5	5	50	30	35	400	10	10	1.0	1.0	10		150	10						23
BFY39-1	TO-18	45	25	5	5	50	30	35	110	10	10	1.0	1.0	10		150	10						23
BFY39-2	TO-18	45	25	5	5	50	30	100	200	10	10	1.0	1.0	10		150	10						23
BFY39-3	TO-18	45	25	5	5	50	30	180	400	10	10	1.0	1.0	10		150	10						23
BFY50	TO-18	80	35	6	6	500	80	20	30	10	10	0.1	1.2	10	12	60	360					9	14
BFY51	TO-39	60	30	6	6	500	60	30	40	10	10	0.1	1.2	10	12	60	360					9	14
BFY52	TO-39	40	20	6	6	500	60	30	60	10	10	0.1	1.2	10	12	60	360					9	14
BFY56	TO-39	80	45	5	5	50	50	15	20	1	10	0.3	1.5	150	25	40	50						14

6501130 NATL SEMICOND, (DISCRETE)

28C 35544

D

PRO ELECTRON SERIES (Continued)



Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V) Min	V <sub>CE0</sub> <sup>*</sup> (V) Max	V <sub>EB0</sub> (V) Min	I <sub>CB0</sub> <sup>*</sup> (mA) Max	V <sub>CB</sub> (V)	HFE I <sub>re</sub> @ 1 kHz <sup>*</sup> Min	HFE I <sub>re</sub> @ 1 kHz <sup>*</sup> Max	I <sub>C</sub> & V <sub>CE</sub> (mA) & (V)	V <sub>CE(SAT)</sub> (V) Max	V <sub>BE(SAT)</sub> & V <sub>BE(ON)</sub> <sup>*</sup> (V) Min	I <sub>C</sub> (mA) Max	C <sub>ob</sub> (pF) Max	f <sub>T</sub> (MHz) Min	f <sub>T</sub> (MHz) Max	I <sub>C</sub> (mA) Max	t <sub>off</sub> (ns) Max	NF (dB) Max	Test Conditions	Process No.
BFY72	TO-39	28	50	5	40*	20	15 20 30 40 15	0.1 1 10 10 150 500	10 10 10 10 10	0.25	1.2	150	8	50	50	50				19
BFY76	TO-18	45	45	6	20	30	30 80 140	0.01 0.5 1	5 5 5	0.35	1.6	500	6							
BSX21	TO-18	80	80	7	10*	50	20	4	3	1.0	0.9	4	20	60	4	4				07
BSX45-6	TO-39	80*	80*	7	10*	60	40	100	1	1.0	2.0	1A	20	60	50	50				14
BSX45-10	TO-39	80*	80*	7	10*	60	63	160	1	1.0	2.0	1A	20	60	50	50				14
BSX45-16	TO-39	80*	80*	7	10*	60	100	250	1	1.0	2.0	1A	20	60	50	50				14
BSX46-6	TO-39	100*	100*	7	10*	60	40	100	1	1.0	2.0	1A	25	60	50	50				12
BSX46-10	TO-39	100*	100*	7	10*	60	63	160	1	1.0	2.0	1A	25	60	50	50				12
BSX46-16	TO-39	100*	100*	7	10*	60	100	250	1	1.0	2.0	1A	25	60	50	50				12
BSX48	TO-18	50	50	5	120	50	17	100	1	1.5	1.5	500	6	250	30	30				19
BSX88	TO-18	40	40	5	25	20	15	0.5	1	0.5	0.72	0.8	6	300	10	10				21
BSY38	TO-18	20	20	5	100	20	30 15	10 45	0.35 1	0.25 0.6	0.7 1.5	10 100	5	200	10	45			16	21
BSY39	TO-18	20	20	5	100	20	40 20	120 70	0.35 1	0.25 0.6	0.7 1.5	10 100	5	200	10	45			16	21
BSY51	TO-18	60	60	5	100	30	100	300	10	1.0	1.3	150	9	130	50	50				19
BSY52	TO-18	60	60	5	100	30	100	300	10	1.0	1.3	150	9	130	50	50				19
BSY53	TO-18	75	75	7	10	60	20 35 40	0.1 10 10	10 10 10	0.6 2.0	1.3 1.3	150 500	9	150	50	50				19

T-31-01

TEST CONDITIONS:  
 (1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

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Pro Electron Series

Pro Electron Series

6501130 NATL SEMICOND, (DISCRETE)

28C 35545 D

T-31-01



PRO ELECTRON SERIES (Continued)

Type No.	Case Style	V <sub>CE0</sub> <sup>*</sup> (V)		V <sub>BE0</sub> (V)		I <sub>CE0</sub> <sup>*</sup> (mA)		HFE <sub>hfe</sub> @ 1 kHz <sup>*</sup>		I <sub>C</sub> & VCE (V)		V <sub>CE(SAT)</sub> (V) & V <sub>BE(ON)</sub> <sup>*</sup> (V)		C <sub>ob</sub> (pF)		f <sub>T</sub> (MHz)		t <sub>off</sub> (ns)		Test Conditions	Process No.
		Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max		
BSY54	TO-18	30	75	7	60	10	35	0.1	10	0.6	1.3	150	9	150	50						19
							75	10	10												
BSY95A	TO-18	15	20	5	16	50	30	1	0.35	0.35	0.87	10	6	200	10						21
							50	200	10	0.35											

TEST CONDITIONS:

(1) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (2) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 20V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 5 mA. (3) I<sub>C</sub> = 200 μA, V<sub>CE</sub> = 2V, f = 1 kHz. (4) I<sub>C</sub> = 100 mA, V<sub>CE</sub> = 10V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 10 mA. (5) I<sub>C</sub> = 10 mA, V<sub>CE</sub> = 3V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 1 mA. (6) I<sub>C</sub> = 100 μA, V<sub>CE</sub> = 5V, f = 1 kHz. (7) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 10V, f = 200 kHz. (8) I<sub>C</sub> = 1 mA, V<sub>CE</sub> = 5V, f = 1 kHz. (9) I<sub>C</sub> = 150 mA, V<sub>CE</sub> = 6V, I<sub>B</sub><sup>1</sup> = I<sub>B</sub><sup>2</sup> = 15 mA. (10) I<sub>C</sub> = 10 μA, V<sub>CE</sub> = 5V, f = WB.

6501130 NATL SEMICOND, (DISCRETE)

28C 35546

T-31-01

Pro Electron Series

PRO ELECTRON SERIES (JFET)



Type No.	Case Style	BV <sub>GSD</sub> (V) @ I <sub>G</sub> Min	I <sub>GSS</sub> I <sub>DGD</sub> (mA) @ V <sub>GD</sub> Max (V)	V <sub>P</sub> @ V <sub>DS</sub> (V) Min Max	I <sub>D</sub> (nA)	V <sub>GS</sub> (V) @ V <sub>GS</sub> Min Max	I <sub>D</sub> (μA)	I <sub>DSS</sub> (mA) @ V <sub>DS</sub> Min Max	R <sub>e</sub> (V <sub>GS</sub> ) (mmho) @ f Min Max	C <sub>iss</sub> (pF) @ V <sub>DS</sub> Typ (V)	V <sub>GS</sub> (V)	C <sub>rss</sub> (pF) @ V <sub>DS</sub> Typ (V)	V <sub>GS</sub> (V)	NF (dB) @ R <sub>G</sub> = 1k f (MHz)*	Process No.	Pkg. No.							
BF244A	TO-92	30	5	5	8	15	10	2	6.5	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	74
BF244B	TO-92	30	5	5	8	15	10	6	15	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	74
BF244C	TO-92	30	5	5	8	15	10	12	25	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	74
BF245A	TO-92	30	5	5	8	15	10	2	6.5	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	77
BF245B	TO-92	30	5	5	8	15	10	6	15	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	77
BF245C	TO-92	30	5	5	8	15	10	12	25	15	3	6.5	.001	4	20	-1	1.1	20	-1	1.5	100	50	77
BF246A	TO-92	25	5	6	14.5	15	10	30	80	15	8	.001	11	15	0	3.5	15	0				51	74
BF246B	TO-92	25	5	6	14.5	15	10	60	140	15	8	.001	11	15	0	3.5	15	0				51	74
BF246C	TO-92	25	5	6	14.5	15	10	110	250	15	8	.001	11	15	0	3.5	15	0				51	74
BF247A	TO-92	25	5	6	14.5	15	10	30	80	15	8	.001	11	15	0	3.5	15	0				51	77
BF247B	TO-92	25	5	6	14.5	15	10	60	140	15	8	.001	11	15	0	3.5	15	0				51	77
BF247C	TO-92	25	5	6	14.5	15	10	110	250	15	8	.001	11	15	0	3.5	15	0				51	77
BF256A	TO-92	30	5	5	7.5	15	200	3	7	15	4.5	.001	7	20	-1	.7	20	-1	7.5	800	50	77	
BF256B	TO-92	30	5	5	7.5	15	200	6	13	15	4.5	.001	7	20	-1	.7	20	-1	7.5	800	50	77	
BF256C	TO-92	30	5	5	7.5	15	200	11	18	15	4.5	.001	7	20	-1	.7	20	-1	7.5	800	50	77	
BC264A	TO-92	30	10	5	15	10	1000	2	4.5	15	2.5	.001	4.0	15	-1	1.2	15	-1	40*	10*	50	77	
BC264B	TO-92	30	10	5	15	10	1500	3.5	6.5	15	3.0	.001	4.0	15	-1	1.2	15	-1	40*	10*	50	77	
BC264C	TO-92	30	10	5	15	10	2500	5.0	8.0	15	3.5	.001	4.0	15	-1	1.2	15	-1	40*	10*	50	77	
BC264D	TO-92	30	10	5	15	10	3500	7.0	12.0	15	4.0	.001	4.0	15	-1	1.2	15	-1	40*	10*	50	77	

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