National Semiconductor™

Discrete POWER & Signal Technologies

Pro Electron Surface Mount Bipolar Devices

Device No. (SOT-23 Mark)	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} h_{fe} 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)	NF (dB) Max	Test Conditions	Process No.
BC807-16 (5A)	**TO-236 (49)**	**50***	**45**	**5**	**100**	**20**	**100 40**	**250**	**100 500**	**1 1**	**0.7**			**500**		**100**		**10**			**78 (6-9)**
BC807-25 (5B)	**TO-236 (49)**	**50***	**45**	**5**	**100**	**20**	**160 40**	**400**	**100 500**	**1 1**	**0.7**			**500**		**100**		**10**			**78 (6-9)**
BC807-40 (5C)	**TO-236 (49)**	**50***	**45**	**5**	**100**	**20**	**250 40**	**600**	**100 500**	**1 1**	**0.7**			**500**		**100**		**10**			**78 (6-9)**
BC817-25 (6B)	**TO-236 (49)**	**30***	**25**	**5**	**100**	**20**	**160 40**	**400**	**100 500**	**1 1**	**0.7**			**500**		**200**		**10**			**38 (6-13)**
BC817-40 (6C)	**TO-236 (49)**	**30***	**25**	**5**	**100**	**20**	**250 40**	**600**	**100 500**	**1 1**	**0.7**			**500**		**200**		**10**			**38 (6-13)**
BC818-25 (6F)	TO-236 (49)	30*	25	5	100	20	160 40	400	100 500	1 1	0.7			500		200		10			38
BC818-40 (6G)	TO-236 (49)	30*	25	5	100	20	250 40	600	100 500	1 1	0.7			500		200		10			38
BC846A (1A)	**TO-236 (49)**	**80***	**65**	**6**	**15**	**30**	**110**	**220**	**2**	**5 5**	**0.25 0.6**	**0.77***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**07 (6-19)**
BC846B (1B)	**TO-236 (49)**	**80***	**65**	**6**	**15**	**30**	**200**	**450**	**2**	**5 5**	**0.25 0.6**	**0.77***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**07 (6-19)**
BC847A (1E)	**TO-236 (49)**	**50***	**45**	**6**	**15**	**30**	**110**	**220**	**2**	**5 5**	**0.25 0.6**	**0.77***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**07 (6-19)**
BC847B (1F)	**TO-236 (49)**	**50***	**45**	**6**	**15**	**30**	**200**	**450**	**2**	**5 5**	**0.25 0.6**	**0.77***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**07 (6-19)**
BC847C (1G)	**TO-236 (49)**	**50***	**45**	**6**	**15**	**30**	**420**	**800**	**2**	**5 5**	**0.25 0.6**	**0.77***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**07 (6-19)**

NOTE: National preferred device for each process in **bold**. Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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)	NF (dB) Max	Test Conditions	Process No.
BC848A (1J.)	TO-236 (49)	30	30	5	15	30	110	220	2	5 5	0.25 0.6			10 100					10	(Note 1)	10
BC848B (1K.)	TO-236 (49)	30	30	5	15	30	200	450	2	5 5	0.25 0.6			10 100					10	(Note 1)	10
BC848C (1L.)	TO-236 (49)	30	30	5	15	30	420	800	2	5 5	0.25 0.6			10 100					10	(Note 1)	10
BC849C (2C.)	TO-236 (49)	30	30	5	15	30	420	800	2	5 5	0.25 0.6			10 100					4	(Note 1)	10
BC850B (2F.)	TO-236 (49)	50	45	5	15	30	200	450	2	5 5	0.25 0.6			10 100						(Note 1)	10
BC850C (2G.)	TO-236 (49)	50	45	5	15	30	420	800	2	5 5	0.25 0.6			10 100						(Note 1)	10
BC856B (3B.)	TO-236 (49)	80	65	5	15	30	220	475	2	5	0.3 0.65			10 100					10	(Note 1)	69
BC857A (3E.)	**TO-236 (49)**	**50**	**45**	**5**	**15**	**30**	**125**	**250**	**2**	**5**	**0.3 0.65**		**0.82***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**68 (6-24)**
BC857B (3F.)	**TO-236 (49)**	**50**	**45**	**5**	**15**	**30**	**220**	**475**	**2**	**5**	**0.3 0.65**		**0.82***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**68 (6-24)**
BC857C (3G.)	**TO-236 (49)**	**50**	**45**	**5**	**15**	**30**	**420**	**800**	**2**	**5**	**0.3 0.65**		**0.82***	**10 100**	**4.5**	**100**		**10**	**10**	**(Note 1)**	**68 (6-24)**
BC858A (3J.)	TO-236 (49)	30	30	5	15	30	125	250	2	5	0.3 0.65		0.82*	10 100					10	(Note 1)	68
BC858B (3K.)	TO-236 (49)	30	30	5	15	30	220	475	2	5	0.3 0.65		0.82*	10 100					10	(Note 1)	68
BC858C (3L.)	TO-236 (49)	30	30	5	15	30	420	800	2	5	0.3 0.65		0.82*	10 100					10	(Note 1)	62
BC859B (4B.)	TO-236 (49)	30	30	5	15	30	220	475	2	5	0.65		0.82*	100					4	(Note 1)	68

NOTE: National preferred device for each process in **bold**. Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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)	NF (dB) Max	Test Conditions	Process No.
BC859C (4C)	TO-236 (49)	30	30	5	15 @ 30	420	800	2 5	0.65	100				4	(Note 1)	68
BC860C (4G)	TO-236 (49)	50	45	5	15 @ 30	420	800	2 5	0.3 0.65	10 100				3	(Note 1)	68
BCP52	**TO-261 (47)**	**60**	**60**	**5**	**100 @ 30**	**25 40**	**250**	**5 2 150 2**	**0.5**	***1 500**						**78 (6-28)**
BCP53	TO-261 (47)	100	80	5	100 @ 30	25 40	250	5 2 150 2	0.5	*1 500						78
BCP54	**TO-261 (47)**	**45**	**45**	**5**	**100 @ 30**	**25 40**	**250**	**5 2 150 2**	**0.5**	***1 500**						**38 (6-32)**
BCP55	TO-261 (47)	60	60	5	100 @ 30	25 40	250	5 2 150 2	0.5	*1 500						38
BCP56	TO-261 (47)	100	80	5	100 @ 30	25 40	250	5 2 150 2	0.5	*1 500						38
BCV26 (FD)	**TO-236 (49)**	**40**	**30**	**10**	**100 @ 30**	**4,000 10,000 20,000**		**1 5 10 5 100 5**	**1**	**1.5 100**						**61 (6-35)**
BCV27 (FF)	**TO-236 (49)**	**40**	**30**	**10**	**100 @ 30**	**4,000 10,000 20,000**		**1 5 10 5 100 5**	**1**	**1.5 100**						**05 (6-39)**
BCV71 (K7)	TO-236 (49)	80	60	5	100 @ 20	110	220	2 5	0.25	10				10	(Note 1)	10
BCV72 (K8)	TO-236 (49)	80	60	5	100 @ 20	200	450	2 5	0.25	10				10	(Note 1)	10
BCW30 (C2)	TO-236 (49)	32	32	5	100 @ 32	215	500	0.01 5 2 5	0.3	10				10	(Note 1)	68
BCW31 (D1)	TO-236 (49)	32	32	5	100 @ 32	150	270	0.01 5 2 5	0.25	10				10	(Note 1)	10

NOTE: National preferred device for each process in **bold**. Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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	@ I_C (mA)	$t_{(off)}$ (ns) Max	NF (dB) Max	Test Conditions	Process No.
BCW32 (D2)	TO-236 (49)	32	32	5	100 @	200	420	0.01 2	5 5	0.25			10					10	(Note 1)	10
BCW33 (D3)	TO-236 (49)	32	32	5	100 @	450	800	0.01 2	5 5	0.25			10					10	(Note 1)	10
BCW60A (AA)	TO-236 (49)	32*	32	5	20 @	50 120	630	50 2	1 5	0.35	0.6	0.85	50		125	10		6	(Note 1)	10
BCW61A (BA)	TO-236 (49)	32*	32	5	20 @	50 120	630	50 2	1 5	0.25	0.6	0.85	50					6	(Note 1)	68
BCW61B (BB)	TO-236 (49)	32*	32	5	20 @	80 140	310	50 2	1 5	0.25	0.6	0.85	50					6	(Note 1)	68
BCW61C (BC)	TO-236 (49)	32*	32	5	20 @	100 250	460	50 2	1 5	0.25	0.6	0.85	50					6	(Note 1)	68
BCW65C (ED)	**TO-236 (49)**	**60**	**32**	**5**	**20* @**	**80 180 250 50**	**630 630**	**0.1 10 100 500**	**10 1 1 1**	**0.7 0.3**		**2**	**500 100**	**12**	**100**	**20**	**400**	**10**	**(Note 1) (Note 7)**	**19 (6-45)**
BCW68G (DG)	**TO-236 (49)**	**60**	**45**	**5**	**20* @**	**120 160 60**	**400**	**10 100 300**	**1 1 1**	**1.5**		**2**	**500 300**	**18**	**100**	**20**		**10**	**(Note 1)**	**63 (6-50)**
BCW69 (H1)	TO-236 (49)	50	45	5	100 @	120	260	2	5	0.3			10					10	(Note 1)	68
BCW71 (K1)	**TO-236 (49)**	**50**	**45**	**5**	**100 @**	**110**	**220**	**2**	**5**	**0.25**			**10**	**4**				**10**		**10 (6-55)**
BCW89 (H3)	TO-236 (49)	80	60	5	100 @	120	260	2	5	0.3			10					10	(Note 1)	68
BCX17 (T1)	TO-236 (49)	50*	45	5	100 @	100 70 40	600	100 300 500	1 1 1	0.62			500							67

NOTE: National preferred device for each process in **bold**. Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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	@ I_C (mA)	$t_{(off)}$ (ns) Max	NF (dB) Max	Test Conditions	Process No.
BCX18 (T2)	TO-236 (49)	30*	25	5	100	20	100 70 40	600	100 300 500	1 1 1	0.62			500							67
BCX19 (U1)	TO-236 (49)	50*	45	5	100	20	100 70 40	600	100 300 500	1 1 1	0.62		1.2	500							12
BCX20 (U2)	TO-236 (49)	30*	25	5	100	20	100 70 40	600	100 300 500	1 1 1	0.62		1.2	500							12
BCX70G (AG)	TO-236 (49)	45	45	5	20	32	120 60	220	2 50	5 1	0.55	0.7	1.05	50	4.5	125	10	800	6	(Note 2) (Note 3)	10
BCX70H (AH)	TO-236 (49)	45	45	5	20	32	180 70 20	310	2 50 0.01	5 1 5	0.55	0.7	1.05	50	4.5	125	10	800	6	(Note 2) (Note 3)	10
BCX70J (AJ)	TO-236 (49)	45	45	5	20	32	250 90 40	460	2 50 0.01	5 1 5	0.55	0.7	1.05	50	4.5	125	10	800	6	(Note 2) (Note 3)	10
BCX71G (BG)	TO-236 (49)	45	45	5	20	32	120 60	220	2 50	5 1	0.55	0.7	1.05	50	4.5	125	10	800	6	(Note 2) (Note 3)	68
BCX71J (BJ)	TO-236 (49)	45	45	5	20	32	250 90 40	460	2 50 0.01	5 1 5	0.55	0.7	1.05	50	4.5	125	10	800	6	(Note 2) (Note 3)	68
BCX71K (BK)	**TO-236 (49)**	**45***	**45**	**5**	**20***	**32**	**380 110 100**	**630**	**2 50 0.01**	**5 1 5**	**0.55 0.25**	**0.68 0.6**	**1.05 0.85**	**50 10**	**6**	**125**	**10**	**800**	**6**	**(Note 2) (Note 3)**	**68 (6-59)**
BSR13 (U7)	TO-236 (49)	60	30	5	30	50	35 50 75 100 50 30	 300 	0.1 1 10 150 150 500	10 10 10 10 1 10	0.4 1.6 		1.3 2.6 	150 500 	8	250	20				19

NOTE: National preferred device for each process in **bold**. Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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	@ I_C (mA)	$t_{(off)}$ (ns) Max	NF (dB) Max	Test Conditions	Process No.
BSR14 (U8)	TO-236 (49)	75	40	6	10	60	35		0.1	10	0.3	0.6	1.2	150	8	300	20				19
							50		1	10											
							75		10	10											
							100	300	150	10	1		2	500							
							50		150	1											
							40		500	10											
BSR15 (T7)	TO-236 (49)	60	40	5	20	50	35		0.1	10	0.4		1.3	150	8	200	50	100		(Note 7)	63
							50		1	10											
							75		10	10	1.6		2.6	500							
							100	300	150	10											
							30		500	10											
BSR16 (T8)	TO-236 (49)	60	60	5	10	50	75		0.1	10	0.4		1.3	150	8	200	50	100		(Note 7)	63
							100		1	10											
							100		10	10	1.6		2.6	500							
							100	300	150	10											
							50		500	10											
BSR17A (U92)	**TO-236 (49)**	**60**	**40**	**6**	**50**	**30**	**40**		**0.1**	**1**	**0.2**	**0.65**	**0.85**	**10**	**4**	**300**	**20**	**250**		**(Note 5)**	**23 (6-72)**
							70		**1**	**1**											
							100	**300**	**10**	**1**											
							60		**50**	**1**											
							30		**100**	**1**	**0.3**		**0.95**	**50**							
BSR18A (T92)	**TO-236 (49)**	**40**	**40**	**5**	**50**	**30**	**60**		**0.1**	**1**	**0.25**	**0.65**	**0.85**	**10**	**4.5**	**250**	**10**	**300**		**(Note 5)**	**66 (6-79)**
							80		**1**	**1**											
							100	**300**	**10**	**1**											
							60		**50**	**1**											
							30		**100**	**1**			**0.95**	**50**							
BSS63 (T3)	**TO-236 (49)**	**110**	**100**	**6**	**100**	**90**	**30**		**10**	**1**	**0.25**		**0.9**	**25**		**50**	**25**				**74 (6-84)**
							30		**25**	**1**											
BSS64 (U3)	**TO-236 (49)**	**120**	**80**	**5**	**100**	**90**	**20**		**10**	**1**	**0.15**		**1.2**	**4**	**5**	**60**	**4**				**16 (6-88)**
											0.2			**50**							

NOTE: National preferred device for each process in **bold.** Number shown in parentheses indicates location **(section-page)** of device datasheet.

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	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} h_{fe} 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	@ I_C (mA)	$t_{(off)}$ (ns) Max	NF (dB) Max	Test Conditions	Process No.
BSS79C (CF)	TO-236 (49)	60	40	5	100 50	100	300	150	10	0.4 1.6			150 500	6	200	20				19
BSV52 (B2)	**TO-236 (49)**	**20**	**12**	**5**	**100 10**	**25 40**	**120 25**	**1 10 50**	**1 1 1**	**0.3**	**0.7**	**0.85**	**50 10**	**4**	**400**	**10**	**18**		**(Note 4)**	**21 (6-92)**

TEST CONDITIONS

Note 1: I_C = 200 µA, V_{CE} = 5V, f = 1 kHz.
Note 2: I_C = 15 mA, $I_B{}^1$ = $I_B{}^2$ = 1 mA.
Note 3: I_{CE} = 200 µA, V_{CE} = 5V, f = 200 Hz.
Note 4: I_C / I_B = 3.3.
Note 5: I_C = 10 mA, V_{CC} = 3V, $I_B{}^1$ = $I_B{}^2$ = 1 mA.
Note 6: I_C = 100 µA, V_{CE} = 5V, f = 1 kHz
Note 7: I_C = 150 mA, V_{CC} = 6V, $I_B{}^1$ = $I_B{}^2$ = 15 mA.

NOTE: National preferred device for each process in **bold.** Number shown in parentheses indicates location **(section-page)** of device datasheet.