



National
Semiconductor*

Discrete POWER & Signal
Technologies

Pro Electron Surface Mount Bipolar Devices

Device No. (SOT-23 Mark)	Case Style	V _{CE(SAT)} V _{CE(SAT)} (V) Min	V _{CE(SAT)} V _{CE(SAT)} (V) Min	V _{EB0} (V) Min	I _{CE(SAT)} I _{CE(SAT)} (nA) Max	V _{CE(SAT)} (V) Max	V _{BE(SAT)} & V _{BE(ON)} (V) Min	I _C (mA) Max	C _{ob} (pF) Max	f _T (MHz) Min	I _C (mA) Max	NF (dB) Max	Test Conditions	Process No.
BC807-16 (5A)	TO-236 (49)	50*	45	5	100	0.7	500	500		100	10			78 (6-9)
BC807-25 (5B)	TO-236 (49)	50*	45	5	100	0.7	500	500		100	10			78 (6-9)
BC807-40 (5C)	TO-236 (49)	50*	45	5	100	0.7	500	500		100	10			78 (6-9)
BC817-25 (6B)	TO-236 (49)	30*	25	5	100	0.7	500	500		200	10			38 (6-13)
BC817-40 (6C)	TO-236 (49)	30*	25	5	100	0.7	500	500		200	10			38 (6-13)
BC818-25 (6F)	TO-236 (49)	30*	25	5	100	0.7	500	500		200	10			38
BC818-40 (6G)	TO-236 (49)	30*	25	5	100	0.7	500	500		200	10			38
BC846A (1A)	TO-236 (49)	80*	65	6	15	0.25 0.6	0.77* 100	10 100	4.5	100	10	10	(Note 1)	07 (6-19)
BC846B (1B)	TO-236 (49)	80*	65	6	15	0.25 0.6	0.77* 100	10 100	4.5	100	10	10	(Note 1)	07 (6-19)
BC847A (1E)	TO-236 (49)	50*	45	6	15	0.25 0.6	0.77* 100	10 100	4.5	100	10	10	(Note 1)	07 (6-19)
BC847B (1F)	TO-236 (49)	50*	45	6	15	0.25 0.6	0.77* 100	10 100	4.5	100	10	10	(Note 1)	07 (6-19)
BC847C (1G)	TO-236 (49)	50*	45	6	15	0.25 0.6	0.77* 100	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 Series

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	Case Style	V _{CE} ⁺ V _{CBO} (V) Min	V _{CE0} (V) Min	V _{EBO} (V) Min	I _{CES} ⁺ I _{CBO} (mA) Max	V _{CB} (V) @ I _C	H _{FE} h _{FE} Min Max	I _C & I _{CE} (mA) (V)	V _{CE(SAT)} (V) Max & V _{BE(ON)} (V) Min	V _{BE(SAT)} V _{BE(ON)} (V) Min Max	I _C (mA) @ I _C Max	C _{ob} (pF) Max	f _T (MHz) Min Max	I _C (mA) @ I _C Max	NF (dB) Max	Test Conditions	Process No.
BC848A (1J.)	TO-236 (49)	30	30	5	15	30	110 220	2 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	0.25 0.6		10 100				10	(Note 1)	10
BC848C (1L.)	TO-236 (49)	30	30	5	15	30	420 800	2 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	0.25 0.6		10 100				4	(Note 1)	10
BC850B (2F.)	TO-236 (49)	50	45	5	15	30	200 450	2 5	0.25 0.6		10 100					(Note 1)	10
BC850C (2G.)	TO-236 (49)	50	45	5	15	30	420 800	2 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 _{CE(SAT)} V _{CB0} (V) Min	V _{CE0} (V) Min	V _{EB0} (V) Min	I _{CB0} [*] (nA) Max	V _{CB} @ (V)	H _{FE} h _{FE} Min	I _C & V _{CE} (mA) (V)	V _{CE(SAT)} (V) Max	V _{BE(SAT)} V _{BE(ON)} [*] (V) Min	I _C (mA) Max	C _{ob} (pF) Max	f _r (MHz) Min	I _C (mA) Max	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	250 150 2	0.5	*1	500						78 (6-28)
BCP53	TO-261 (47)	100	80	5	100	30	25 40	250 150 2	0.5	*1	500						78
BCP54	TO-261 (47)	45	45	5	100	30	25 40	250 150 2	0.5	*1	500						38 (6-32)
BCP55	TO-261 (47)	60	60	5	100	30	25 40	250 150 2	0.5	*1	500						38
BCP56	TO-261 (47)	100	80	5	100	30	25 40	250 150 2	0.5	*1	500						38
BCV26 (FD)	TO-236 (49)	40	30	10	100	30	4,000 10,000 20,000	1 5 5 10 5 5 100 5 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 5 10 5 5 100 5 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 2 5	0.3		10				10	(Note 1)	68
BCW31 (D1)	TO-236 (49)	32	32	5	100	32	150	270 0.01 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 Series

Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	Case Style	V _{CE} * V _{CEO} (V) Min	V _{EB} (V) Min	I _{CB} * I _{CB} (nA) Max	H _{FE} h _{FE} Min Max	I _C & I _C (mA) @	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 _{com} (ns) Max	NF (dB) Max	Test Conditions	Process No.
BCW32 (D2)	TO-236 (49)	32	5	100	200	0.01 2	0.25		10					10	(Note 1)	10
BCW33 (D3)	TO-236 (49)	32	5	100	450	0.01 2	0.25		10					10	(Note 1)	10
BCW60A (AA)	TO-236 (49)	32*	5	20	50 120	50 2	0.35	0.6	0.85		125	10		6	(Note 1)	10
BCW61A (BA)	TO-236 (49)	32*	5	20	50 120	50 2	0.25	0.6	0.85					6	(Note 1)	68
BCW61B (BB)	TO-236 (49)	32*	5	20	80 140	50 2	0.25	0.6	0.85					6	(Note 1)	68
BCW61C (BC)	TO-236 (49)	32*	5	20	100 250	50 2	0.25	0.6	0.85					6	(Note 1)	68
BCW65C (ED)	TO-236 (49)	60	5	20*	80 180 250 50	0.1 10 100 500	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	5	20*	120 160 60	10 100 300	1.5	2	500 300	18	100	20		10	(Note 1)	63 (6-50)
BCW69 (H1)	TO-236 (49)	50	5	100	120	260	0.3		10					10	(Note 1)	68
BCW71 (K1)	TO-236 (49)	50	5	100	110	220	0.25		10	4				10	(Note 1)	10 (6-55)
BCW89 (H3)	TO-236 (49)	80	5	100	120	260	0.3		10					10	(Note 1)	68
BCX17 (T1)	TO-236 (49)	50*	5	100	100 70 40	100 300 500	0.62		500							67

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Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	Case Style	V_{CES}^*	V_{CE0}	V_{EBO}	I_{CES}^*	V_{CB}	H_{FE}	I_C & I_C & I_C &	$V_{CE(SAT)}$	$V_{BE(SAT)}$	I_C	C_{ob}	f_T	$t_{(on)}$	NF (dB) Max	Test Conditions	Process No.
		V_{CB0} (V) Min	(V) Min	(V) Min	(nA) Max	@ (mA)	h_{fe} Min Max	I_C (mA) Max	$V_{BE(ON)}$ (V) Min Max	@ (mA) Max	(pF) Max	(MHz) Min	(ns) Max				
BCX18 (T2)	TO-236 (49)	30*	25	5	100	20	100 600 70 40	100 300 500	0.62		500						67
BCX19 (U1)	TO-236 (49)	50*	45	5	100	20	100 600 70 40	100 300 500	0.62	1.2	500						12
BCX20 (U2)	TO-236 (49)	30*	25	5	100	20	100 600 70 40	100 300 500	0.62	1.2	500						12
BCX70G (AG)	TO-236 (49)	45	45	5	20	32	120 60	2 50	0.55	0.7	50	4.5	125	800	6	(Note 2) (Note 3)	10
BCX70H (AH)	TO-236 (49)	45	45	5	20	32	180 70 20	2 50 0.01	0.55	0.7	50	4.5	125	800	6	(Note 2) (Note 3)	10
BCX70J (AJ)	TO-236 (49)	45	45	5	20	32	250 90 40	2 50 0.01	0.55	0.7	50	4.5	125	800	6	(Note 2) (Note 3)	10
BCX71G (BG)	TO-236 (49)	45	45	5	20	32	120 60	2 50	0.55	0.7	50	4.5	125	800	6	(Note 2) (Note 3)	68
BCX71J (BJ)	TO-236 (49)	45	45	5	20	32	250 90 40	2 50 0.01	0.55	0.7	50	4.5	125	800	6	(Note 2) (Note 3)	68
BCX71K (BK)	TO-236 (49)	45*	45	5	20*	32	380 110 100	2 50 0.01	0.55	0.68 0.6	50 10	6	125	800	6	(Note 2) (Note 3)	68 (6-59)
BXR13 (U7)	TO-236 (49)	60	30	5	30	50	35 50 75 100 50 30	0.1 1 10 150 150 500	0.4	1.3	150	8	250				19

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Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	Case Style	V _{CE} ⁺		V _{CE0}		V _{EBO}		I _{CEB} ⁺		I _{CEB} ⁺		H _{FE}		I _C & V _{CE}		V _{CE(SAT)} (V) & V _{BE(ON)} (V)		I _C		C _{ob} (pF) Max	f _T (MHz) Min	I _C (mA) Max	t _{on} (ns) Max	NF (dB) Max	Test Conditions	Process No.	
		V _{CE0} (V) Min	V _{CEB} (V) Min	I _{CEB} (nA) Max	I _{CEO} (nA) Max	I _C (mA) Max	V _{CE} (V) Max	h _{FE} Min	h _{FE} Max	I _C (mA) Min	V _{CE} (V) Max	I _C (mA) Min	V _{BE} (V) Min	I _C (mA) Max	I _C (mA) Max	V _{BE} (V) Max											
BSR14 (U8)	TO-236 (49)	75	40	6	10	60	35	0.1	10	10	0.3	0.6	1.2	150	8	300	20									19	
							50	1	10	10	1																
BSR15 (T7)	TO-236 (49)	60	40	5	20	50	35	0.1	10	10	0.4	1.3	150	8	200	50									(Note 7)	63	
							50	1	10	10	1.6	2.6	500														
BSR16 (T8)	TO-236 (49)	60	60	5	10	50	75	0.1	10	10	0.4	1.3	150	8	200	50										(Note 7)	63
							100	1	10	10	1.6	2.6	500														
BSR17A (U92)	TO-236 (49)	60	40	6	50	30	40	0.1	1	1	0.2	0.65	0.85	10	4	300	20								(Note 5)	23 (6-72)	
							70	1	1	1	100	300	10	1	1	1	1	1	0.3	0.95	50						
BSR18A (T92)	TO-236 (49)	40	40	5	50	30	60	0.1	1	1	0.25	0.65	0.85	10	4.5	250	10								(Note 5)	66 (6-79)	
							80	1	1	1	100	300	10	1	1	1	1	0.3	0.95	50							
BSS63 (T3)	TO-236 (49)	110	100	6	100	90	30	10	1	1	0.25	0.9	25			50	25									74 (6-84)	
BSS64 (U3)	TO-236 (49)	120	80	5	100	90	30	25	1	1	0.15	1.2	4	5		60	4									16 (6-88)	

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Pro Electron Surface Mount Bipolar Devices (continued)

Device No. (SOT-23 Mark)	Case Style	V_{CES}^*		V_{EBO} (V) Min	I_{CES}^*		H_{FE} h_{fe} Min	I_C & V_{CE} (mA) (V)		$V_{CE(SAT)}$ (V) Max	$V_{BE(SAT)}$ $V_{BE(ON)}^*$ (V)		C_{ob} (pF) Max	f_T (MHz) @ I_C (mA)	$t_{(off)}$ (ns) Max	NF (dB) Max	Test Conditions	Process No.
		V_{CBO} (V) Min	V_{CB} (V) Min		I_{CBO} (nA) Max	V_{CB} (V) Min		Max	Min		Max							
BSS79C (CF)	TO-236 (49)	60	40	5	100	50	100	300	150	10	0.4	150	6	200	20			19
BSV52 (B2)	TO-236 (49)	20	12	5	100	10	25	120	10	1	0.3	50	4	400	10	18		21 (6-92)

TEST CONDITIONS

Note 1: $I_C = 200 \mu A$, $V_{CE} = 5V$, $f = 1 \text{ kHz}$.
 Note 2: $I_C = 15 \text{ mA}$, $I_B^1 = I_B^2 = 1 \text{ mA}$.

Note 3: $I_{CE} = 200 \mu A$, $V_{CE} = 5V$, $f = 200 \text{ Hz}$.
 Note 4: $I_C/I_B = 3.3$.

Note 5: $I_C = 10 \text{ mA}$, $V_{CC} = 3V$, $I_B^1 = I_B^2 = 1 \text{ mA}$.

Note 6: $I_C = 100 \mu A$, $V_{CE} = 5V$, $f = 1 \text{ kHz}$.
 Note 7: $I_C = 150 \text{ mA}$, $V_{CC} = 6V$, $I_B^1 = I_B^2 = 15 \text{ mA}$.

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