

# NPN Silicon Transistors

NPN Silicon Epitaxial Planar Transistors ( $I_C = 100\text{mA}$ ) for general amplifying and switching purposes

Common maximum ratings	$-I_C$ 100 mA <sup>5</sup>	$-V_{EBO}$ 5 V <sup>5</sup>	$P_{tot}$ ( $T_{amb} = 25^\circ\text{C}$ ) 300 mW (TO-92) <sup>3</sup> 300 mW (TO-18) <sup>4</sup>	$T_i$ 125 °C (TO-92) 175 °C (TO-18) <sup>4</sup>
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Common characteristics	$\Theta_{amb}$ < 0,33 °C/mW (TO-92) <sup>3</sup> < 0,50 °C/mW (TO-18) <sup>4</sup>
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Type		Maximum Ratings		Characteristics at $T_{amb} = 25^\circ\text{C}$							
$\approx$ TO-92 epoxy	TO-18 case	$V_{CES}$ V ( $V_{CB0}$ V)	$V_{CE0}$ V	$h_{21E}$	@ $V_{CE}/I_C$ V/mA	@ $V_{CE} = 5\text{ V}$ $I_C = 2\text{ mA}$ ( $I_C = 1\text{ mA}$ ) $h_{21e}$	$V_{CE\text{ sat}}$ V	@ $I_C/I_B$ mA/mA	@ $V_{CE} = 5\text{ V}$ $I_C = 10\text{ mA}$ $f = 100\text{ MHz}$ ( $I_C = 5\text{ mA}$ ) $f_T$ MHz	$I_{CES}$ nA ( $I_{CB0}$ nA)	@ $V_{CE}$ V ( $V_{CB}$ V)
BC 170 A	---	(20)	20	35 ... 100	1/1	(70)	< 0,4	30/3	100	(< 100)	(15)
BC 170 B	---	(20)	20	80 ... 250	1/1	(150)	< 0,4	30/3	100	(< 100)	(15)
BC 170 C	---	(20)	20	200 ... 600	1/1	(350)	< 0,4	30/3	100	(< 100)	(15)
BC 171 A	BC 107 A	50	45	220	5/20	125 ... 260	< 0,6	100/5	250	< 15	50
BC 171 B	BC 107 B	50	45	320	5/20	240 ... 500	< 0,6	100/5	250	< 15	50
BC 172 A	BC 108 A	30	20	220	5/20	125 ... 260	< 0,6	100/5	250	< 15	30
BC 172 B	BC 108 B	30	20	320	5/20	240 ... 500	< 0,6	100/5	250	< 15	30
BC 172 C	BC 108 C	30	20	620	5/20	450 ... 900	< 0,6	100/5	250	< 15	30
BC 173 B <sup>2</sup>	BC 109 B <sup>2</sup>	30	20	> 40	5/0,01	240 ... 500	< 0,6	100/5	300	< 15	30
BC 173 C <sup>2</sup>	BC 109 C <sup>2</sup>	30	20	> 100	5/0,01	450 ... 900	< 0,6	100/5	300	< 15	30
BC 174 A	---	70	64	220	5/20	125 ... 260	< 0,6	100/5	200	< 15	60
BC 174 B	---	70	64	320	5/20	240 ... 500	< 0,6	100/5	200	< 15	60
---	BCY43	(40)	20	75 ... 150	5/1	(120)	< 0,5	50/2,2	100 <sup>7</sup>	(< 25)	(30)
---	BCY 58 A	32	32	225	5/20	125 ... 250	< 0,6	100/5	(300)	< 10	32
---	BCY 58 B	32	32	280	5/20	175 ... 350	< 0,6	100/5	(300)	< 10	32
---	BCY 58 C	32	32	350	5/20	250 ... 500	< 0,6	100/5	(300)	< 10	32
---	BCY 58 D	32	32	540	5/20	350 ... 700	< 0,6	100/5	(300)	< 10	32
---	BCY 59 A	45	45	225	5/20	125 ... 250	< 0,6	100/5	(300)	< 10	45
---	BCY 59 B	45	45	280	5/20	175 ... 350	< 0,6	100/5	(300)	< 10	45
---	BCY 59 C	45	45	350	5/20	250 ... 500	< 0,6	100/5	(300)	< 10	45
---	BCY 59 D	45	45	540	5/20	350 ... 700	< 0,6	100/5	(300)	< 10	45
---	BFY18	(60)	40	60	9/10	> 35	< 1,5	10/0,5	> 200	(10)	(9)
---	BFY19	(30)	20	> 50	9/10	> 35	< 2	10/0,33	> 300	(25)	(9)
---	BSV40	(40)	20	40 ... 120	0,35/10	---	< 0,4	10/1	> 300	(10)	(32)
---	BSV41	(40)	20	100 ... 200	0,35/10	---	< 0,4	10/1	> 300	(10)	(32)
---	BSY 72 <sup>1</sup>	(25)	18	80 ... 250	1/1	(150)	---	---	170	(< 100)	(20)
---	BSY 73 <sup>1</sup>	(25)	18	35 ... 100	1/1	(80)	< 0,5	100/10	145	(< 100)	(20)
---	BSY 74 <sup>1</sup>	(25)	18	80 ... 250	1/1	(150)	< 0,5	100/10	170	(< 100)	(20)
---	BSY 75 <sup>1</sup>	(40)	32	35 ... 100	1/1	(90)	< 0,5	100/10	145	(< 50)	(32)
---	BSY 76 <sup>1</sup>	(40)	32	80 ... 250	1/1	(150)	< 0,5	100/10	170	(< 50)	(32)
---	BSY 77	(80)	64	35 ... 100	1/1	(90)	< 0,5	100/10	145	(< 50)	(65)
---	BSY 78	(80)	64	80 ... 250	1/1	(150)	< 0,5	100/10	170	(< 50)	(65)
---	BSY 80 <sup>1</sup>	(25)	18	> 200	1/1	(375)	< 0,5	100/10	210	(< 100)	(20)
---	2 N 929 <sup>2</sup>	(45)	45	40 ... 120	5/0,01	(60 ... 350)	< 1	10/0,5	150	(< 10)	(45)
---	2 N 930 <sup>2</sup>	(45)	45	100 ... 300	5/0,01	(150 ... 600)	< 1	10/0,5	150	(< 10)	(45)

<sup>1</sup> Not recommended for new designs.

<sup>2</sup> Low noise type.

<sup>3</sup> Leads at  $T_{amb}$  at 2 mm from case.

<sup>4</sup> BCY 58 and BCY 59:  $P_{tot} = 390\text{ mW}$ ,  $T_i = 0_{amb} < 0,45^\circ\text{C/mW}$

<sup>5</sup> 2N 929 and 2 N 930: 30 mA, BSY 75 ... 78; 250 mA.

<sup>6</sup> BC 107: 6V, BSY 75 ... 78, BCY 58 and BCY 59: 7V.

<sup>7</sup> At 1 mA.

Note: Types BC 107, BC 108, BC 109, BC 170, BC 171, BC 172 and BC 173 are also available. These combine the full specification spreads of their respective suffixed types shown above, e.g. BC 108=BC 108A+BC108B+BC108C.

Red = New Type