

NPN Silicon Transistors

NPN Silicon Epitaxial Planar Transistors in TO-39 (\approx TO-5) metal case.
 These transistors are complementary to the PNP types shown on page 25.

Type	Maximum Ratings				Characteristics at $T_{amb} = 25^\circ\text{C}$									
	V_{CB0} V	V_{CE0} V	V_{EB0} V	I_C A	P_{tot} W	T_j $^\circ\text{C}$	h_{21E}	V_{CE}/I_C V/mA	$V_{CE sat}$ V	I_C/I_B A/mA	I_{CES} nA	V_{CE} V	$\theta_{case} (\theta_{amb})$ $^\circ\text{C/W}$	
	@ $T = 25^\circ\text{C}$													
BC 140-6	80	40	7	1	0,75	175	40 ... 100	1/100	< 1,4	1/100	< 100	40	< 35 (< 200)	
BC 140-10	80	40	7	1	0,75	175	63 ... 160	1/100	< 1,4	1/100	< 100	40	< 35 (< 200)	
BC 140-16	80	40	7	1	0,75	175	100 ... 250	1/100	< 1,4	1/100	< 100	40	< 35 (< 200)	
BC 141-6	100	60	7	1	0,75	175	40 ... 100	1/100	< 1,4	1/100	< 100	60	< 35 (< 200)	
BC 141-10	100	60	7	1	0,75	175	63 ... 160	1/100	< 1,4	1/100	< 100	60	< 35 (< 200)	
BC 141-16	100	60	7	1	0,75	175	100 ... 250	1/100	< 1,4	1/100	< 100	60	< 35 (< 200)	
BC 340-6	40	40	5	0,5	0,8	200	40 ... 100	5/50	< 0,4	0,15/15	< 100	40	< 58 (< 220)	
BC 340-10	40	40	5	0,5	0,8	200	63 ... 160	5/50	< 0,4	0,15/15	< 100	40	< 58 (< 220)	
BC 340-16	40	40	5	0,5	0,8	200	100 ... 250	5/50	< 0,4	0,15/15	< 100	40	< 58 (< 220)	
BC 341-6	60	60	5	0,5	0,8	200	40 ... 100	5/50	< 0,4	0,15/15	< 100	60	< 58 (< 220)	
BC 341-10	60	60	5	0,5	0,8	200	63 ... 160	5/50	< 0,4	0,15/15	< 100	60	< 58 (< 220)	

NPN Silicon Epitaxial Planar Transistors ($I_C = 500\text{mA}$) in TO-39 (\approx TO-5) metal case

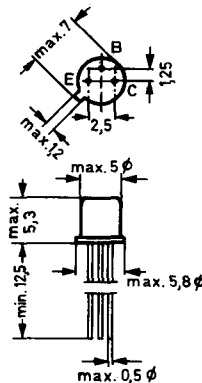
Type	Maximum Ratings				Characteristics at $T_{amb} = 25^\circ\text{C}$									
Common maximum ratings	I_C 500 mA ²⁾				$P_{tot} (T_{amb} = 25^\circ\text{C})$ 0,8 W			$P_{tot} (T_{case} = 25^\circ\text{C})$ 3 W			T_j 200 $^\circ\text{C}$			
Common characteristics	$f_T (V_{CE} = 10\text{ V}, I_C = 50\text{ mA})$ 100 MHz				$C_{22b} (V_{CB0} = 10\text{ V})$ 10 pF			θ_{case} < 58 $^\circ\text{C/W}$			θ_{amb} < 220 $^\circ\text{C/W}$			
	V_{CB0} V	V_{CE0} V	V_{EB0} V	I_C A	h_{21E}	h_{21E}	h_{21E}	h_{21E}	$V_{CE sat}$ V	I_C/I_B A/mA	I_{CB0} nA	V_{CB} V		
	@ $V_{CE} = 10\text{ V}$ $I_C = 0,1\text{ mA}$ ($0,01\text{ mA}$) $I_C = 10\text{ mA}$ (50 mA) $I_C = 0,15\text{ A}$ @ $V_{CE} = 5\text{ V}$ $I_C = 1\text{ mA}$ ($10\text{ V} / 5\text{ mA}$)													
BSY 51 \approx 2 N 697	60	25	5	—	> 30	40 ... 120	30 ... 100	0,15 (< 0,8)	0,15/15	< 100	30			
BSY 52 \approx 2 N 1420	60	25	5	—	> 70	100 ... 300	50 ... 200	0,15 (< 0,8)	0,15/15	< 100	30			
BSY 53 \approx 2 N 1613	75	30	7	> 20	> 35	40 ... 120	30 ... 100	0,5 (< 1,2)	0,5/50	< 10	60			
BSY 54 \approx 2 N 1711	75	30	7	(> 20)	> 75	100 ... 300	50 ... 250	0,5 (< 1,2)	0,5/50	< 10	60			
BSY 55 \approx 2 N 1893	120	80	7	> 20	> 35	40 ... 120	30 ... 150	0,2 (< 0,6)	0,15/15	< 10	90			
BSY 56	120	80	7	> 35	> 75	100 ... 300	60 ... 280	0,2 (< 0,6)	0,15/15	< 10	90			
BSY 87 \approx 2 N 1889	100	60	7	> 20	> 35	40 ... 120	30 ... 150	0,2 (< 0,6)	0,15/15	< 10	75			
BSY 88 \approx 2 N 1890	100	60	7	> 35	> 75	100 ... 300	60 ... 280	0,2 (< 0,6)	0,15/15	< 10	75			
BSY 90	60	25	5	> 100	> 140	> 250	200 ... 550	0,14 (< 0,8)	0,15/15	< 10	30			
2 N 1613	75	50 ³⁾	7	(35)	> 35	40 ... 120	30 ... 100	< 1,5	0,15/15	< 10	60			
2 N 1711	75	50 ³⁾	7	(> 20)	> 75	100 ... 300	50 ... 200	< 1,5	0,15/15	< 10	60			
2 N 1893	120	80	7	> 20	> 35	40 ... 120	(> 45)	< 5	0,15/15	< 10	90			

¹ Not recommended for new designs

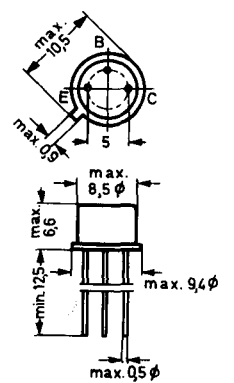
² 750 mA for BSY 53/54

³ V_{CER} @ $R_{BE} < 10\ \Omega$

TO-18 metal case
 Weight 0,35p
 Collector connected to case



TO-39 (\approx TO-5) metal case
 Weight 1p
 Collector connector to case



Red = New Type