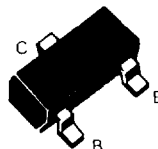


SOT23 NPN SILICON PLANAR GENERAL PURPOSE TRANSISTORS

BC846 BC847
BC848 BC849
BC850

PARTMARKING DETAILS:-

BC846A - 1A	BC848B - 1K
BC846B - 1B	BC848C - 1L
BC847A - 1E	BC849B - 2B
BC847B - 1F	BC849C - 2C
BC847C - 1G	BC850B - 2F
BC848A - 1J	BC850C - 2G



ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	BC846	BC847	BC848	BC849	BC850	UNIT
Collector-Base Voltage	V_{CBO}	80	50	30	30	50	V
Collector-Emitter Voltage	V_{CES}	80	50	30	30	50	V
Collector-Emitter Voltage	V_{CEO}	65	45	30	30	45	V
Emitter-Base Voltage	V_{EBO}	6	6	5	5	5	V
Collector Current	I_C	100	100	100	100	100	mA
Peak Collector Current	I_{CM}	200	200	200	200	200	mA
Peak Base Current	I_{BM}	200	200	200	200	200	mA
Peak Emitter Current	I_{EM}	200	200	200	200	200	mA
Power Dissipation at $T_{amb} = 25^\circ\text{C}$	P_{TOT}	330					mW
Operating and Storage Temperature Range	$t_j:tstg$	- 55 to + 150°C					°C

ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL	BC846	BC847	BC848	BC849	BC850	UNIT	CONDITIONS
Collector Cut-Off Current	I_{CBO}	Max.	15	15	15	15	nA	$V_{CB} = 30\text{V}$ $V_{CE} = 30\text{V}$ $T_{amb} = 150^\circ\text{C}$
		Max.	5	5	5	5	μA	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	Typ.	90	90	90	90	mV	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$
		Max.	250	250	250	250	mV	
		Typ.	200	200	200	200	mV	
Max.	600	600	600	600	mV			
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	Typ.	700	700	700	700	mV	$I_C = 10\text{mA}$ $I_B = 0.5\text{mA}$ $I_C = 100\text{mA}$ $I_B = 5\text{mA}$
		Typ.	900	900	900	900	mV	
Base-Emitter Voltage	V_{BE}	Min.	580	580	580	580	mV	$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$
		Typ.	660	660	660	660	mV	
		Max.	700	700	700	700	mV	
		Max.	770	770	770	770	mV	

* Collector-Emitter Saturation Voltage at $I_C = 10\text{mA}$ for the characteristics going through the operating point $I_C = 11\text{mA}$, $V_{CE} = 1\text{V}$ at constant base current.

BC846	BC847
BC848	BC849
BC850	

CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated)

PARAMETER	SYMBOL		BC846	BC847	BC848	BC849	BC850	UNIT	CONDITIONS
Static Forward Current Transfer Ratio	h_{FE}	Min.	75	75	75				$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$
		Typ.	110	110	110				
		Max.	150	150	150				
	Group A	Typ.	90	90	90				$I_C = 0.01\text{mA}$ $V_{CE} = 5\text{V}$
		Min.	110	110	110				$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$
		Typ.	180	180	180				
			Max.	220	220	220			
			Typ.	120	120	120			$I_C = 100\text{mA}$ $V_{CE} = 5\text{V}$
	Group B	Typ.	150	150	150	150	150		$I_C = 0.01\text{mA}$ $V_{CE} = 5\text{V}$
		Min.	200	200	200	200	200		$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$
		Typ.	290	290	290	290	290		
			Max.	450	450	450	450		
		Typ.	200	200	200			$I_C = 100\text{mA}$ $V_{CE} = 5\text{V}$	
Group C	Typ.		270	270	270	270		$I_C = 0.01\text{mA}$ $V_{CE} = 5\text{V}$	
	Min.		420	420	420	420		$I_C = 2\text{mA}$ $V_{CE} = 5\text{V}$	
	Typ.		500	500	500	500			
		Max.	800	800	800	800			
		Typ.			400			$I_C = 100\text{mA}$ $V_{CE} = 5\text{V}$	
Transition Frequency	f_T	Typ.	300	300	300	300	300	MHz	$I_C = 10\text{mA}$ $V_{CE} = 5\text{V}$ $f = 100\text{MHz}$
Collector-Base Capacitance	C_{obo}	Typ.	2.5	2.5	2.5	2.5	2.5	pF	$V_{CB} = 10\text{V}$ $f = 1\text{MHz}$
		Max.	4.5	4.5	4.5	4.5	4.5	pF	

CHARACTERISTICS (cont.)

PARAMETER	SYMBOL		BC846	BC847	BC848	BC849	BC850	UNIT	CONDITIONS	
Emitter-Base Capacitance	C_{ibo}	Typ.	9	9	9	9	9	pF	$V_{EB} = 0.5V$ $f = 1MHz$	
Noise figure	N	Typ.	2	2	2	1.2	1	dB	$V_{CE} = 5V$ $I_C = 200\mu A$ $R_G = 2k\Omega$ $f = 1kHz$ $\Delta f = 200Hz$	
		Max.	10	10	10	4	4			
		Typ.				1.4	1.4	dB	$V_{CE} = 5V$ $I_C = 200\mu A$ $R_G = 2k\Omega$ $f = 30Hz$ to 15kHz at -3dB points	
		Max.				4	3			
Equivalent Noise Voltage	e_n	Max.				135	135	nV	$V_{CE} = 5V$ $I_C = 200\mu A$ $R_G = 2k\Omega$ $f = 10$ to 50Hz at -3dB points	
Dynamic Characteristics	Group V1	h_{ie}	Min.	0.4	0.4	0.4			k Ω	$V_{CE} = 5V$ $I_C = 2mA$ $f = 1kHz$
			Typ.	1.2	1.2	1.2			k Ω	
	Max.		2.2	2.2	2.2			k Ω		
	Group A	Min.	1.6	1.6	1.6			k Ω		
		Typ.	2.7	2.7	2.7			k Ω		
		Max.	4.5	4.5	4.5			k Ω		
	Group B	Min.	3.2	3.2	3.2	3.2	3.2	k Ω		
		Typ.	4.5	4.5	4.5	4.5	4.5	k Ω		
		Max.	8.5	8.5	8.5	8.5	8.5	k Ω		
	Group C	Min.			6	6	6	k Ω		
		Typ.			8.7	8.7	8.7	k Ω		
		Max.			15	15	15	k Ω		
	Group VI	h_{re}	Typ.	2.5	2.5	2.5			$\times 10^{-4}$	
	Group A		Typ.	1.5	1.5	1.5			$\times 10^{-4}$	
	Group B		Typ.	2	2	2	2	2	$\times 10^{-4}$	
	Group C		Typ.			3	3	3	$\times 10^{-4}$	
	Group VI	h_{fe}	Min.	75	75	75				
	Group A		Typ.	110	110	110				
			Max.	150	150	150				
		Group B	Min.	125	125	125				
Typ.	220		220	220						
Max.	260		260	260						
Group C	Min.	240	240	240	240	240				
	Typ.	330	330	330	330	330				
	Max.	500	500	500	500	500				
Group VI	Min.		450	450	450	450				
	Typ.		600	600	600	600				
	Max.		900	900	900	900				
Group VI	h_{oe}	Typ.	20	20	20			μS		
		Max.	40	40	40			μS		
Group A	h_{oe}	Typ.	18	18	18			μS		
		Max.	30	30	30			μS		
Group B	h_{oe}	Typ.	30	30	30	30	30	μS		
		Max.	60	60	60	60	60	μS		
Group C	h_{oe}	Typ.			60	60	60	μS		
		Max.			110	110	110	μS		