

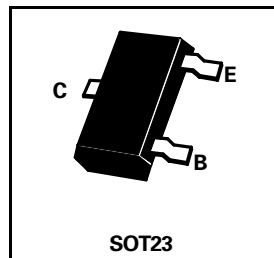
SOT23 PNP SILICON PLANAR

GENERAL PURPOSE TRANSISTORS

ISSUE 6 - APRIL 1997

BC856	BC857
BC858	BC859
BC860	

PARTMARKING DETAILS		COMPLEMENTARY TYPES	
BC856A-3A	BC858C-3L	BC856	BC846
BC856B-Z3B	BC859A-Z4A	BC857	BC847
BC857A-Z3E	BC859B-4B	BC858	BC848
BC857B-3F	BC859C-Z4C	BC859	BC849
BC857C-3G	BC860A-Z4E	BC860	BC850
BC858A-3J	BC860B-4F		
BC858B-3K	BC860C-4GZ		



ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	BC856	BC857	BC858	BC859	BC860	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}	-5					V
Continuous Collector Current	I_C	-100					mA
Peak Pulse Current	I_{EM}	-200					mA
Base Current	I_{BM}	-200					mA
Base Current	I_{EM}	-200					mA
Power Dissipation at $T_{amb}=25^{\circ}C$	P_{tot}	330					mW
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150					$^{\circ}C$

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

PARAMETER	SYMBOL		BC856	BC857	BC858	BC859	BC860	UNIT	CONDITIONS.
Collector Cut-Off Current	I_{CBO}	Max	-15					nA	$V_{CB} = -30V$
		Max	-4					μA	$V_{CB} = -30V$ $T_{amb}=150^{\circ}C$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	Typ	-75	-75	-75	-75	-75	mV	$I_C = -10mA$, $I_B = -0.5mA$
		Max.	-300	-300	-300	-250	-250	mV	$I_C = -100mA$, $I_B = -5mA$
		Typ	-250					mV	$I_C = -100mA$, $I_B = -5mA$
		Max.	-650					mV	$I_C = -10mA^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	Typ	-700					mV	$I_C = -10mA$, $I_B = -0.5mA$
		Typ	-850					mV	$I_C = -100mA$, $I_B = -5mA$
Base-Emitter Voltage	V_{BE}	Min	-600	-600	-600	-580	-580	mV	$I_C = -2mA$
		Typ	-650	-650	-650	-650	-650		$V_{CE} = -5V$
		Max	-750	-750	-750	-750	-750		
		Max	-820					mV	$I_C = -10mA$ $V_{CE} = -5V$

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

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ELECTRICAL CHARACTERISTICS (Continued)

PARAMETER	SYMBOL		BC856	BC857	BC858	BC859	BC860	UNIT	CONDITIONS.					
Noise Figure	N	Typ Max	2 10	2 10	2 10	1 4	1 4	dB dB	$V_{CB} = -5V$, $I_C = 200\mu A$, $R_G = 2k\Omega$, $f = 1kHz$, $\Delta f = 200Hz$					
		Typ Max	— —	— —	— —	1.2 4	1 3	dB dB	$V_{CB} = -5V$, $I_C = 200\mu A$, $R_G = 2k\Omega$, $f = 30Hz$ to $15kHz$ at -3dB points					
Equivalent Noise Voltage	e_n	Max	—	—	—	110	110	nV	$V_{CB} = -5V$, $I_C = 200\mu A$, $R_G = 2k\Omega$, $f = 10Hz$ to $50Hz$ at -3dB points					
Dynamic Characteristics	Group VI Group A Group B Group C	h_{ie}	Min Typ Max	0.4 1.2 2.2	0.4 1.2 2.2	0.4 1.2 2.2	— — —	— — —	k Ω k Ω k Ω					
			Min Typ Max	1.6 2.7 4.5					k Ω k Ω k Ω					
			Min Typ Max	3.2 4.5 8.5					k Ω k Ω k Ω					
			Min Typ Max	— — —	— — —	6 8.7 15	6 8.7 15	6 8.7 15	k Ω k Ω k Ω					
			Group VI Group A Group B Group C	h_{re}	Typ Typ Typ Typ	2.5 1.5 2 2	2.5 1.5 2 2	2.5 1.5 2 3	— 1.5 2 3		— 1.5 2 3	$\times 10^{-4}$ $\times 10^{-4}$ $\times 10^{-4}$ $\times 10^{-4}$	$V_{CE} = -5V$ $I_C = 2mA$ $f = 1kHz$	
					Group A	Min Typ Max	75 110 150	75 110 150	75 110 150		— — —	— — —		
						Min Typ Max	125 220 260							
						Min Typ Max	240 330 500							
			Group B	Min Typ Max		— — —	450 600 900	450 600 900	450 600 900		450 600 900			
				Group C	Min Typ Max	20 40	20 40	20 40	— —		— —	μs μs		
					Typ Max	18 30					μs μs			
					Typ Max	30 60					μs μs			
Typ Max	— —	— —	60 110		60 110	60 110	μs μs							

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ELECTRICAL CHARACTERISTICS (Continued)

PARAMETER		SYMBOL		BC856	BC857	BC858	BC859	BC860	UNIT	CONDITIONS.		
Static Forward Current Ratio	Group VI	h_{FE}	Min	75	75	75	–	–		$I_C=2mA,$ $V_{CE}=5V$		
			Typ	110	110	110	–	–				
			Max	150	150	150	–	–				
	Group A	h_{FE}	Typ	90	90	90	–	–		$I_C=0.01mA,V_{CE}=5V$		
			Min	125							$I_C=2mA,$ $V_{CE}=5V$	
			Typ	180								
	Group B	h_{FE}	Max	250						$I_C=100mA,V_{CE}=5V$		
			Typ	120	120	120	–	–	$I_C=0.01mA,V_{CE}=5V$			
			Min	150						$I_C=2mA,$ $V_{CE}=5V$		
			Typ	220								
Max			290						$I_C=100mA,V_{CE}=5V$			
Typ			200	200	200	–	–					
Group C	h_{FE}	Typ.	–	270	270	270	270		$I_C=0.01mA,$ $V_{CE}=5V$			
		Min	–	420	420	420	420			$I_C=2mA,$ $V_{CE}=5V$		
		Typ	–	500	500	500	500					
		Max	–	800	800	800	800			$I_C=100mA,V_{CE}=5V$		
Typ	–	–	400	–	–							
Transition Frequency		f_T	Typ	150	150	150	300	300	MHz	$I_C=10mA,V_{CE}=5V$ $f=100MHz$		
Collector-Base Capacitance		C_{obo}	Typ	4.5						pF	$V_{CB}=10V,$ $f=1MHz$	

Spice parameter data is available upon request for these devices

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