

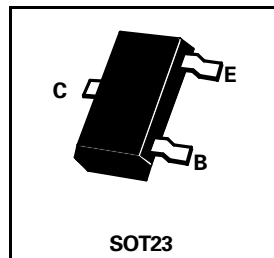
SOT23 PNP SILICON PLANAR

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	2	2	2	1	1	dB	V _{CB} = -5V, I _C =200μA, R _G =2kΩ, f=1kHz, Δf=200Hz		
		Max	10	10	10	4	4	dB			
		Typ	—	—	—	1.2	1	dB	V _{CB} = -5V, I _C =200μA, R _G =2kΩ, f=30Hz to 15kHz at -3dB points		
		Max	—	—	—	4	3	dB			
Equivalent Noise Voltage	e _n	Max	—	—	—	110	110	nV	V _{CB} = -5V, I _C =200μA, R _G =2kΩ, f=10Hz to 50Hz at -3dB points		
Dynamic Characteristics	Group VI Group A Group B Group C	h _{ie}	Min	0.4	0.4	0.4	—	—	kΩ		
			Typ	1.2	1.2	1.2	—	—	kΩ		
			Max	2.2	2.2	2.2	—	—	kΩ		
			Min	1.6					kΩ		
			Typ	2.7					kΩ		
			Max	4.5					kΩ		
			Min	3.2					kΩ		
			Typ	4.5					kΩ		
			Max	8.5					kΩ		
			Min	—	—	6	6	6	kΩ		
			Typ	—	—	8.7	8.7	8.7	kΩ		
			Max	—	—	15	15	15	kΩ		
Group VI Group A Group B Group C	h _{re}	Typ	2.5	2.5	2.5	—	—	×10 ⁻⁴			
		Typ	1.5	1.5	1.5	1.5	1.5	×10 ⁻⁴			
		Typ	2	2	2	2	2	×10 ⁻⁴			
		Typ	3	3	3	3	3	×10 ⁻⁴			
Group VI Group A Group B Group C	h _{fe}	Min	75	75	75	—	—	V _{CE} =-5V I _C =-2mA f=1kHz			
		Typ	110	110	110	—	—				
		Max	150	150	150	—	—				
		Min	125								
		Typ	220								
		Max	260								
		Min	240								
		Typ	330								
		Max	500								
		Min	—	450	450	450	450				
		Typ	—	600	600	600	600				
		Max	—	900	900	900	900				
		Group VI Group A Group B Group C	h _{oe}	Typ	20	20	20		—	—	μs
				Max	40	40	40		—	—	μs
				Typ	18					μs	
				Max	30					μs	
Group VI Group A Group B Group C	h _{oe}	Typ	30					μs			
		Max	60					μs			
		Typ	—	—	60	60	60	μs			
		Max	—	—	110	110	110	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 =-2mA, V _{CE} =-5V						
			Typ	120	120	120	–	–								
						I _C =-100mA,V _{CE} =-5V										
							h _{FE}	Typ	150						I _C =-0.01mA,V _{CE} =-5V	
									Min	220						
										Typ	290					
			I _C =-2mA, V _{CE} =-5V													
				Max	475											
					Typ	200	200	200	–	–		I _C =-100mA,V _{CE} =-5V				
Group C	h _{FE}	Typ.	–	270	270	270	270		I _C =-0.01mA, V _{CE} =-5V							
			Min	–	420	420	420			420						
			Typ	–	500	500	500			500						
			Max	–	800	800	800			800						
			I _C =-2mA, V _{CE} =-5V													
				Typ	–	–	400	–	–		I _C =-100mA,V _{CE} =-5V					
					Max	–	–	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 _{CE} =-10V, f=1MHz						

Spice parameter data is available upon request for these devices

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