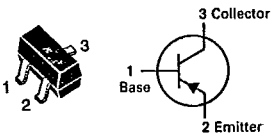
T-27-09

BC859AL, BL, CL
BC860AL, BL, CL

CASE 318-03, STYLE 6
SOT-23 (TO-236AB)



LOW NOISE TRANSISTORS

PNP SILICON

Refer to BC559 for graphs.

MAXIMUM RATINGS

Rating	Symbol	BC860	BC859	Unit
Collector-Emitter Voltage	V_{CEO}	45	30	V
Collector-Base Voltage	V_{CBO}	50	30	V
Emitter-Base Voltage	V_{EBO}	6.0	5.0	V
Collector Current — Continuous	I_C	100	100	mAdc

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board,* T_A = 25°C Derate above 25°C	P_D	225 1.8	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	417	°C/W
Total Device Dissipation Alumina Substrate,** T_A = 25°C Derate above 25°C	P_D	300 2.4	mW mW/°C
Thermal Resistance Junction to Ambient	$R_{\theta JA}$	556	°C/W
Junction and Storage Temperature	T_J, T_{stg}	−55 to +150	°C

*FR-5 = 1.0 x 0.75 x 0.062 in.
**Alumina = 0.4 x 0.3 x 0.024 in. 99.5% alumina.

DEVICE MARKING

BC859AL = 4A; BC859BL = 4B; BC859CL = 4C; BC860AL = 4E;
BC860BL = 4F; BC860CL = 4G

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$				V
	BC860 Series		45	—	—	
	BC859 Series		30	—	—	
Collector-Emitter Breakdown Voltage (V_{EB} = 0)		$V_{(BR)CES}$				V
	BC860 Series		50	—	—	
	BC859 Series		30	—	—	
Emitter-Base Breakdown Voltage		$V_{(BR)EBO}$	5.0	—	—	V
Collector Cutoff Current		I_{CBO}				
(V_{CB} = 30 V, I_E = 0)			—	—	15	nA
(V_{CB} = 30 V, T_A = 150°C)			—	—	5.0	μA
ON CHARACTERISTICS						
DC Current Gain		h_{FE}				—
(I_C = 10 μA, V_{CE} = 5.0 V)	BC859AL, BC860AL		—	90	—	
	BC859BL, BC860BL		—	150	—	
	BC859CL, BC860CL		—	270	—	
(I_C = 2.0 mA, V_{CE} = 5.0 V)	BC859AL, BC860AL		110	180	220	
	BC859BL, BC860BL		200	290	450	
	BC859CL, BC860CL		420	520	800	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$				V
(I_C = 10 mA, I_B = 0.5 mA)			—	—	0.25	
(I_C = 100 mA, I_B = 5.0 mA)			—	—	0.6	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$				V
(I_C = 10 mA, I_B = 0.5 mA)			—	0.7	—	
(I_C = 100 mA, I_B = 5.0 mA)			—	0.9	—	
Base-Emitter On Voltage		$V_{BE(on)}$				V
(I_C = 2.0 mA, V_{CE} = 5.0 V)			0.58	—	0.7	
(I_C = 10 mA, V_{CE} = 5.0 V)			—	—	0.77	
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain Bandwidth Product (I_C = 10 mA, V_{CE} = 5.0 Vdc, f = 35 MHz)		f_T	100	—	—	MHz
Output Capacitance (V_{CB} = 10 V, f = 1.0 MHz)		C_{obo}	—	—	4.5	pF
Noise Figure (I_C = 0.2 mAdc, V_{CE} = 5.0 Vdc, R_S = 2.0 kΩ, f = 1.0 kHz, BW = 200 Hz)		N_F	—	—	4.0	dB