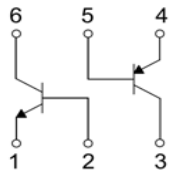
GOOD-ARK SEMICONDUCTOR

GSBC847PN
Complementary NPN+PNP Transistor

Features

- Complementary pair (BC847 + BC857)
- Two isolated transistor NPN and PNP in one package
- Power dissipation 200mW
- SOT-363 small outline plastic package

SOT-363



Schematic Diagram

NPN Absolute Maximum Ratings

(T_A= 25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	45	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector Current-Continuous	I_C	0.1	A
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

NPN Electrical Characteristics

(T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=10μA, I_E=0	50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=10mA, I_B=0	45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=1μA, I_C=0	6	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB}=30V, I_E=0	-	-	15	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=5V, I_C=0	-	-	15	nA
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=2mA	200	-	450	-
Collector-Emitter Saturation Voltage[1]	$V_{CE(sat)}$	I_C=10mA, I_B=0.5mA	-	-	0.25	V
		I_C=100mA, I_B=5mA	-	-	0.6	V
Base-Emitter Saturation Voltage[1]	$V_{BE(sat)}$	I_C=10mA, I_B=0.5mA	-	0.7	-	V
		I_C=100mA, I_B=5mA	-	0.9	-	V
Base-Emitter Voltage	$V_{BE(on)}$	V_{CE}=5V, I_C=2mA	0.58	-	0.7	V
		V_{CE}=5V, I_C=10mA	-	-	0.72	V
Collector Output Capacitance	C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	-	6.0	pF
Transition Frequency	f_T	V_{CE}=5V, I_C=10mA, f=100MHz	100	-	-	MHz
Noise Figure	NF	$V_{..}$ =5V, I_C=0.2mA, f=1kHz, R_G=2KΩ, Δf=200Hz	-	-	10	dB

PNP Absolute Maximum Ratings

(T_A=25°C unless otherwise noted)

Parameter	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-45	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Current-Continuous	I_C	-0.1	A
Collector Power Dissipation	P_C	200	mW
Junction Temperature	T_J	-55 to +150	°C
Storage Temperature	T_{STG}	-55 to +150	°C

PNP Electrical Characteristics

(T_A = 25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	I_C=-10μA, I_E=0	-50	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C=-10mA, I_B=0	-45	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	I_E=-1μA, I_C=0	-5	-	-	V
Collector Cut-Off Current	I_{CBO}	V_{CB}=-30V, I_E=0	-	-	-15	nA
Emitter Cut-Off Current	I_{EBO}	V_{EB}=-5V, I_C=0	-	-	-15	nA
DC Current Gain	h_{FE}	V_{CE}=-5V, I_C=-2mA	220	-	475	-
Collector-Emitter Saturation Voltage[1]	$V_{CE(sat)}$	I_C=-10mA, I_B=-0.5mA	-	-	-0.3	V
		I_C=-100mA, I_B=-5mA	-	-	-0.65	V
Base-Emitter Saturation Voltage[1]	$V_{BE(sat)}$	I_C=-10mA, I_B=-0.5mA	-	-0.7	-	V
		I_C=-100mA, I_B=-5mA	-	-	-0.95	V
Base-Emitter Voltage	$V_{BE(on)}$	V_{CE}=-5V, I_C=-2mA	-0.6	-	-0.75	V
		V_{CE}=-5V, I_C=-10mA	-	-	-0.82	V
Collector Output Capacitance	C_{ob}	V_{CB}=-10V, I_E=0, f=1MHz	-	-	4.5	pF
Transition Frequency	f_T	V_{CE}=-5V, I_C=-10mA, f=100MHz	100	-	-	MHz
Noise Figure	NF	V_{CE}=-5V, I_C=-0.2mA, f=1kHz, R_G=2KΩ, Δf=200Hz	-	-	10	dB

Note 1: pulse test: PW ≤ 350μS， δ ≤ 2%.

NPN Ratings and Characteristic Curves

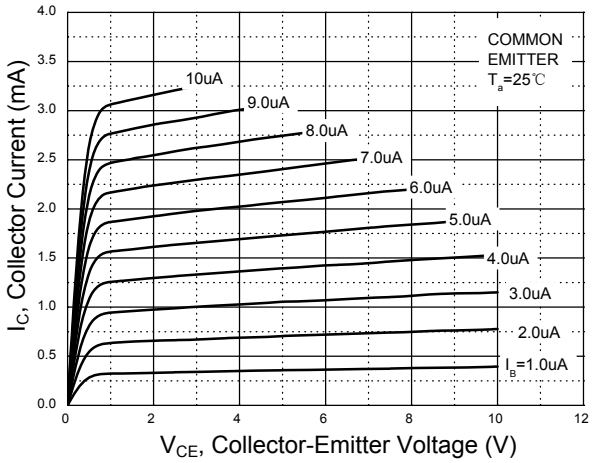


Figure 1. Static Characteristic

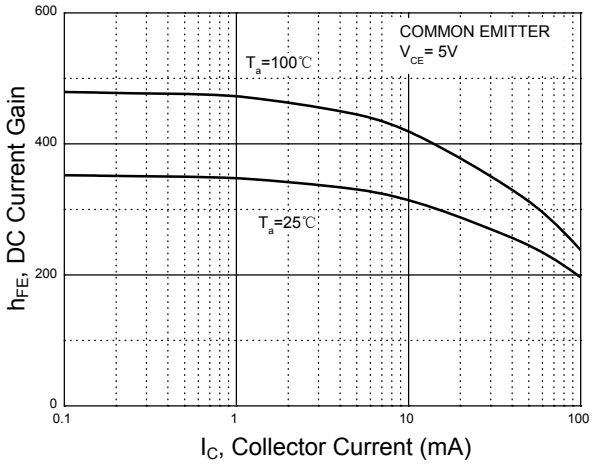


Figure 2. DC Current Gain vs. Collector Current

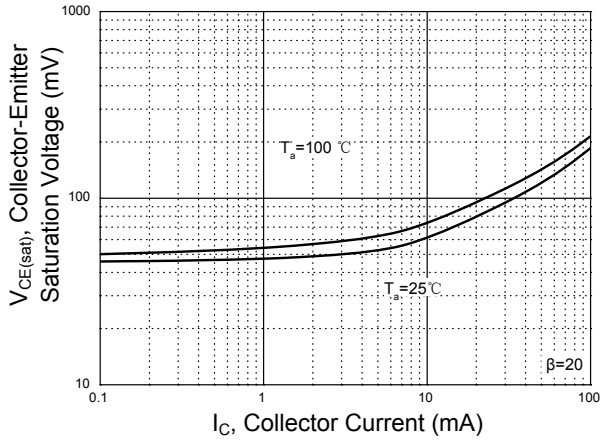


Figure 3. Collector-Emitter Saturation Voltage vs. Collector Current

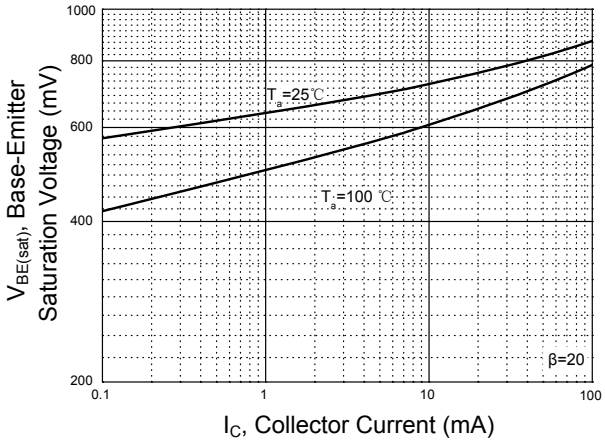


Figure 4. Base-Emitter Saturation Voltage vs. Collector Current

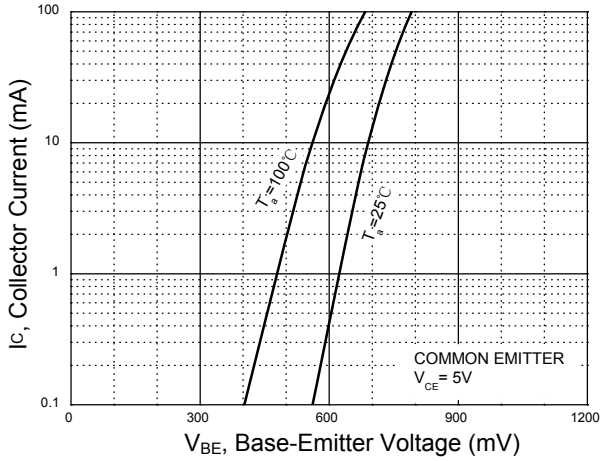


Figure 5. Collector Current vs. Base-Emitter Voltage

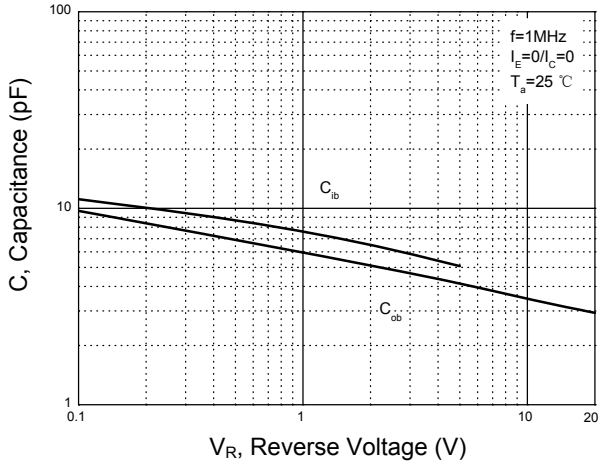


Figure 6. Capacitance vs. Reverse Voltage

NPN Ratings and Characteristic Curves

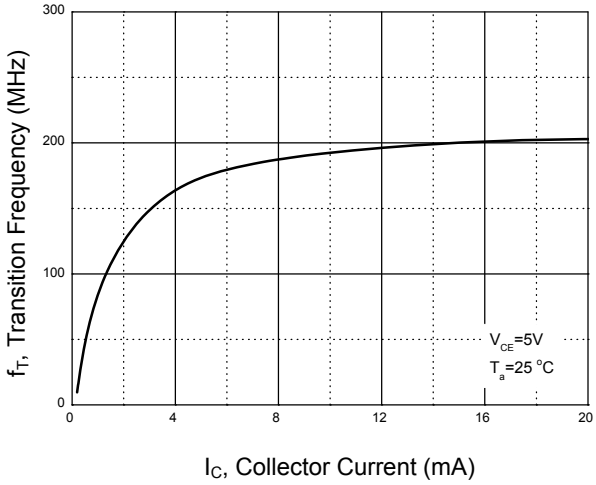


Figure 7. Transition Frequency vs. Collector Current

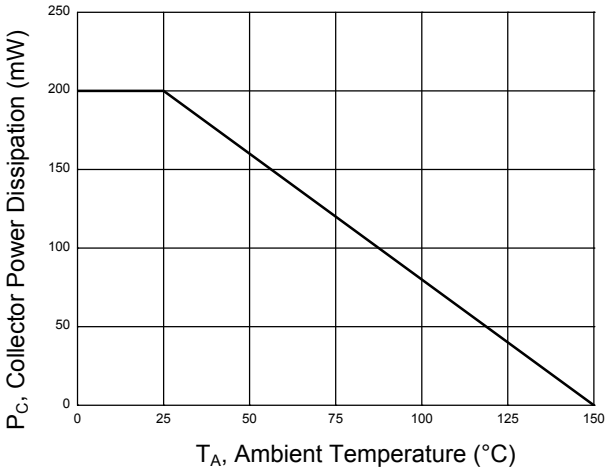


Figure 8. Power Dissipation vs. Ambient Temperature

PNP Ratings and Characteristic Curves

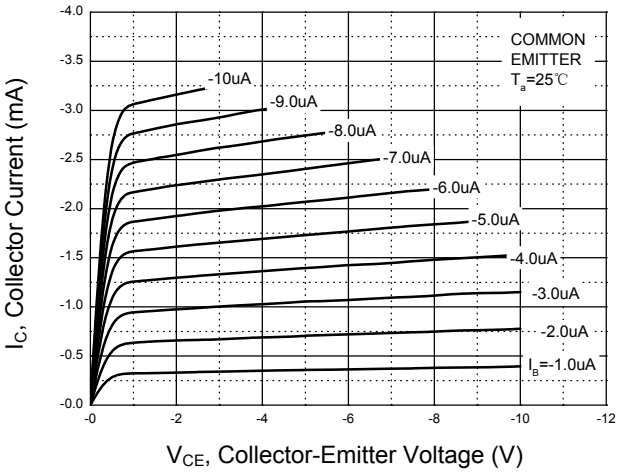


Figure 9. Static Characteristic

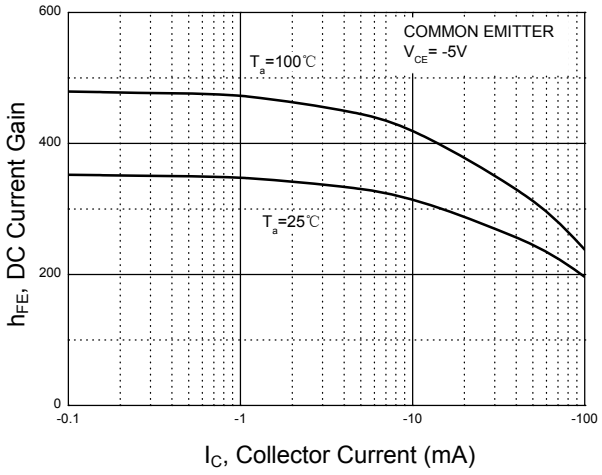


Figure 10. DC Current Gain vs. Collector Current

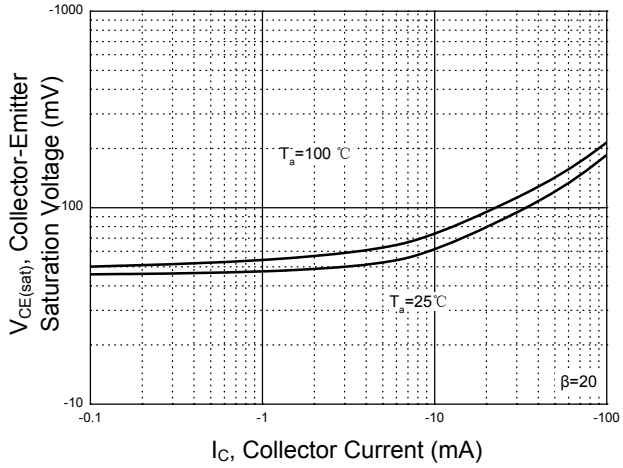


Figure 11. Collector-Emitter Saturation Voltage vs. Collector Current

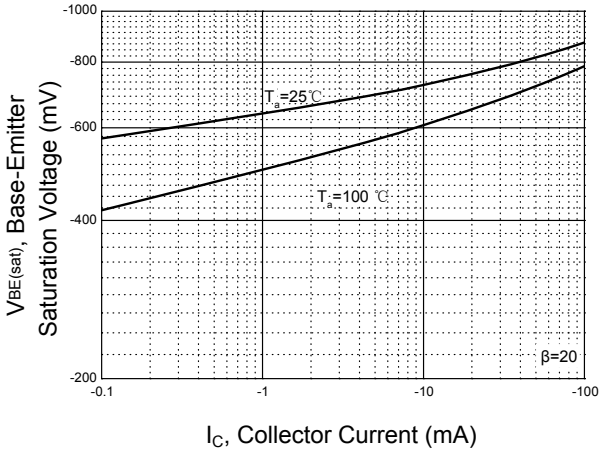


Figure 12. Base-Emitter Saturation Voltage vs. Collector Current

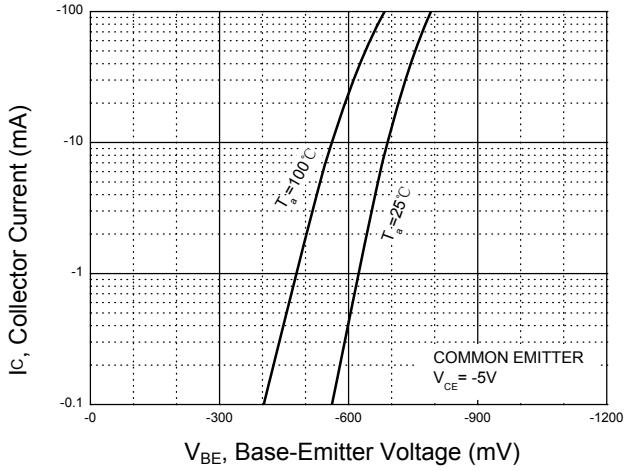


Figure 13. Collector Current vs. Base-Emitter Voltage

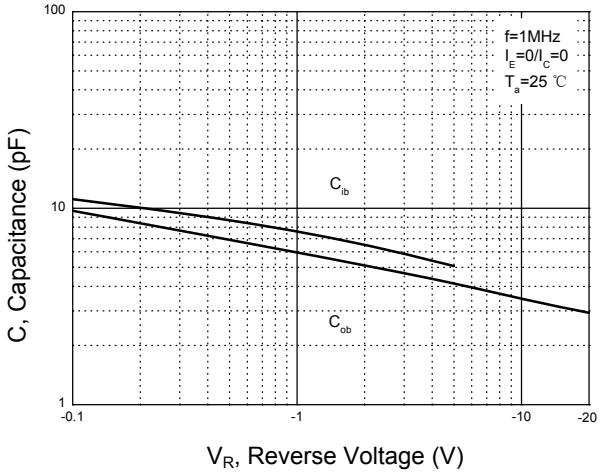


Figure 14. Capacitance vs. Reverse Voltage

PNP Ratings and Characteristic Curves

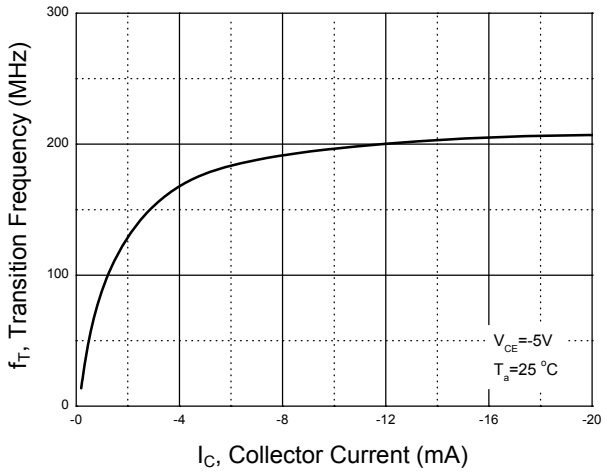


Figure 15. Transition Frequency vs. Collector Current

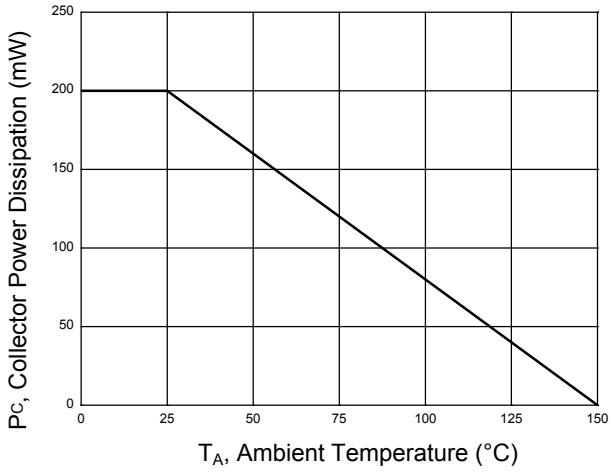
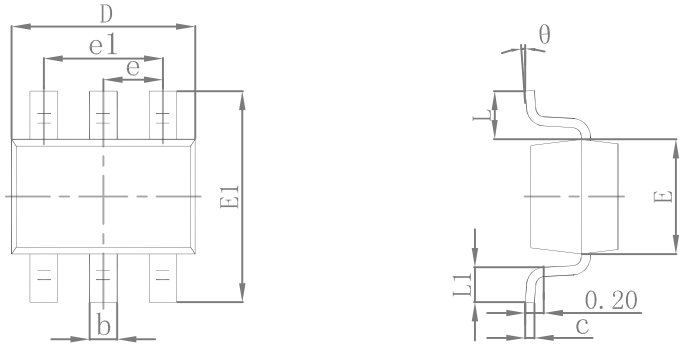


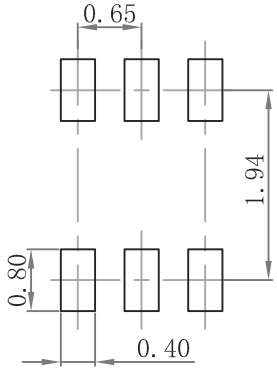
Figure 16. Power Dissipation vs. Ambient Temperature

Package Outline Dimensions (SOT-363)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	0.900	1.100	0.035	0.043
A1	0.000	0.100	0.000	0.004
A2	0.900	1.000	0.035	0.039
b	0.150	0.350	0.006	0.014
c	0.100	0.150	0.004	0.006
D	2.000	2.200	0.079	0.087
E	1.150	1.350	0.045	0.053
E1	2.150	2.400	0.085	0.094
e	0.650 TYP		0.026 TYP	
e1	1.200	1.400	0.047	0.055
L	0.525 REF		0.021 REF	
L1	0.260	0.460	0.010	0.018
θ	0°	8°	0°	8°

Recommended Pad Layout



Note:
1. Controlling dimension: in millimeter;
2. General tolerance: +/- 0.05m;
3. The pad layout is for reference purposes only.

Ordering Information

Device	Package	Marking	Quantity	HSF Status
GSBC847PN	SOT-363	DV4	3,000pcs / Reel	RoHS Compliant