GSTBC847PNJ4F

Dual NPN & PNP General Purpose Transistor

Product Description

This device is designed as a general-purpose amplifier and switch application.

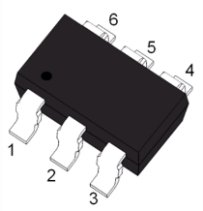
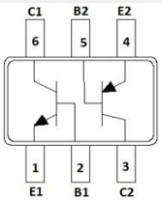
Features

- Collector-Emitter Voltage V_{CEO} = ±45V
- Collector Current I_C = ±100mA

Mechanical Data

- SOT-363 Package
- RoHS Compliant and Halogen Free

Packages & Pin Assignments

SOT-363	Equivalent Circuit
	

Pin	Symbol	Description	Pin	Symbol	Description
1	E1	Emitter 1	4	E2	Emitter 2
2	B1	Base 1	5	B2	Base 2
3	C2	Collector 2	6	C1	Collector 1

Ordering and Marking Information

Ordering Information			
Part Number	**Package**	**Marking Code**	**Quantity/Reel**
GSTBC847PNJ4F	SOT-363	7P	3,000 PCS

GSTBC847PN[1][2]

- **Product Code:** GSTBC847PN
- **Package Code:** [1] is **J4** for SOT-363
- **Green Level:** **F** for RoHS Compliant and Halogen Free

Marking Information



- **Product Code:** 7P
- The dot • indicates Pin 1

Absolute Maximum Ratings (T_A=25°C unless otherwise specified)

NPN Transistor

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	50	V
V_{CEO}	Collector-Emitter Voltage	45	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	100	mA
P_D	Power Dissipation T_A=25°C [1, 2]	200	mW
$R_{\Theta JA}$	Thermal Resistance, Junction to Ambient [2]	625	°C/W
T_J	Junction Temperature Range	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

PNP Transistor

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage	-50	V
V_{CEO}	Collector-Emitter Voltage	-45	V
V_{EBO}	Emitter-Base Voltage	-5	V
I_C	Collector Current	-100	mA
P_D	Power Dissipation T_A=25°C [1, 2]	200	mW
$R_{\Theta JA}$	Thermal Resistance, Junction to Ambient [2]	625	°C/W
T_J	Junction Temperature Range	150	°C
T_{STG}	Storage Temperature Range	-55 to +150	°C

NOTE:

1. The device is mounted on FR-4 PCB, single-sided copper and standard footprint.
2. Maximum combined dissipation.

Electrical Characteristics (T_A=25°C unless otherwise specified)

NPN Transistor

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

Electrical Characteristics (T_A=25°C unless otherwise specified)

PNP Transistor

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

Typical Performance Characteristics (T_A=25°C unless otherwise specified)

NPN Transistor

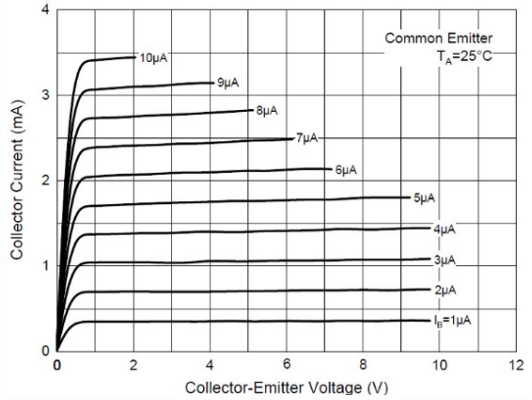


Figure 1. Static Characteristics

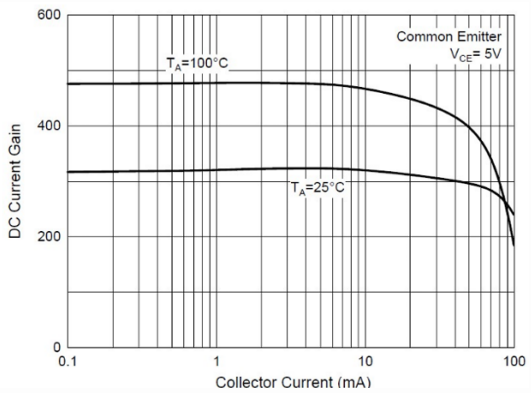


Figure 2. h_{FE} - I_C

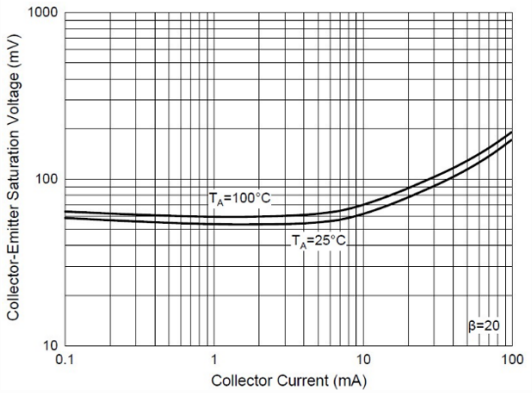


Figure 3. $V_{CE(SAT)}$ - I_C

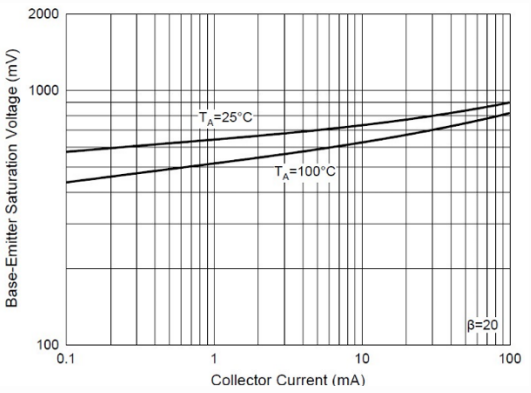


Figure 4. $V_{BE(SAT)}$ - I_C

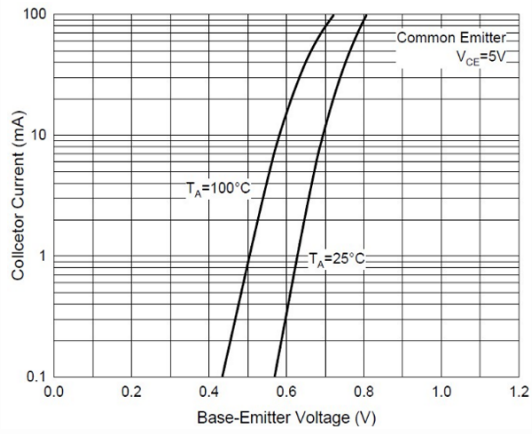


Figure 5. I_C - V_{BE}

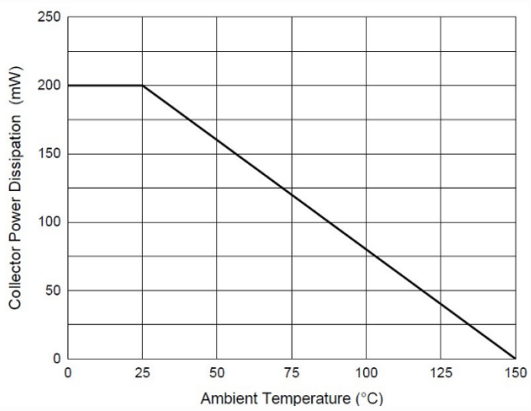


Figure 6. Power Derating Curve

Typical Performance Characteristics (T_A=25°C unless otherwise specified)

PNP Transistor

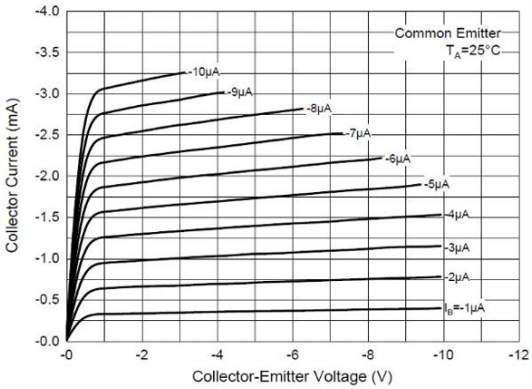


Figure 1. Static Characteristics

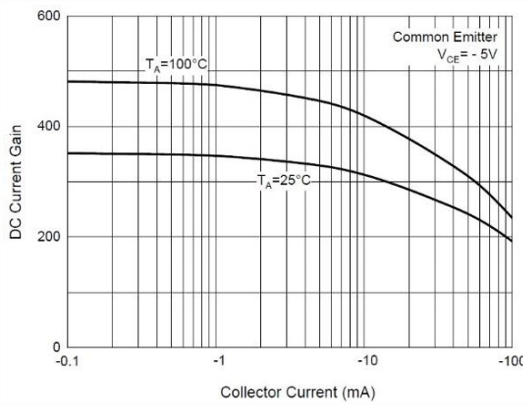


Figure 2. h_{FE} - I_C

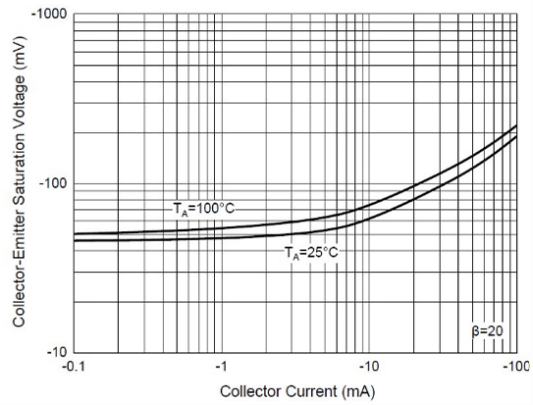


Figure 3. $V_{CE(SAT)}$ - I_C

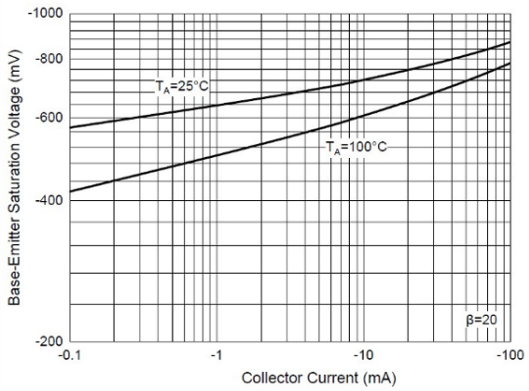


Figure 4. $V_{BE(SAT)}$ - I_C

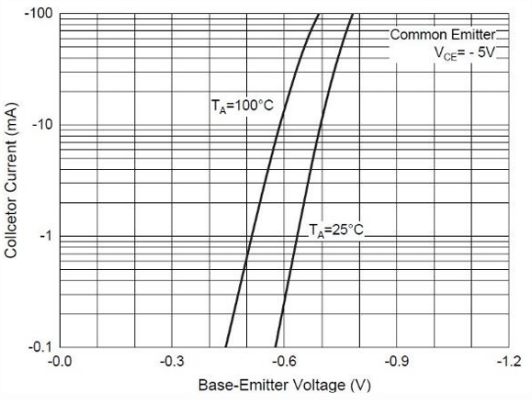


Figure 5. I_C - V_{BE}

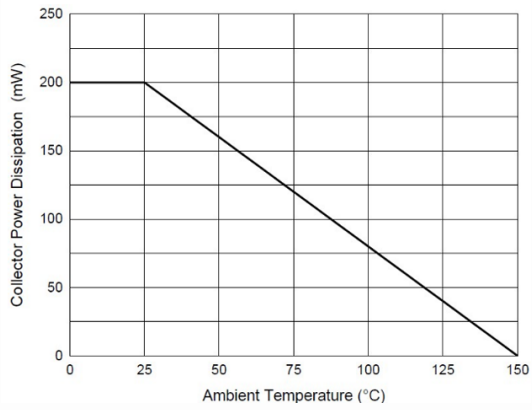
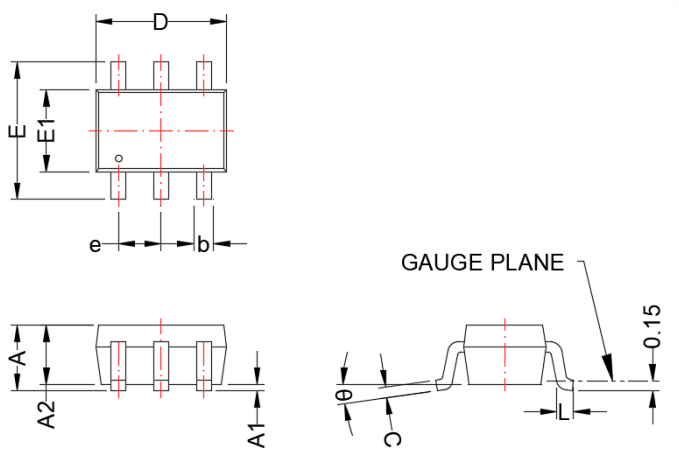


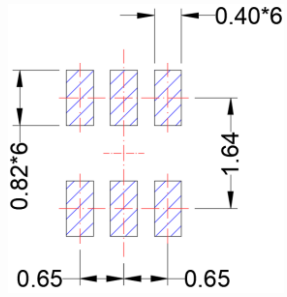
Figure 6. Power Derating Curve

SOT-363

Package Dimension



Recommended Land Pattern



Unit:mm

Dimensions				
Symbol	Millimeters		Inches	
	Min	Max	Min	Max
A	0.80	1.10	0.031	0.043
A1	0.00	0.10	0.000	0.004
A2	0.70	1.00	0.028	0.039
b	0.15	0.35	0.006	0.014
c	0.08	0.25	0.003	0.010
D	1.80	2.20	0.071	0.087
E	1.80	2.40	0.071	0.094
E1	1.15	1.35	0.045	0.053
e	0.65 BSC		0.026 BSC	
L	0.26	0.46	0.010	0.018
θ	0°	8°	0°	8°

NOTE:

Dimensions are exclusive of Burrs, Mold Flash & Tie Bar extrusions.

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