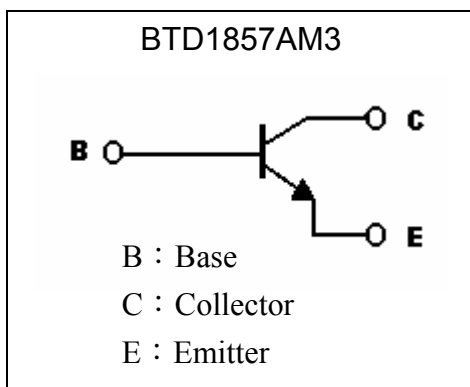
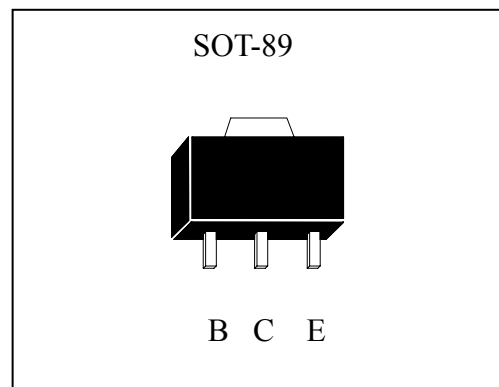


**Silicon NPN Epitaxial Planar Transistor**

# BTD1857AM3

**Description**

- High  $BV_{CEO}$
- High current capability
- Complementary to BTB1236AM3

**Symbol**

**Outline**

**Absolute Maximum Ratings** ( $T_a=25^\circ\text{C}$ )

Parameter	Symbol	Limits	Unit
Collector-Base Voltage	$V_{CB0}$	180	V
Collector-Emitter Voltage	$V_{CEO}$	160	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current (DC)	$I_C$	1.5	A
Collector Current (Pulse)	$I_{CP}$	3	A
Power Dissipation	$P_D$	0.6	W
		1 (Note 1)	
		2 (Note 2)	
Junction Temperature	$T_j$	150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$	-55~+150	$^\circ\text{C}$

Note : 1. When mounted on FR-4 PCB with area measuring  $10 \times 10 \times 1$  mm  
 2. When mounted on ceramic with area measuring  $40 \times 40 \times 1$  mm

**Thermal Characteristics**

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	208	°C/W
		125 (Note 1)	
		62.5 (Note 2)	
Thermal Resistance, Junction to Case	R <sub>θJC</sub>	105	°C/W
		60	
		39.3	

Note : 1. When mounted on FR-4 PCB with area measuring 10×10×1 mm  
2. When mounted on ceramic with area measuring 40×40×1 mm

**Characteristics (Ta=25°C)**

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
BV <sub>CBO</sub>	180	-	-	V	I <sub>C</sub> =50μA, I <sub>E</sub> =0
BV <sub>CEO</sub>	160	-	-	V	I <sub>C</sub> =1mA, I <sub>B</sub> =0
BV <sub>EBO</sub>	5	-	-	V	I <sub>E</sub> =50μA, I <sub>C</sub> =0
I <sub>CBO</sub>	-	-	1	μA	V <sub>CB</sub> =160V, I <sub>E</sub> =0
I <sub>EBO</sub>	-	-	1	μA	V <sub>EB</sub> =4V, I <sub>C</sub> =0
*V <sub>CE(sat)</sub>	-	-	0.6	V	I <sub>C</sub> =1A, I <sub>B</sub> =100mA
*V <sub>BE(on)</sub>	-	-	1.5	V	V <sub>CE</sub> =5V, I <sub>C</sub> =150mA
h <sub>FE1</sub>	82	-	320	-	V <sub>CE</sub> =5V, I <sub>C</sub> =150mA
h <sub>FE2</sub>	30	-	-	-	V <sub>CE</sub> =5V, I <sub>C</sub> =500mA
f <sub>T</sub>	-	140	-	MHz	V <sub>CE</sub> =5V, I <sub>C</sub> =150mA
C <sub>ob</sub>	-	27	-	pF	V <sub>CB</sub> =10V, I <sub>E</sub> =0, f=1MHz

\*Pulse Test: Pulse Width ≤380μs, Duty Cycle≤2%

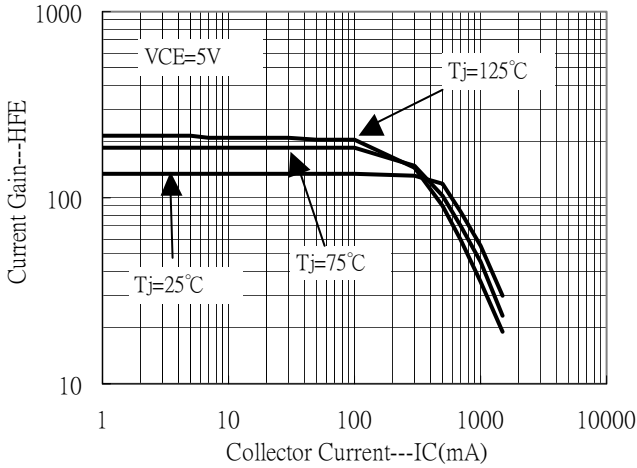
**Classification of hFE 1**

Rank	P	Q	R
Range	82~190	120~200	180~320

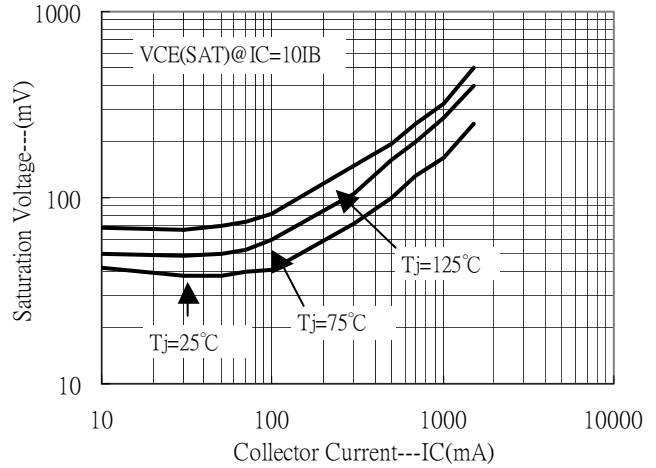


### Characteristic Curves

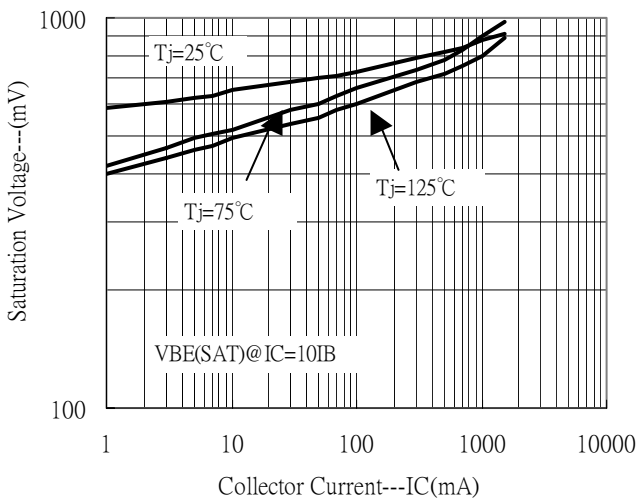
Current Gain vs Collector Current



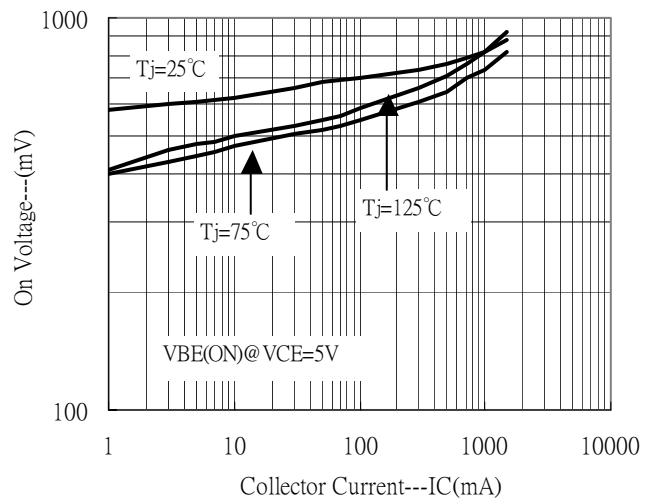
Saturation Voltage vs Collector Current



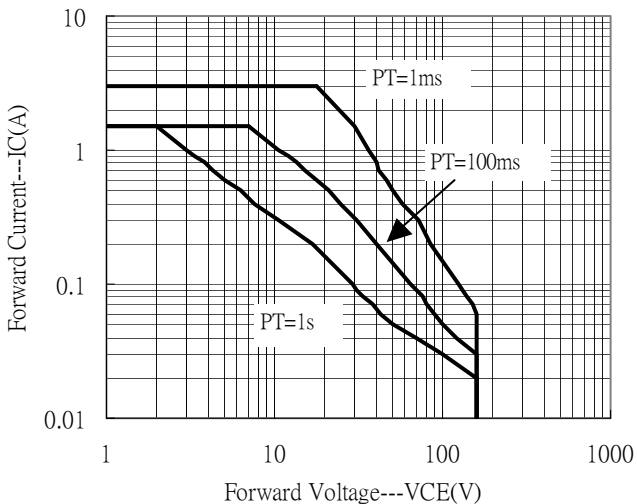
Saturation Voltage vs Collector Current



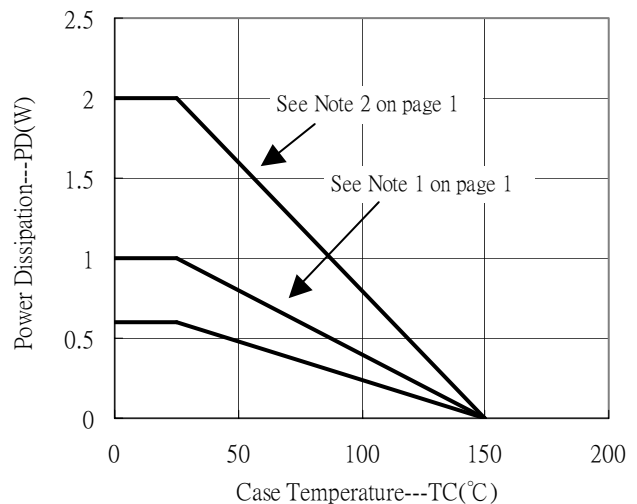
On Voltage vs Collector Current



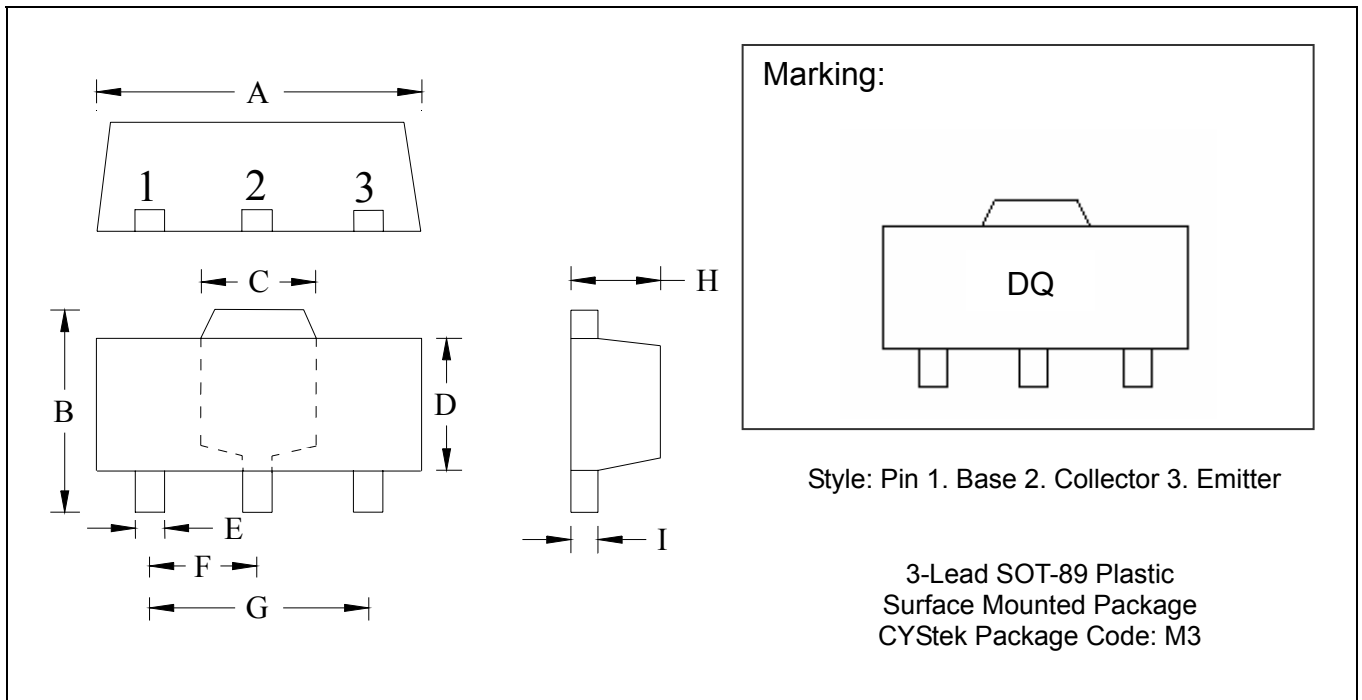
Safe Operating Area



Power Derating Curve



**SOT-89 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1732	0.1811	4.40	4.60	F	0.0583	0.0598	1.48	1.527
B	0.1594	0.1673	4.05	4.25	G	0.1165	0.1197	2.96	3.04
C	0.0591	0.0663	1.50	1.70	H	0.0551	0.0630	1.40	1.60
D	0.0945	0.1024	2.40	2.60	I	0.0138	0.0161	0.35	0.41
E	0.01417	0.0201	0.36	0.51					

- Notes: 1.Controlling dimension: millimeters.  
 2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.  
 3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

**Material:**

- Lead: 42 Alloy ; solder plating
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0

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