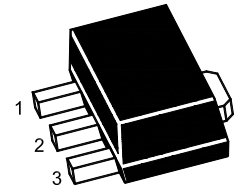


# 8050U

## NPN Silicon Epitaxial Planar Power Transistor



1.Base 2.Collector 3.Emitter  
SOT-89 Plastic Package

### Applications

- For switching and amplifier
- Especially suitable for AF-driver stages and low power output stages

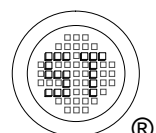
### Absolute Maximum Ratings ( $T_a = 25^\circ\text{C}$ )

Parameter	Symbol	Value	Unit
Collector Base Voltage	$V_{\text{CBO}}$	40	V
Collector Emitter Voltage	$V_{\text{CEO}}$	25	V
Emitter Base Voltage	$V_{\text{EBO}}$	6	V
Collector Current	$I_{\text{C}}$	1.5	A
Power Dissipation	$P_{\text{tot}}$	1	W
Junction Temperature	$T_{\text{j}}$	150	$^\circ\text{C}$
Storage Temperature Range	$T_{\text{Stg}}$	- 55 to + 150	$^\circ\text{C}$

### Thermal Characteristics

Parameter	Symbol	Max.	Unit
Thermal Resistance from Junction Ambient <sup>1)</sup>	$R_{\theta\text{JA}}$	125	$^\circ\text{C}/\text{W}$

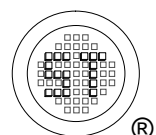
<sup>1)</sup> Device mounted on FR-4 substrate PC board, 2oz copper, with 1-inch square copper plate.



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## Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Min.	Typ.	Max.	Unit	
DC Current Gain at $V_{CE} = 1\text{ V}$ , $I_C = 5\text{ mA}$ at $V_{CE} = 1\text{ V}$ , $I_C = 100\text{ mA}$ at $V_{CE} = 1\text{ V}$ , $I_C = 800\text{ mA}$	Current Gain Group C D	$h_{FE}$	45	-	-	-
		$h_{FE}$	120	-	200	-
		$h_{FE}$	160	-	300	-
		$h_{FE}$	40	-	-	-
Collector Base Cutoff Current at $V_{CB} = 35\text{ V}$	$I_{CBO}$	-	-	100	nA	
Emitter Base Cutoff Current at $V_{EB} = 6\text{ V}$	$I_{EBO}$	-	-	100	nA	
Collector Base Breakdown Voltage at $I_C = 100\text{ }\mu\text{A}$	$V_{(BR)CBO}$	40	-	-	V	
Collector Emitter Breakdown Voltage at $I_C = 2\text{ mA}$	$V_{(BR)CEO}$	25	-	-	V	
Emitter Base Breakdown Voltage at $I_E = 100\text{ }\mu\text{A}$	$V_{(BR)EBO}$	6	-	-	V	
Collector Emitter Saturation Voltage at $I_C = 800\text{ mA}$ , $I_B = 80\text{ mA}$	$V_{CE(sat)}$	-	-	0.5	V	
Base Emitter Saturation Voltage at $I_C = 800\text{ mA}$ , $I_B = 80\text{ mA}$	$V_{BE(sat)}$	-	-	1.2	V	
Base Emitter Voltage at $I_C = 10\text{ mA}$ , $V_{CE} = 1\text{ V}$	$V_{BE}$	-	-	1	V	
Gain Bandwidth Product at $V_{CE} = 10\text{ V}$ , $I_C = 50\text{ mA}$	$f_T$	100	-	-	MHz	
Collector Base Capacitance at $V_{CB} = 10\text{ V}$ , $f = 1\text{ MHz}$	$C_{ob}$	-	9	-	pF	



## Electrical Characteristics Curves

Fig. 1 Output Characteristics Curve

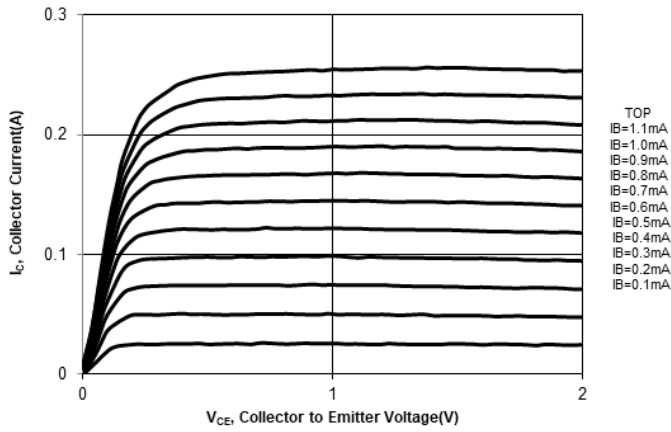


Fig. 2 Collector Current vs.  $V_{BE}$

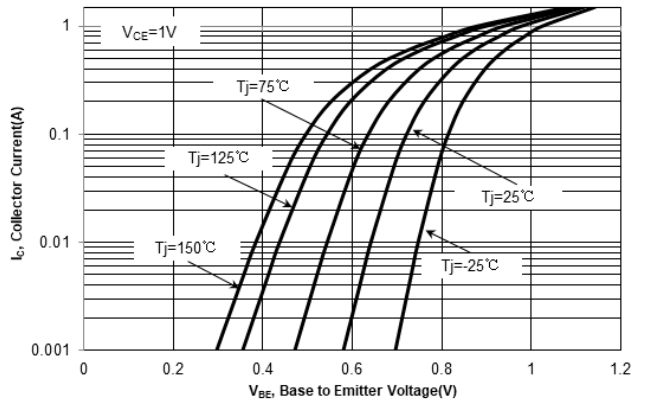


Fig. 3  $h_{FE}$  vs. Collector Current

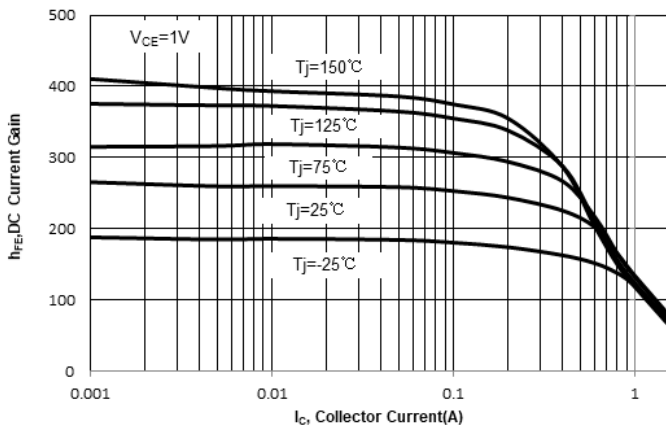
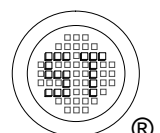
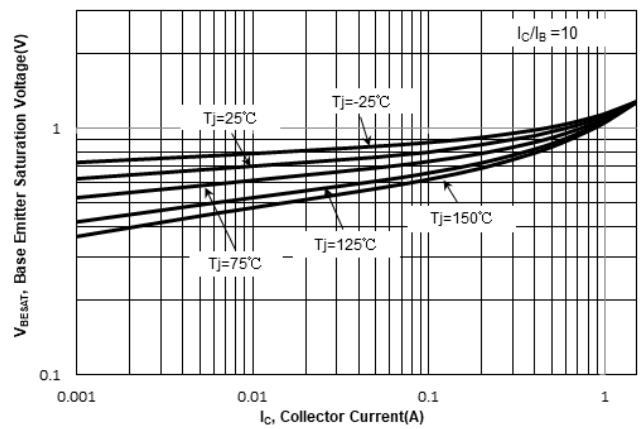


Fig. 4  $V_{BE(sat)}$  vs. Collector Current



## Electrical Characteristics Curves

Fig. 5  $V_{CE(sat)}$  vs. Collector Current

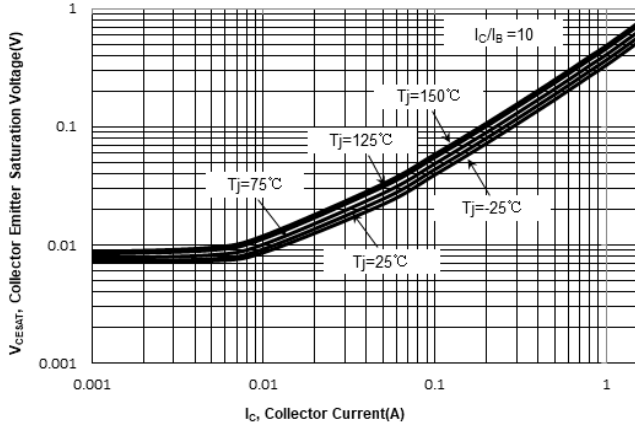


Fig 6. Output Capacitance

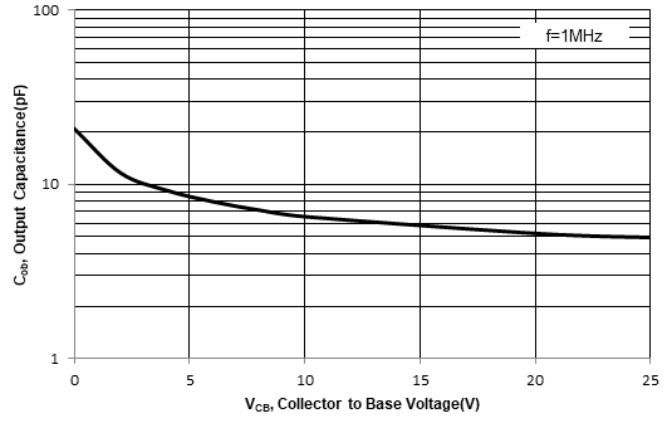
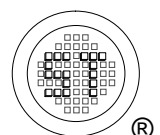
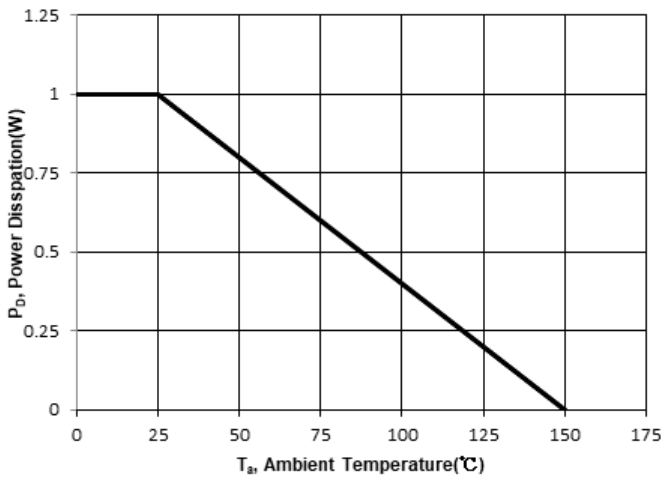


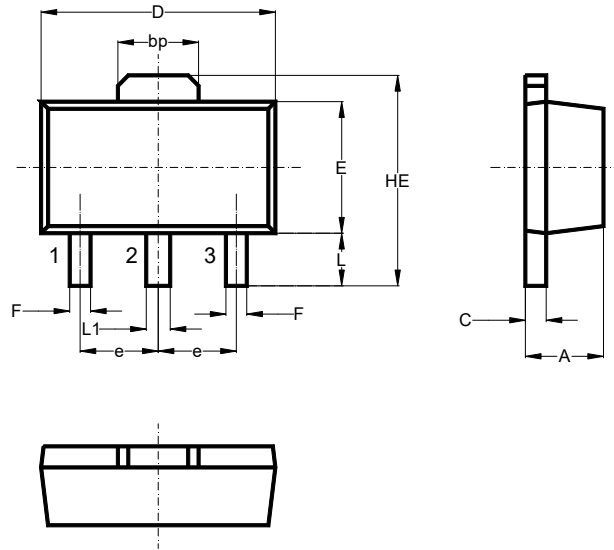
Fig. 7 Power Derating Curve



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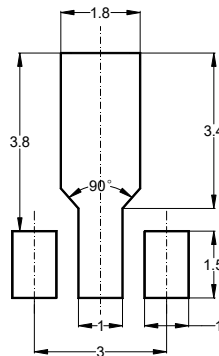
## Package Outline (Dimensions in mm)

SOT-89



Unit	A	bp	C	D	E	F	HE	e	L	L1
mm	1.6	1.60	0.5	4.6	2.6	0.45	4.25	1.5	1.05	0.51
	1.4	1.50	0.3	4.4	2.4	0.35	3.75	typ.	0.95	0.41

### Recommended Soldering Footprint



### Packing information

Package	Tape Width (mm)	Pitch		Reel Size		Per Reel Packing Quantity
		mm	inch	mm	inch	
SOT-89	12	$8 \pm 0.1$	$0.315 \pm 0.004$	178	7	1,000
				330	13	4,000

### Marking information

"8050\*U" = Part No. ("\*" = HFE grouping Code)

"YM" = Date Code Marking

"Y" = Year

"M" = Month

Font type: Arial

