

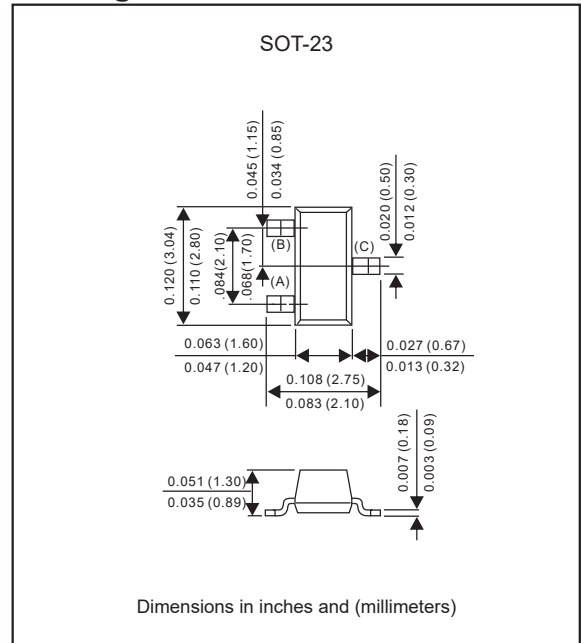
Features

- Moisture sensitivity level: 1
- Epitaxial plana chip construction
- Ideal for medium power application and switching
- Capable of 200mW power dissipation.
- Lead-free parts for green partner, exceeds environmental standards of MIL-STD-19500 /228
- Compliant to Halogen-free
- Suffix "-Q1" for AEC-Q101

Mechanical data

- Epoxy:UL94-V0 rated flame retardant
- Case : Molded plastic, SOT-23
- Terminals : Solder plated, solderable per MIL-STD-750, Method 2026
- Mounting Position : Any

Package outline



Maximum ratings (AT $T_A=25^{\circ}\text{C}$ unless otherwise noted)

Rating	Symbol	Value	UNIT
Collector-Base voltage	V_{CBO}	-80 -50 -30	V
Collector-Emitter voltage	V_{CEO}	-65 -45 -30	V
Emitter-Base voltage	V_{EBO}	-5.0	V
Collector current-continuous	I_C	-100	mAdc

Thermal characteristics

PARAMETER	Symbol	MIN.	TYP.	MAX.	UNIT
Collector power dissipation	P_C			200	mW
Thermal resistance Junction to ambient	$R_{\theta JA}$		625		$^{\circ}\text{C}/\text{W}$
Operating junction temperature range	T_J	-55		+150	$^{\circ}\text{C}$
Storage temperature range	T_{STG}	-55		+150	$^{\circ}\text{C}$

Electrical characteristics (AT $T_A=25^\circ\text{C}$ unless otherwise noted)

Off characteristics

PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Collector-Base breakdown voltage	BC856-Q1 SERIES BC857-Q1 SERIES BC858-Q1 SERIES $I_c = -10\mu\text{A}, I_E = 0$	$V_{(BR)CBO}$	-80 -50 -30			V
Collector-Emitter breakdown voltage	BC856-Q1 SERIES BC857-Q1 SERIES BC858-Q1 SERIES $I_c = -10\text{mA}, I_B = 0$	$V_{(BR)CEO}$	-65 -45 -30			V
Emitter-Base breakdown voltage	BC856-Q1 SERIES BC857-Q1 SERIES BC858-Q1 SERIES $I_E = -1.0\mu\text{A}, I_C = 0$	$V_{(BR)EBO}$	-5.0 -5.0 -5.0			V
Collect Cut-off Current	BC856-Q1 SERIES BC857-Q1 SERIES BC858-Q1 SERIES $V_{CB} = -70\text{V}, I_E = 0$ $V_{CB} = -45\text{V}, I_E = 0$ $V_{CB} = -25\text{V}, I_E = 0$	I_{CBO}			-100	nA
Emitter Cut-off Current	$V_{CB} = -5\text{V}, I_E = 0$	I_{EBO}			-100	nA

On characteristics

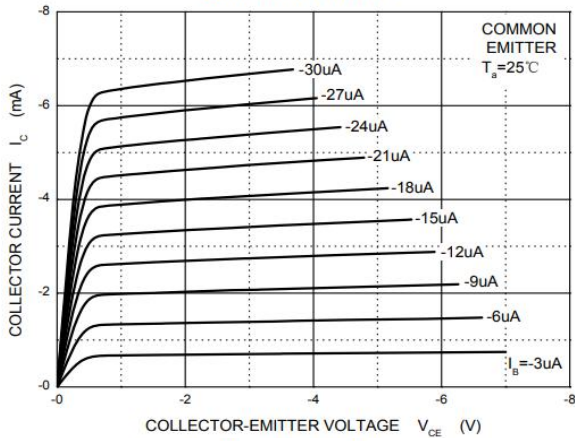
PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
DC current gain	BC856A-Q1,BC857A-Q1,BC858A-Q1 BC856B-Q1,BC857B-Q1,BC858B-Q1 BC857C-Q1,BC858C-Q1 $I_c = -2.0\text{mA}, V_{CE} = -5.0\text{V}$	h_{FE}	125 220 420		250 475 800	
Collector-Emitter saturation voltage	$I_c = -100\text{mA}, I_B = -5.0\text{mA}$	$V_{CE(sat)}$			-0.50	V
Base-Emitter saturation voltage	$I_c = -100\text{mA}, I_B = -5.0\text{mA}$	$V_{BE(sat)}$			-1.10	V

Small-signal characteristics

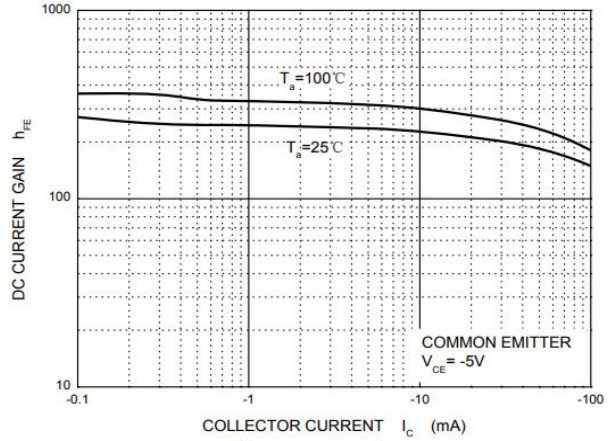
PARAMETER	CONDITIONS	Symbol	MIN.	TYP.	MAX.	UNIT
Current-gain-bandwidth product	$I_c = -10\text{mA}, V_{CE} = -5.0\text{Vdc}, f = 100\text{MHz}$	f_T	100			MHz
Output capacitance	$V_{CB} = -5.0\text{V}, f = 1.0\text{MHz}$	C_{obo}			4.5	pF

Rating and characteristic curves

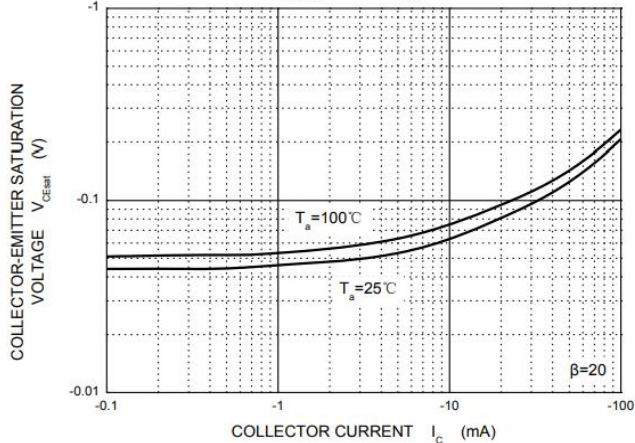
Static Characteristic



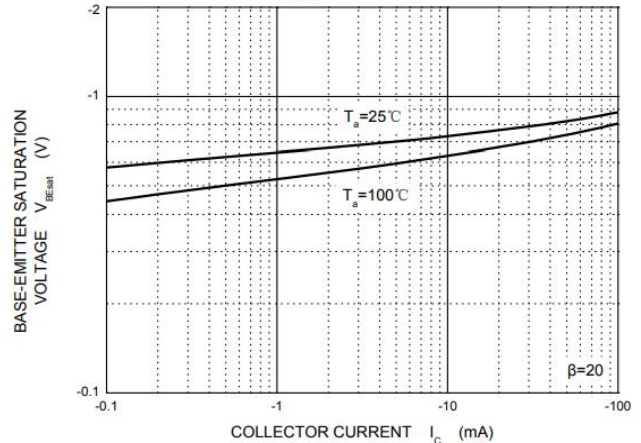
h_{FE} — I_C



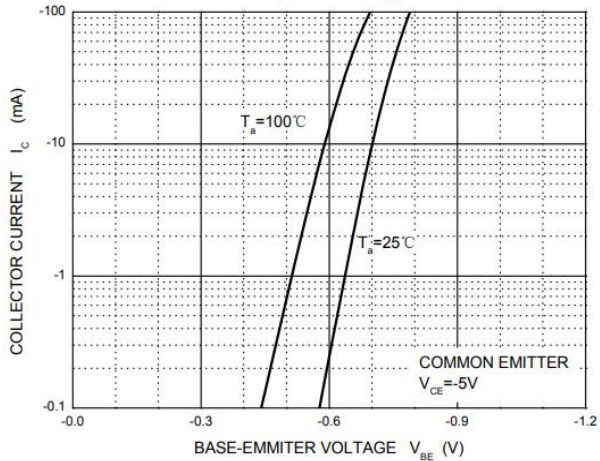
V_{CEsat} — I_C



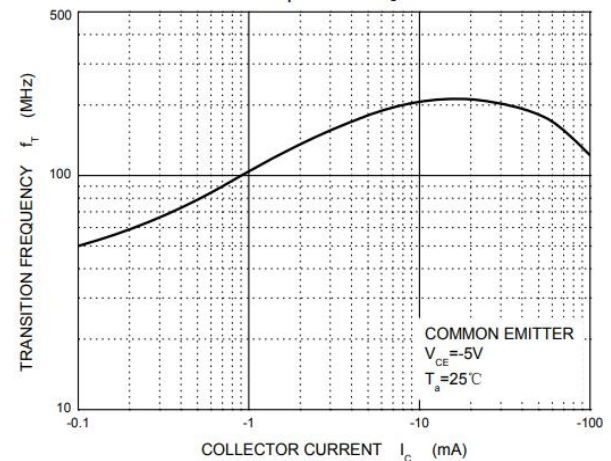
V_{BEsat} — I_C



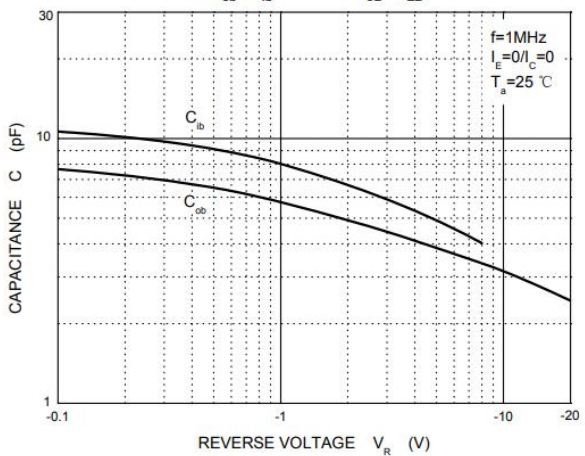
I_C — V_{BE}



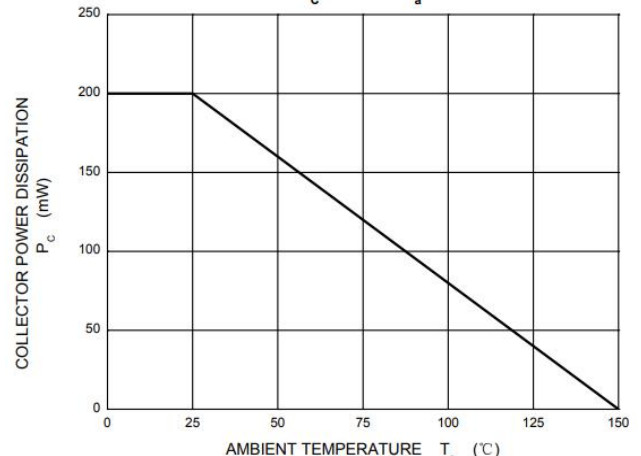
f_T — I_C



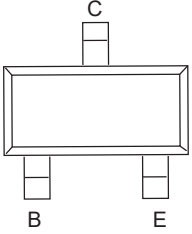
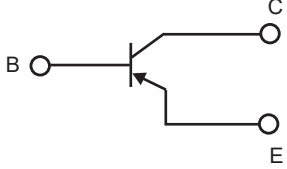
C_{ob}/C_{ib} — V_{CB}/V_{EB}



P_c — T_a



Pinning information

Pin	Simplified outline	Symbol
PinB Base PinC Collector PinE Emitter		

Marking

Type number	Marking code
BC856A-Q1	3A
BC856B-Q1	3B
BC857A-Q1	3E
BC857B-Q1	3F
BC857C-Q1	3G
BC858A-Q1	3J
BC858B-Q1	3K
BC858C-Q1	3L

Suggested solder pad layout

