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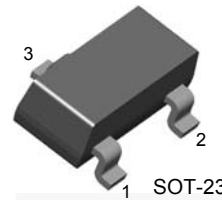


November 2014

# BC817 / BC818 NPN Epitaxial Silicon Transistor

## Features

- Switching and Amplifier Applications
- Suitable for AF-Driver Stages and Low Power Output Stages
- Complement to BC807 / BC808



SOT-23  
1. Base 2. Emitter 3. Collector

## Ordering Information<sup>(1)</sup>

Part Number	Marking	Package	Packing Method
BC81716MTF	8FA	SOT-23 3L	Tape and Reel
BC81725MTF	8FB	SOT-23 3L	Tape and Reel
BC81740MTF	8FC	SOT-23 3L	Tape and Reel
BC81816MTF	8GA	SOT-23 3L	Tape and Reel
BC81825MTF	8GB	SOT-23 3L	Tape and Reel
BC81840MTF	8GC	SOT-23 3L	Tape and Reel

### Note:

1. Affix "-16,-25,-40" means  $h_{FE}$  classification. Affix "-M" means the matte type package. Affix "-TF" means the tape and reel type packing.

## Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit	
$V_{CBO}$	Collector-Base Voltage	BC817	50	V
		BC818	30	
$V_{CEO}$	Collector-Emitter Voltage	BC817	45	V
		BC818	25	
$V_{EBO}$	Emitter-Base Voltage	5	V	
$I_C$	Collector Current (DC)	800	mA	
$T_J$	Junction Temperature	150	$^\circ\text{C}$	
$T_{STG}$	Storage Temperature	-65 to +150	$^\circ\text{C}$	

**Thermal Characteristics<sup>(1)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	310	mW
	Derate Above $25^\circ\text{C}$	2.48	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	403	$^\circ\text{C}/\text{W}$

**Note:**

1. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

**Electrical Characteristics<sup>(2)</sup>**

Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	BC817	$I_C = 10\text{ mA}, I_B = 0$			V
		BC818				
$BV_{CES}$	Collector-Emitter Breakdown Voltage	BC817	$I_C = 0.1\text{ mA}, V_{BE} = 0$			V
		BC818				
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 0.1\text{ mA}, I_C = 0$	5			V
$I_{CES}$	Collector Cut-Off Current	$V_{CE} = 25\text{ V}, V_{BE} = 0$			100	nA
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 4\text{ V}, I_C = 0$			100	nA
$h_{FE1}$	DC Current Gain	$V_{CE} = 1\text{ V}, I_C = 100\text{ mA}$	100		630	
$h_{FE2}$		$V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$	60			
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = 500\text{ mA}, I_B = 50\text{ mA}$			0.7	V
$V_{BE(on)}$	Base-Emitter On Voltage	$V_{CE} = 1\text{ V}, I_C = 300\text{ mA}$			1.2	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 5\text{ V}, I_C = 10\text{ mA}, f = 50\text{ MHz}$		100		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10\text{ V}, f = 1\text{ MHz}$			12	pF

**Note:**

2. Pulse test: pulse width  $\leq 300\ \mu\text{s}$ , duty cycle  $\leq 2\%$

 **$h_{FE}$  Classification**

Classification	16	25	40
$h_{FE1}$	100 ~ 250	160 ~ 400	250 ~ 630
$h_{FE2}$	60 ~	100 ~	170 ~

## Typical Performance Characteristics

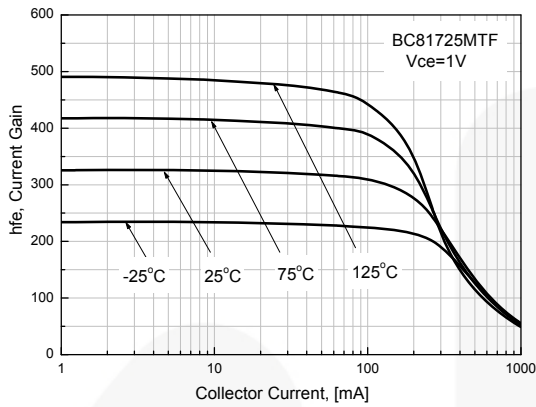


Figure 1. DC Current Gain

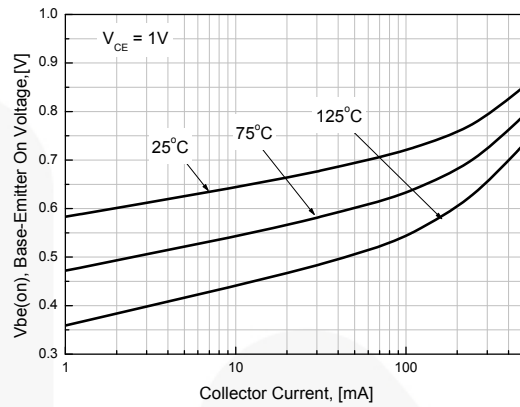


Figure 2. Base-Emitter On Voltage

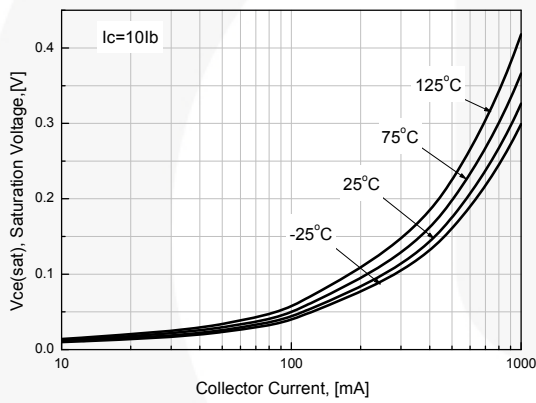


Figure 3. Collector-Emitter Saturation Voltage

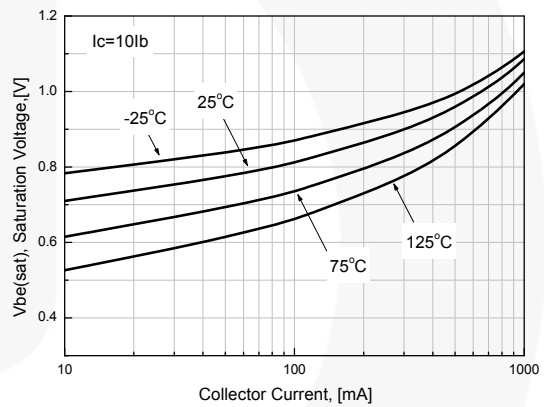


Figure 4. Base-Emitter Saturation Voltage

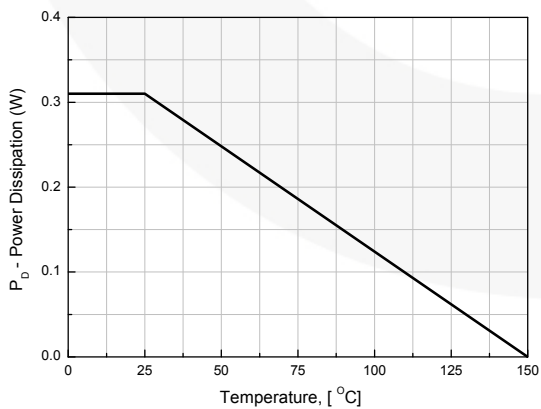
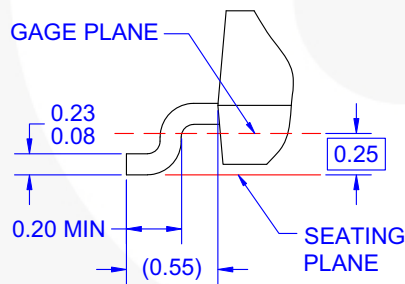
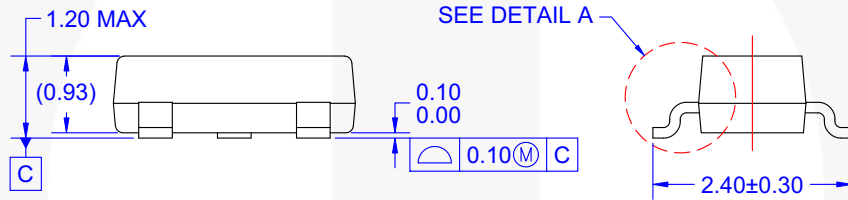
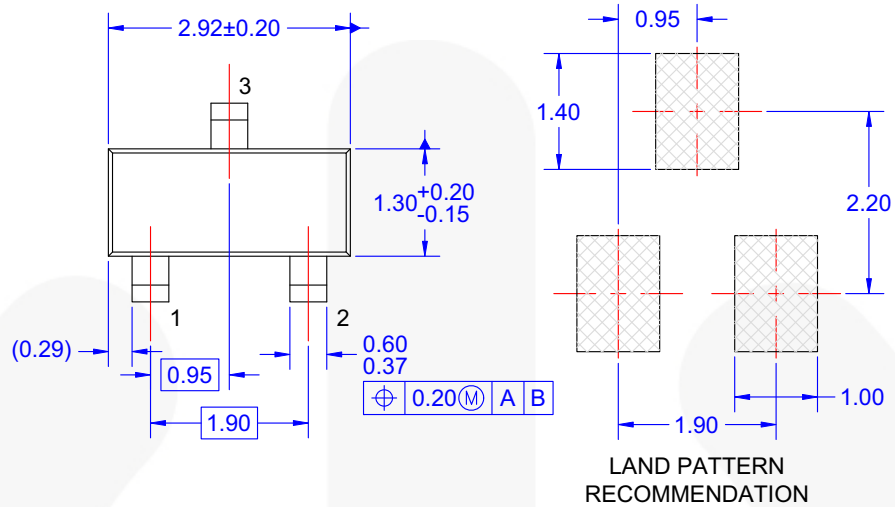


Figure 5. Power Dissipation vs Ambient Temperature

### Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A) REFERENCE JEDEC REGISTRATION TO-236, VARIATION AB, ISSUE H.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS ARE INCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
- D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 1994.
- E) DRAWING FILE NAME: MA03DREV10

**DETAIL A**  
SCALE: 2X

Figure 6. 3-LEAD, SOT23, JEDEC TO-236, LOW PROFILE



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