

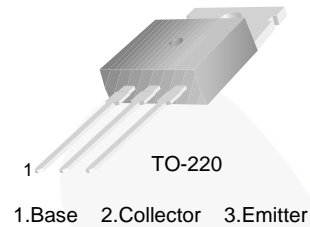


November 2014

# TIP41A / TIP41B / TIP41C NPN Epitaxial Silicon Transistor

## Features

- Medium Power Linear Switching Applications
- Complement to TIP42 Series



## Ordering Information

Part Number	Top Mark	Package	Packing Method
TIP41A	TIP41A	TO-220 3L (Single Gauge)	Bulk
TIP41B	TIP41B	TO-220 3L (Single Gauge)	Bulk
TIP41C	TIP41C	TO-220 3L (Single Gauge)	Bulk
TIP41CTU	TIP41C	TO-220 3L (Single Gauge)	Rail

## 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  $T_C = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	TIP41A	60
		TIP41B	80
		TIP41C	100
$V_{CEO}$	Collector-Emitter Voltage	TIP41A	60
		TIP41B	80
		TIP41C	100
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Collector Current (DC)	6	A
$I_{CP}$	Collector Current (Pulse)	10	A
$I_B$	Base Current	2	A
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-65 to 150	$^\circ\text{C}$

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TIP41A / TIP41B / TIP41C — NPN Epitaxial Silicon Transistor

## Thermal Characteristics

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

Symbol	Parameter	Value	Unit
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	65	W
	Collector Dissipation ( $T_A = 25^\circ\text{C}$ )	2	

## Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{CE(sus)}$	Collector-Emitter Sustaining Voltage <sup>(1)</sup>	TIP41A	$I_C = 30\text{ mA}, I_B = 0$	60	V
		TIP41B		80	
		TIP41C		100	
$I_{CEO}$	Collector Cut-Off Current	TIP41A	$V_{CE} = 30\text{ V}, I_B = 0$	0.7	mA
		TIP41B / TIP41C	$V_{CE} = 60\text{ V}, I_B = 0$	0.7	
$I_{CES}$	Collector Cut-Off Current	TIP41A	$V_{CE} = 60\text{ V}, V_{EB} = 0$	400	$\mu\text{A}$
		TIP41B	$V_{CE} = 80\text{ V}, V_{EB} = 0$	400	
		TIP41C	$V_{CE} = 100\text{ V}, V_{EB} = 0$	400	
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = 5\text{ V}, I_C = 0$		1	mA
$h_{FE}$	DC Current Gain <sup>(1)</sup>	$V_{CE} = 4\text{ V}, I_C = 0.3\text{ A}$	30		
		$V_{CE} = 4\text{ V}, I_C = 3\text{ A}$	15	75	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage <sup>(1)</sup>	$I_C = 6\text{ A}, I_B = 600\text{ mA}$		1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage <sup>(1)</sup>	$V_{CE} = 4\text{ V}, I_C = 6\text{ A}$		2.0	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = 10\text{ V}, I_C = 500\text{ mA}, f = 1\text{ MHz}$	3.0		MHz

### Note:

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

## Typical Performance Characteristics

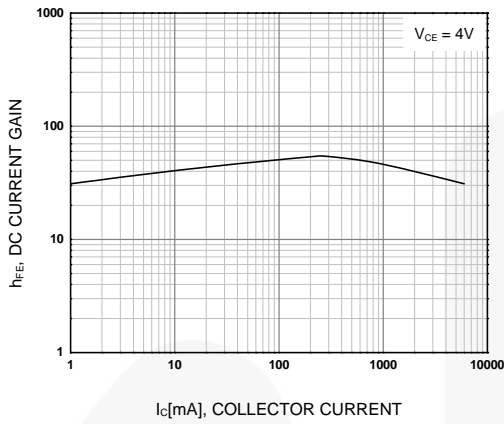


Figure 1. DC Current Gain

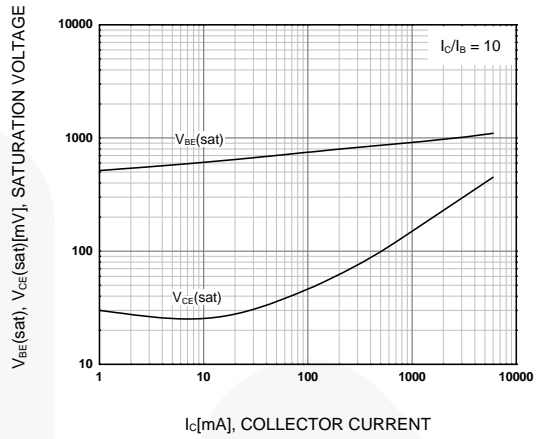


Figure 2. Base-Emitter Saturation Voltage and Collector-Emitter Saturation Voltage

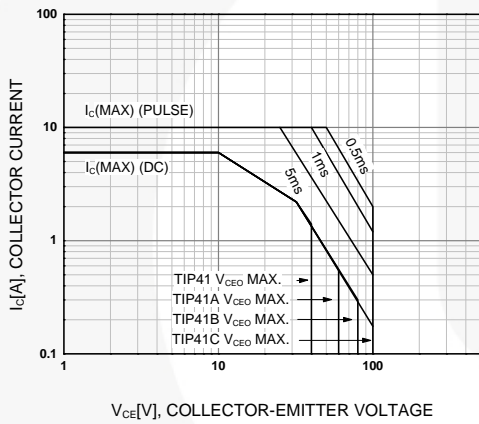


Figure 3. Safe Operating Area

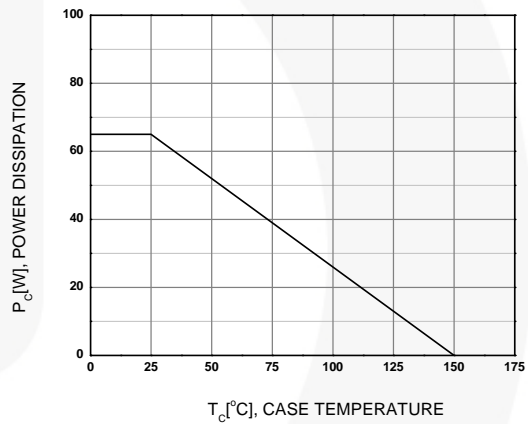


Figure 4. Power Derating

Physical Dimensions

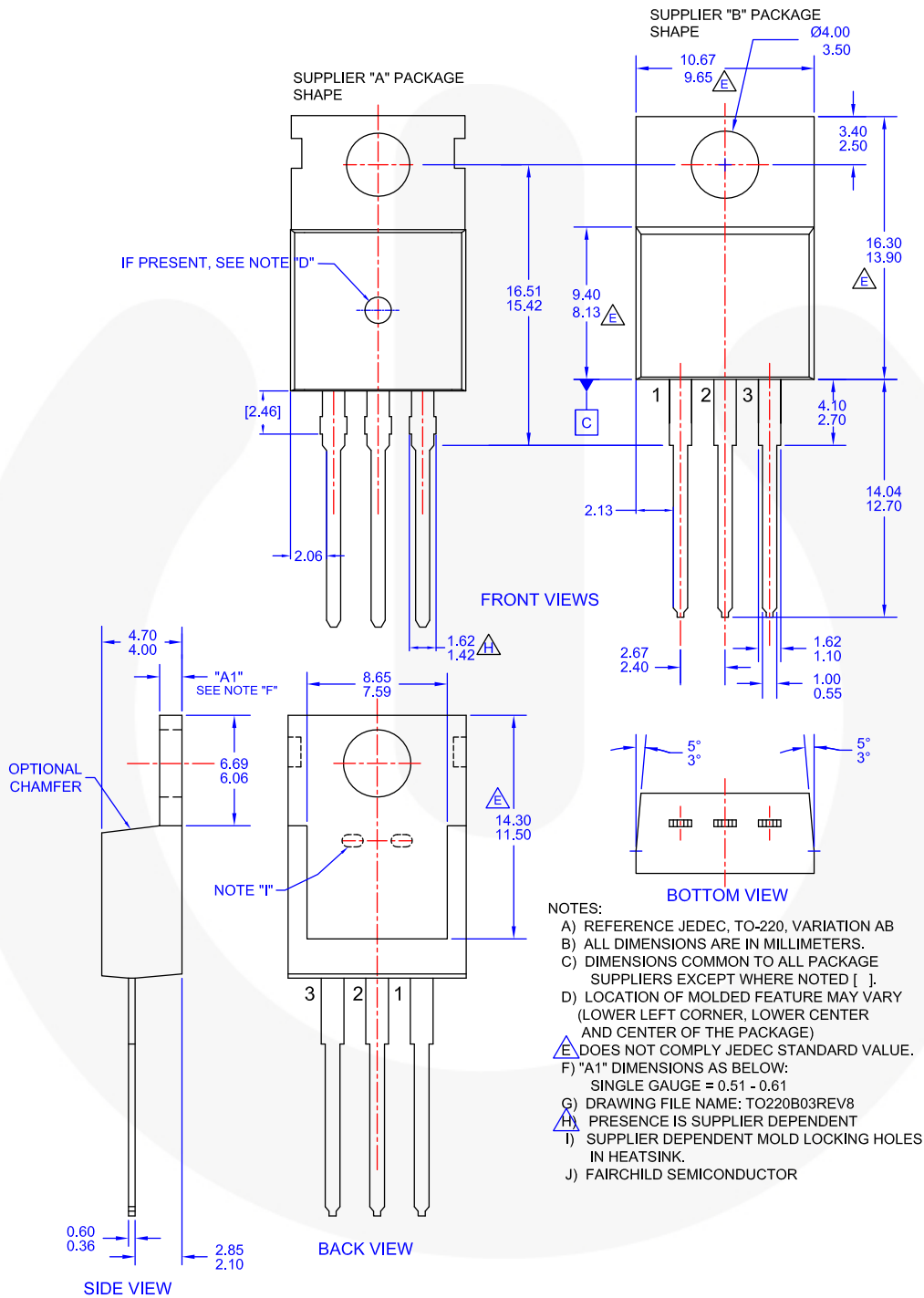


Figure 5. TO-220, MOLDED, 3LEAD, JEDEC VARIATION AB

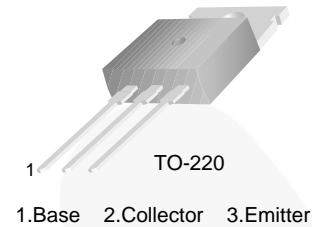


November 2014

# TIP42 / TIP42C PNP Epitaxial Silicon Transistor

## Features

- Medium Power Linear Switching Applications
- Complement to TIP41 Series



## Ordering Information

Part Number	Top Mark	Package	Packing Method
TIP42	TIP42	TO-220 3L (Single Gauge)	Bulk
TIP42C	TIP42C	TO-220 3L (Single Gauge)	Bulk
TIP42CTU	TIP42C	TO-220 3L (Single Gauge)	Rail

## 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  $T_C = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector-Base Voltage	TIP42	-40
		TIP42C	-100
$V_{CEO}$	Collector-Emitter Voltage	TIP42	-40
		TIP42C	-100
$V_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current (DC)	-6	A
$I_{CP}$	Collector Current (Pulse)	-10	A
$I_B$	Base Current	-2	A
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature Range	-65 to 150	$^\circ\text{C}$

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TIP42 / TIP42C — PNP Epitaxial Silicon Transistor

## Thermal Characteristics

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

Symbol	Parameter	Value	Unit
$P_C$	Collector Dissipation ( $T_C = 25^\circ\text{C}$ )	65	W
	Collector Dissipation ( $T_A = 25^\circ\text{C}$ )	2	

## Electrical Characteristics

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

Symbol	Parameter	Conditions	Min.	Max.	Unit
$V_{CEO(sus)}$	Collector-Emitter Sustaining Voltage <sup>(1)</sup>	TIP42	$I_C = -30\text{ mA}, I_B = 0$	-40	V
		TIP42C		-100	
$I_{CEO}$	Collector Cut-Off Current	TIP42	$V_{CE} = -30\text{ V}, I_B = 0$	-0.7	mA
		TIP42C	$V_{CE} = -60\text{ V}, I_B = 0$	-0.7	
$I_{CES}$	Collector Cut-Off Current	TIP42	$V_{CE} = -40\text{ V}, V_{EB} = 0$	-400	$\mu\text{A}$
		TIP42C	$V_{CE} = -100\text{ V}, V_{EB} = 0$	-400	
$I_{EBO}$	Emitter Cut-Off Current	$V_{EB} = -5\text{ V}, I_C = 0$		-1	mA
$h_{FE}$	DC Current Gain <sup>(1)</sup>	$V_{CE} = -4\text{ V}, I_C = -0.3\text{ A}$	30		
		$V_{CE} = -4\text{ V}, I_C = -3\text{ A}$	15	75	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage <sup>(1)</sup>	$I_C = -6\text{ A}, I_B = -600\text{ mA}$		-1.5	V
$V_{BE(on)}$	Base-Emitter On Voltage <sup>(1)</sup>	$V_{CE} = -4\text{ V}, I_C = -6\text{ A}$		-2.0	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -10\text{ V}, I_C = -500\text{ mA}, f = 1\text{ MHz}$	3.0		MHz

### Note:

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

## Typical Performance Characteristics

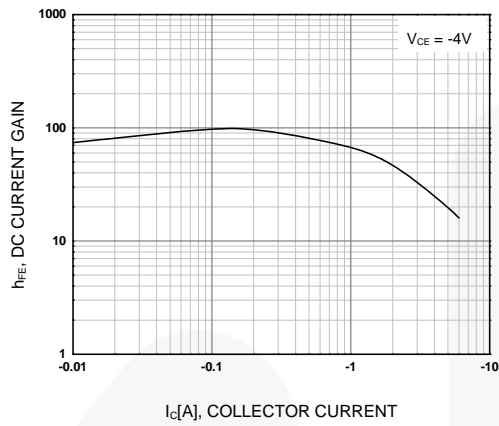


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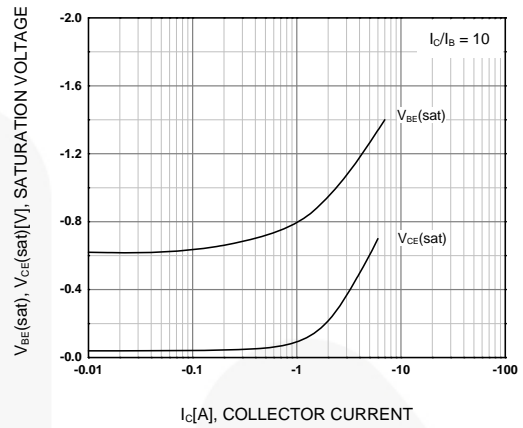


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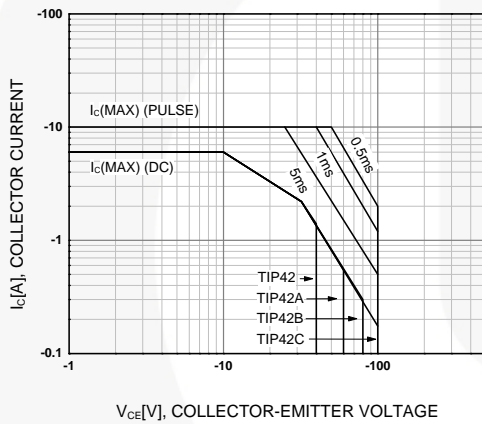


Figure 3. Safe Operating Area

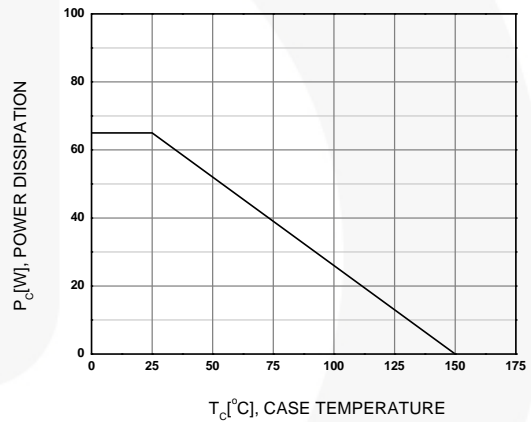


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Physical Dimensions

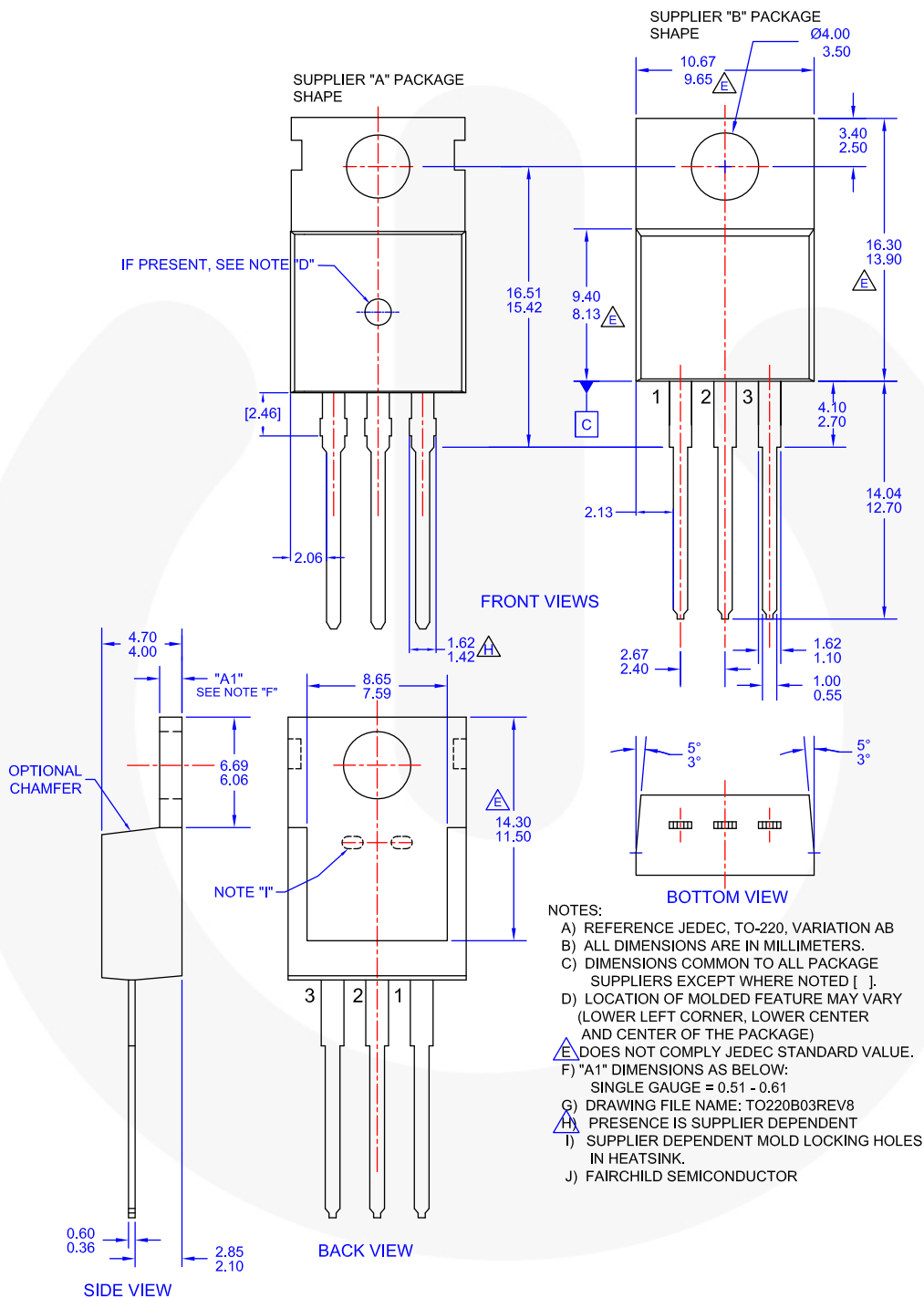


Figure 5. TO-220, MOLDED, 3LEAD, JEDEC VARIATION AB