

# TIP42/42A/42B/42C

**SemiHow**  
Know-How for Semiconductor

# TIP42/42A/42B/42C

## Medium Power Linear Switching Applications

- Complement to TIP41/41A/41B/41C

### Absolute Maximum Ratings $T_a=25^\circ\text{C}$ unless otherwise noted

CHARACTERISTICS	SYMBOL	RATING	UNIT
Collector-Base Voltage : TIP42 : TIP42A : TIP42B : TIP42C	$V_{CBO}$	-40 -60 -80 -100	V V V V
Collector-Emitter Voltage : TIP42 : TIP42A : TIP42B : TIP42C	$V_{CEO}$	-40 -60 -80 -100	V V V V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Collector Current(DC)	$I_C$	-6	A
Collector Current(Pulse)	$I_{CP}$	-10	A
Base Current	$I_B$	-2	A
Collector Dissipation( $T_a=25^\circ\text{C}$ )	$P_C$	2	W
Collector Dissipation( $T_c=25^\circ\text{C}$ )	$P_C$	65	W
Junction Temperature	$T_J$	150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65~150	$^\circ\text{C}$

### PNP Epitaxial Silicon Darlington Transistor

TO-220

1. Base
2. Collector
3. Emitter



### Electrical Characteristics $T_a=25^\circ\text{C}$ unless otherwise noted

CHARACTERISTICS	SYMBOL	Test Condition	Min	Max	Unit
Collector-Emitter Sustaining Voltage : TIP42 : TIP42A : TIP42B : TIP42C	$V_{CEO(SUS)}$	$I_C=-30\text{mA}, I_B=0$	-40 -60 -80 -100		V V V V
Collector Cut-off Current : TIP42/42A : TIP42B/42C	$I_{CEO}$	$V_{CE}=-30\text{V}, I_B=0$ $V_{CE}=-60\text{V}, I_B=0$		-0.7 -0.7	mA mA
Collector Cut-off Current : TIP42 : TIP42A : TIP42B : TIP42C	$I_{CES}$	$V_{CE}=-40\text{V}, V_{EB}=0$ $V_{CE}=-60\text{V}, V_{EB}=0$ $V_{CE}=-80\text{V}, V_{EB}=0$ $V_{CE}=-100\text{V}, V_{EB}=0$		-400 -400 -400 -400	$\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$ $\mu\text{A}$
Emitter Cut-off Current	$I_{EBO}$	$V_{EB}=-5\text{V}, I_C=0$		-1	mA
*DC Current Gain	$h_{FE}$	$V_{CE}=-4\text{V}, I_C=-0.3\text{A}$ $V_{CE}=-4\text{V}, I_C=-3\text{A}$	30 15	75	
*Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=-6\text{A}, I_B=-600\text{mA}$		-1.5	V
*Base-Emitter ON Voltage	$V_{BE(on)}$	$V_{CE}=-4\text{V}, I_C=-6\text{A}$		-2.0	V
Output Capacitance	$f_T$	$V_{CE}=-10\text{V}, I_C=-500\text{mA}$ $f=1\text{MHz}$	3.0		MHz

\* Pulse Test:  $PW \leq 300\mu\text{s}$ , Duty Cycle  $\leq 2\%$

## Typical Characteristics

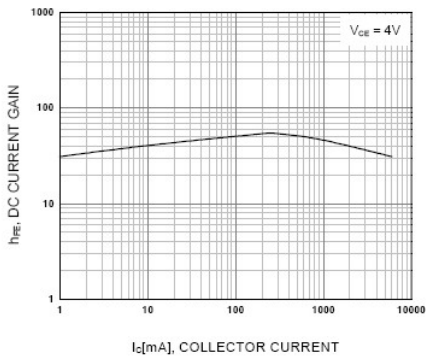


Figure 1. DC current Gain

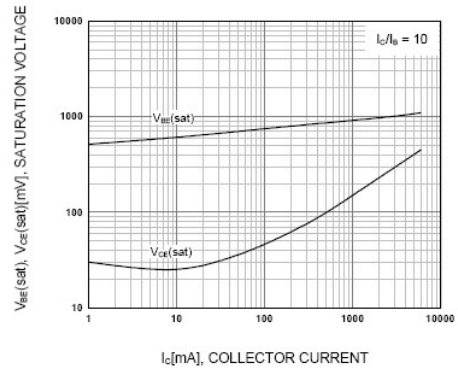


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

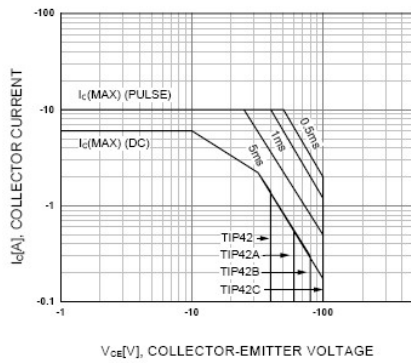


Figure 3. Safe Operating Area

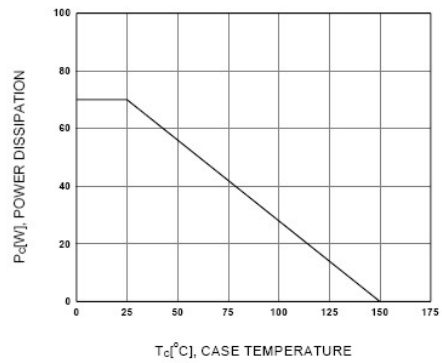
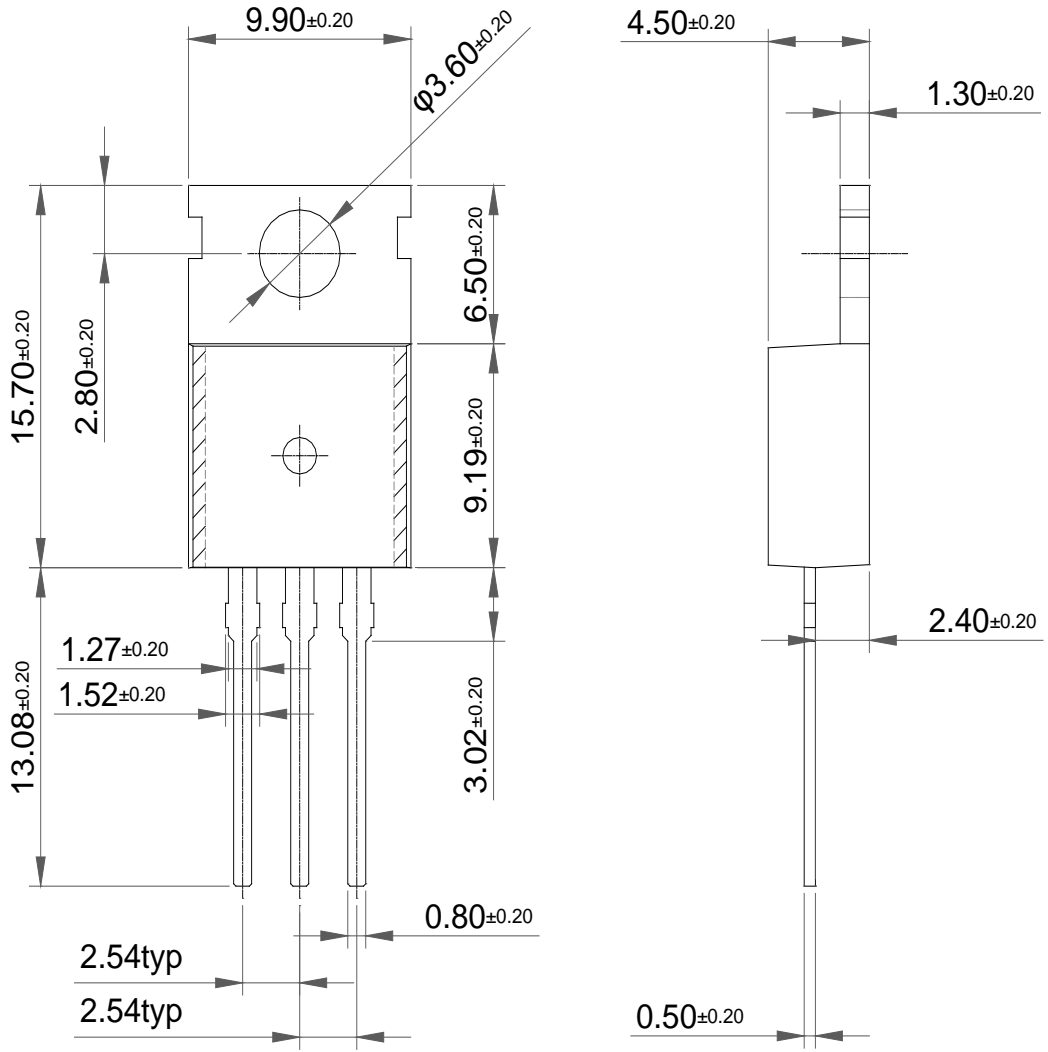


Figure 4. Power derating

Package Dimension

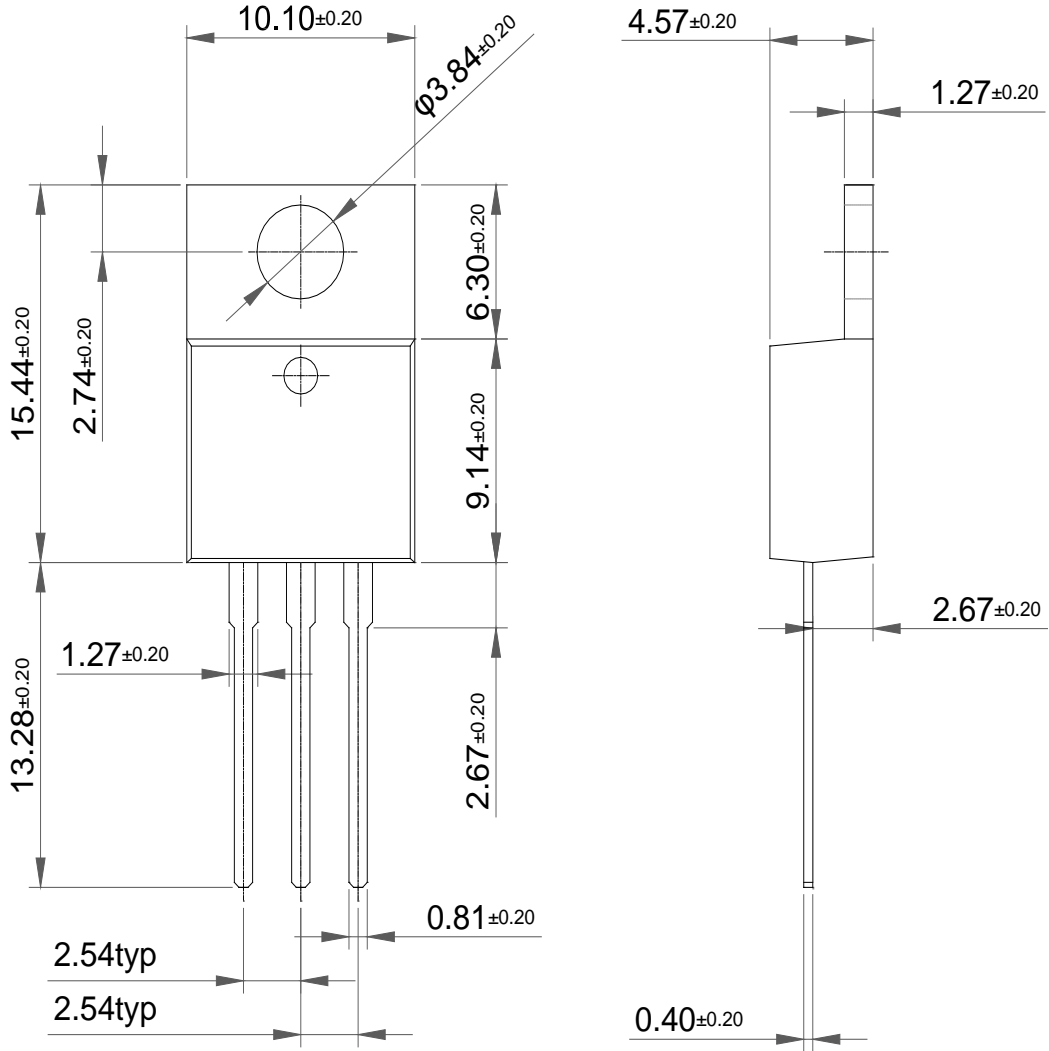
# TO-220 (A)



Dimensions in Millimeters

Package Dimension

TO-220 (B)



Dimensions in Millimeters