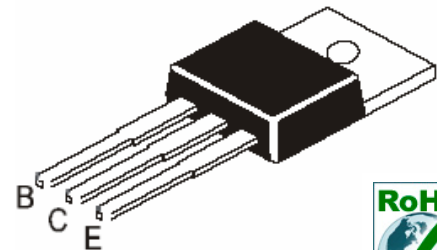


## NPN High Voltage Power Transistors

### Features

- Application for High Voltage and Switching Circuit
- RoHS Compliant



TO-220



### Maximum Ratings *(T<sub>Ambient</sub>=25°C unless noted otherwise)*

Symbol	Description	Value	Unit	Conditions	
<b>V<sub>CB0</sub></b>	Collector-Base Voltage:	TIP47	350	V	Open Emitter
		TIP48	400		
		TIP49	450		
		TIP50	500		
<b>V<sub>CEO</sub></b>	Collector-Emitter Voltage:	TIP47	250	V	Open Base
		TIP48	300		
		TIP49	350		
		TIP50	400		
<b>V<sub>EBO</sub></b>	Emitter-Base Voltage	5	V	Open Collector	
<b>I<sub>C</sub></b>	Collector Current (Continuous)	1	A		
<b>I<sub>CP</sub></b>	Collector Current (Peak)	2	A		
<b>I<sub>B</sub></b>	Base Current	0.6	A		
<b>P<sub>D</sub></b>	Collector Power Dissipation	40	W	T <sub>C</sub> = 25 °C	
		0.32	mW/° C	Derate above 25 °C	
<b>T<sub>J</sub>,T<sub>STG</sub></b>	Operating Junction and Storage	-55 to 150	° C		

### Thermal Characteristics

Symbol	Description	Value	Unit
<b>R<sub>th(j-a)</sub></b>	Thermal Resistance from Junction to Ambient	62.5	° C/W
<b>R<sub>th(j-c)</sub></b>	Thermal Resistance from Junction to Case	3.125	° C/W

# NPN High Voltage Power Transistors

## TIP47/48/49/50

### Electrical Characteristics ( $T_{Ambient}=25^{\circ}C$ unless noted otherwise)

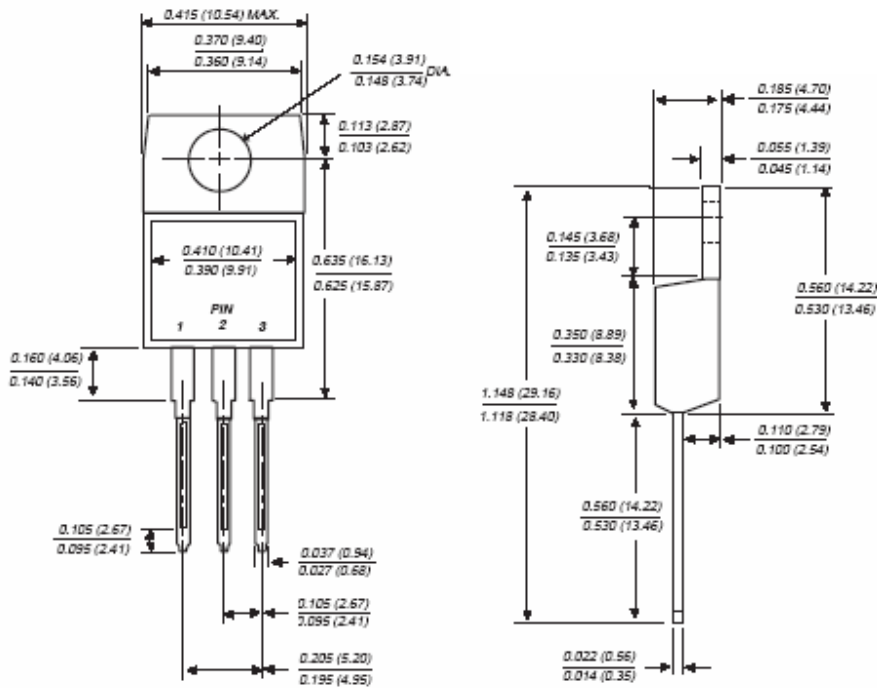
Symbol	Description	Min.	Max.	Unit	Conditions
<b>V<sub>CEO</sub> (sus)</b>	Collector- Emitter Sustaining Voltage TIP47 TIP48 TIP49 TIP50	250 300 350 400	--	V	$I_C = 30mA; I_B = 0$
<b>I<sub>CEO</sub></b>	Collector Cut-Off Current TIP47 TIP48 TIP49 TIP50	--	1 1 1 1	mA	$V_{CE} = 150V, I_B = 0$ $V_{CE} = 200V, I_B = 0$ $V_{CE} = 250V, I_B = 0$ $V_{CE} = 300V, I_B = 0$
<b>I<sub>CES</sub></b>	Collector Cut-Off Current TIP47 TIP48 TIP49 TIP50	--	1 1 1 1	mA	$V_{CE} = 350V, V_{BE} = 0$ $V_{CE} = 400V, V_{BE} = 0$ $V_{CE} = 450V, V_{BE} = 0$ $V_{CE} = 500V, V_{BE} = 0$
<b>I<sub>EBO</sub></b>	Emitter Cut-Off Current	--	1	mA	$V_{EB} = 5V, I_C = 0$
<b>h<sub>FE</sub></b>	* DC Current Gain	30 10	150		$V_{CE} = 10V, I_C = 0.3A$ $V_{CE} = 10V, I_C = 1A$
<b>V<sub>CE(sat)</sub></b>	* Collector-Emitter Saturation Voltage	--	1	V	$I_C = 1A; I_B = 0.2A$
<b>V<sub>BE(on)</sub></b>	* Base-Emitter On Voltage	--	1.5	V	$V_{CE} = 10V, I_C = 1A$
<b>f<sub>T</sub></b>	Current Gain Bandwidth Product	10	--	MHz	$V_{CE} = 10V, I_C = 0.2A, f=2MHz$
<b>t<sub>ON</sub></b>	Turn ON Time	--	0.5	μs	$V_{CC} = 400V,$ $5 I_{B1} = -2.5 I_{B2} = I_C = 6A$ $R_L = 66.7\Omega$
<b>t<sub>STG</sub></b>	Storage Time	--	3	μs	
<b>t<sub>F</sub></b>	Fall Time	--	0.3	μs	
* Pulse Test: Pulse Width $\leq 300\mu s$ , duty Cycle $\leq 2\%$					

# NPN High Voltage Power Transistors

## TIP47/48/49/50

### Package Dimensions

#### TO-220



#### Pin Configuration

1. Base
2. Collector
3. Emitter

# NPN High Voltage Power Transistors

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TIP47/48/49/50

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