

BUV48A

Power Transistor

High Voltage Switching



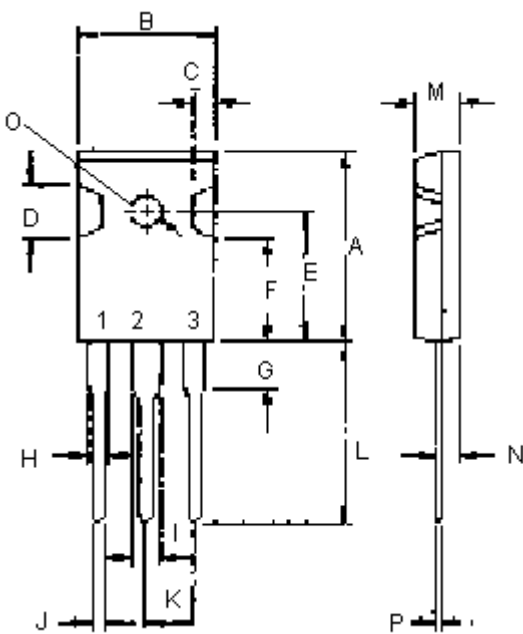
Features:

- Collector - emitter sustaining voltage - $V_{CEO(sus)} = 450$ V (minimum)
- Collector - emitter saturation voltage - $V_{CE(sat)} = 1.5$ V (maximum) at $I_C = 8$ A
- Switching time - $t_f = 0.8$ μ s (maximum) at $I_C = 8$ A

Application:

Switch mode series NPN Power Transistors are designed for use in high-voltage, high speed, power switching regulators, converters, inverters, motor control system application

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Dimensions	Minimum	Maximum
A	20.63	22.38
B	15.38	16.2
C	1.9	2.7
D	5.1	6.1
E	14.81	15.22
F	11.72	12.84
G	4.2	4.5
H	1.82	2.46
I	2.92	3.23
J	0.89	1.53
K	5.26	5.66
L	18.5	21.5
M	4.68	5.36
N	2.4	2.8
O	3.25	3.65
P	0.55	0.7

Dimensions : Millimetres

Pin

1. Base
2. Collector
3. Emitter

Maximum Ratings

Characteristics	Symbol	TIP42A	Unit
Collector - emitter voltage	V_{CEO}	450	V
Collector - emitter voltage ($V_{BE} = -2.5$ V)	V_{CEX}	1,000	V
Emitter - base voltage	V_{EBO}	7	V
Collector current - continuous - peak	I_C I_{CM}	15 30	A
Base current	I_B	4	A
Total power dissipation at $T_c = 25^\circ$ C derate above 25° C	P_D	150 1	W W/ $^\circ$ C
Operating and storage Junction temperature range	T_j, T_{stg}	-65 to +175	$^\circ$ C

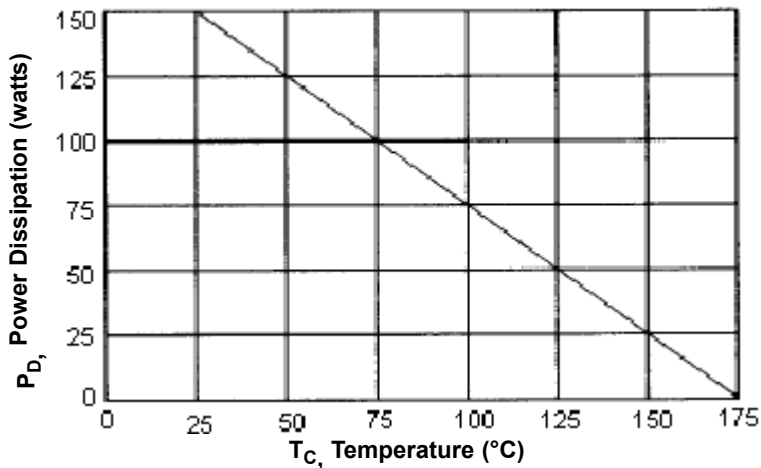
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Thermal Characteristics

Characteristic	Symbol	Maximum	Unit
Thermal resistance junction to case	$R_{\theta jc}$	1	$^{\circ}\text{C/W}$

Power Derating



Electrical Characteristics ($T_c = 25^{\circ}\text{C}$ Unless Otherwise noted)

Characteristics	Symbol	Minimum	Maximum	Units	
Off Characteristics					
Collector - emitter sustaining voltage (1) ($I_C = 200 \text{ mA}$, $I_B = 0$, $L = 25 \text{ mH}$)	$V_{CEO(SUS)}$	450	-	V	
Collector cut off current ($V_{CE} = V_{CEX}$, $V_{BE} = -2.5 \text{ V}$) ($V_{CE} = V_{CEX}$, $V_{BE} = -2.5 \text{ V}$, $TC = 125^{\circ}\text{C}$)	I_{CEX}	-	0.2 2	mA	
Collector cut off current ($V_{CE} = V_{CEX}$, $R_{BE} < 10\Omega$) ($V_{CE} = V_{CEX}$, $R_{BE} < 10\Omega$, $TC = 125^{\circ}\text{C}$)	I_{CER}	-	0.5 4	mA	
Emitter cut off current ($V_{EB} = 5 \text{ V}$, $I_C = 0$)	I_{EBO}	-	1	mA	
On Characteristics (1)					
Collector - emitter saturation voltage ($I_C = 8 \text{ A}$; $I_B = 1.6 \text{ A}$) ($I_C = 12 \text{ A}$; $I_B = 2.4 \text{ A}$)	$V_{CE(sat)}$	-	1.5 5	V	
Base-emitter saturation voltage ($I_C = 8 \text{ A}$; $I_B = 1.6 \text{ V}$)	$V_{BE(sat)}$	-	1.6	V	
Switching characteristics					
Turn on time	$I_C = 8 \text{ A}$, $I_{B1} = 1.6 \text{ A}$, $I_{B2} = -1.6 \text{ A}$	t_{on}	-	1	μs
Storage time		t_s	-	3	μs
Fall time		t_f	-	0.8	μs

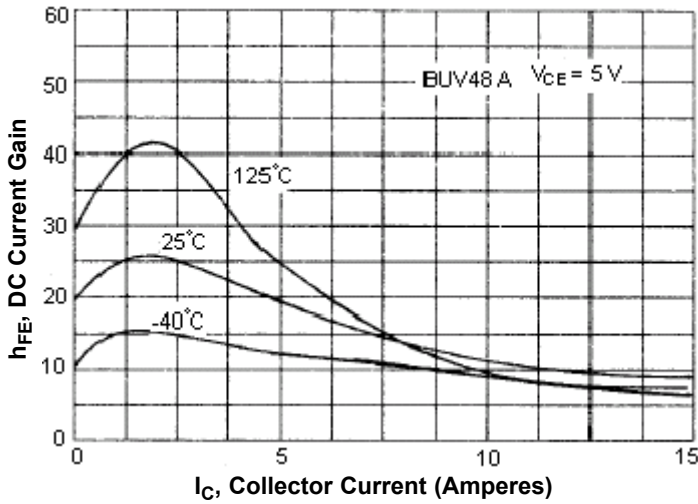
(1) Pulse test: Pulse width = 300 μs , duty cycle $\leq 2\%$

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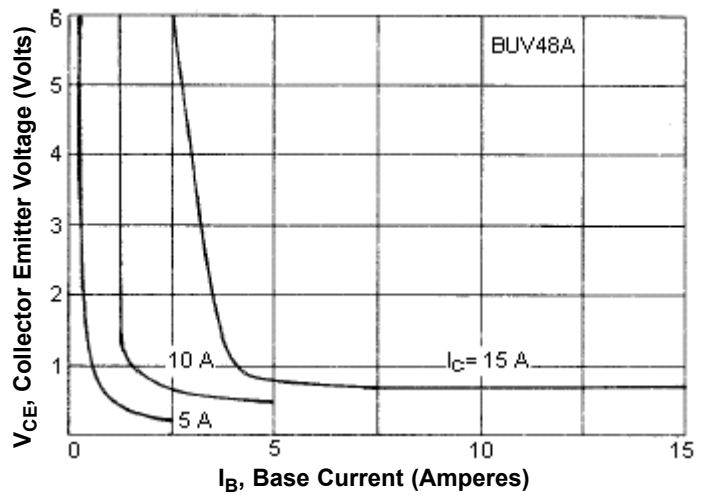
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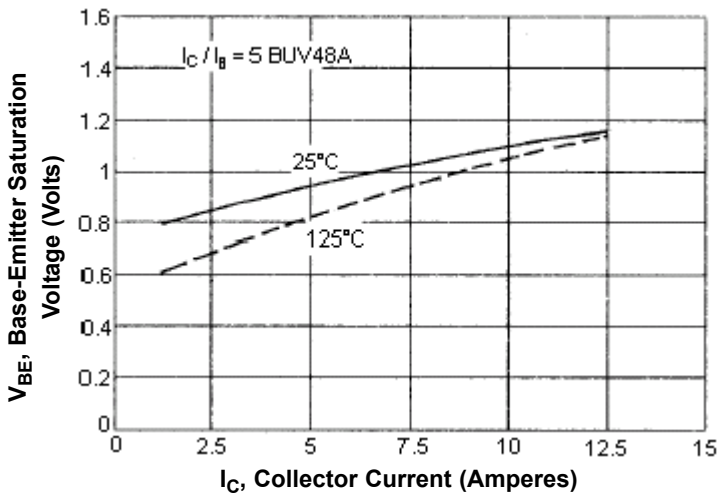
DC Current Gain



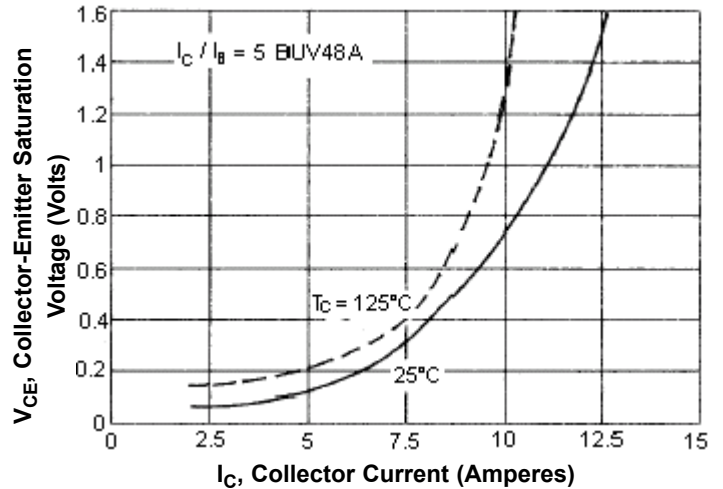
Collector Saturation Region



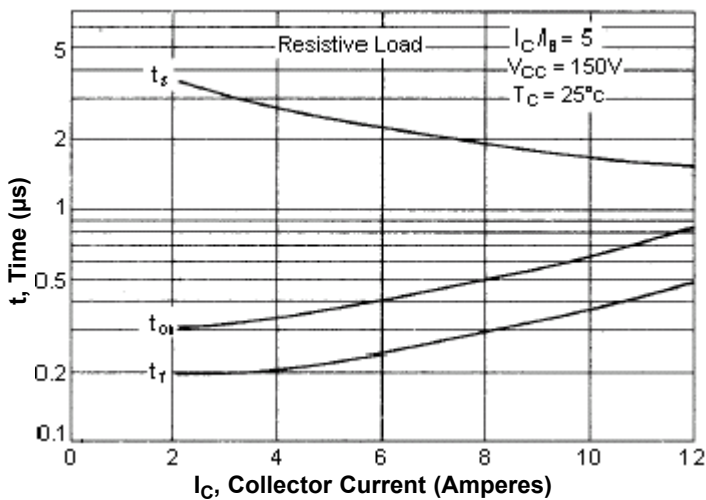
Base-Emitter Saturation Voltage



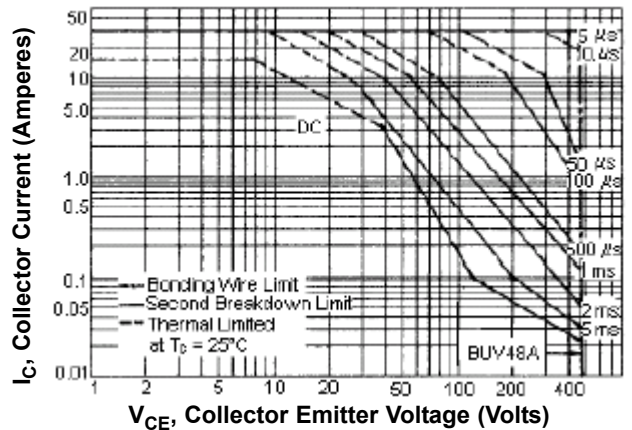
Collector-Emitter Saturation Voltage



Switching Time



Active Region Safe Operating Area



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Specifications Table

Description	I_C (av) Maximum (A)	V_{CEO} maximum (V)	V_{CEX} maximum (V)	$V_{CE(Sat)}$ (V) at $I_C = 12$ A	t_f maximum (μ s)	P_{tot} at 25°C (W)	Part Number
Power Transistor	15	450	1,000	5	0.8	150	BUV48A

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