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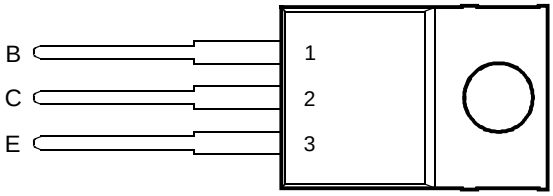
- **7 A Continuous Collector Current**
- **15 A Peak Collector Current**
- **60 W at 25°C Case Temperature**

TO-220 PACKAGE
(TOP VIEW)



Pin 2 is in electrical contact with the mounting base.

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absolute maximum ratings at 25°C case temperature (unless otherwise noted)

RATING		SYMBOL	VALUE	UNIT
Collector-base voltage (I_E = 0)	BU406 BU407	V_{CBO}	400 330	V
Collector-emitter voltage (V_{BE} = -2 V)	BU406 BU407	V_{CEX}	400 330	V
Collector-emitter voltage (I_B = 0)	BU406 BU407	V_{CEO}	200 150	V
Emitter-base voltage		V_{EB}	6	V
Continuous collector current		I_C	7	A
Peak collector current (see Note 1)		I_{CM}	15	A
Continuous base current		I_B	4	A
Continuous device dissipation at (or below) 25°C case temperature		P_{tot}	60	W
Operating junction temperature range		T_j	-55 to +150	°C
Storage temperature range		T_{stg}	-55 to +150	°C

NOTE 1: This value applies for $t_p \leq 10$ ms, duty cycle ≤ 2%.

PRODUCT INFORMATION

Information is current as of publication date. Products conform to specifications in accordance with the terms of Power Innovations standard warranty. Production processing does not necessarily include testing of all parameters.

electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS				MIN	TYP	MAX	UNIT
$V_{(BR)CEO}$	Collector-emitter breakdown voltage	I_C = 30 mA	I_B = 0			140			V
I_{CES}	Collector-emitter cut-off current	V_{CE} = 400 V	V_{BE} = 0		BU406			5	mA
		V_{CE} = 330 V	V_{BE} = 0		BU407			5	
		V_{CE} = 250 V	V_{BE} = 0		BU406			0.1	
		V_{CE} = 200 V	V_{BE} = 0		BU407			0.1	
		V_{CE} = 250 V	V_{BE} = 0	T_C = 150°C	BU406			1	
		V_{CE} = 200 V	V_{BE} = 0	T_C = 150°C	BU407			1	
I_{EBO}	Emitter cut-off current	V_{EB} = 6 V	I_C = 0					1	mA
h_{FE}	Forward current transfer ratio	V_{CE} = 10 V	I_C = 4 A	(see Notes 2 and 3)		12			
		V_{CE} = 10 V	I_C = 0.5 A			20			
$V_{CE(sat)}$	Collector-emitter saturation voltage	I_B = 0.5 A	I_C = 5 A	(see Notes 2 and 3)				1	V
$V_{BE(sat)}$	Base-emitter saturation voltage	I_B = 0.5 A	I_C = 5 A	(see Notes 2 and 3)				1.2	V
f_t	Current gain bandwidth product	V_{CE} = 5 V	I_C = 0.5 A	f = 1 MHz	(see Note 4)		6		MHz
C_{ob}	Output capacitance	V_{CB} = 20 V	I_E = 0	f = 1 MHz			60		pF

NOTES: 2. These parameters must be measured using pulse techniques, t_p = 300 µs, duty cycle ≤ 2%.
3. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.
4. To obtain f_t the [h_{FE}] response is extrapolated at the rate of -6 dB per octave from f = 1 MHz to the frequency at which [h_{FE}] = 1.

thermal characteristics

PARAMETER		MIN	TYP	MAX	UNIT
$R_{\theta JC}$	Junction to case thermal resistance			2.08	°C/W
$R_{\theta JA}$	Junction to free air thermal resistance			70	°C/W

inductive-load-switching characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER		TEST CONDITIONS †			MIN	TYP	MAX	UNIT
t_s	Storage time	I_C = 5 A	$I_{B(end)}$ = 0.5A	(see Figures 1 and 2)		2.7		µs
$t_{(off)}$	Turn off time						750	ns

† Voltage and current values shown are nominal; exact values vary slightly with transistor parameters.

PARAMETER MEASUREMENT INFORMATION

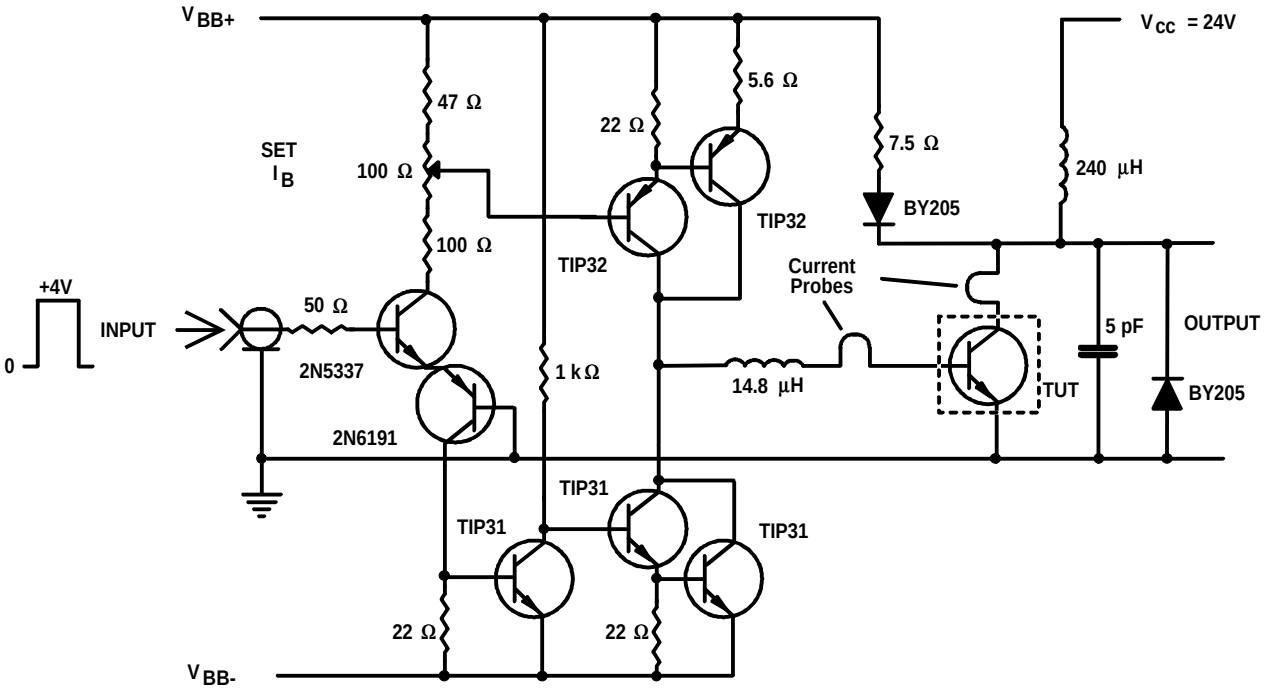
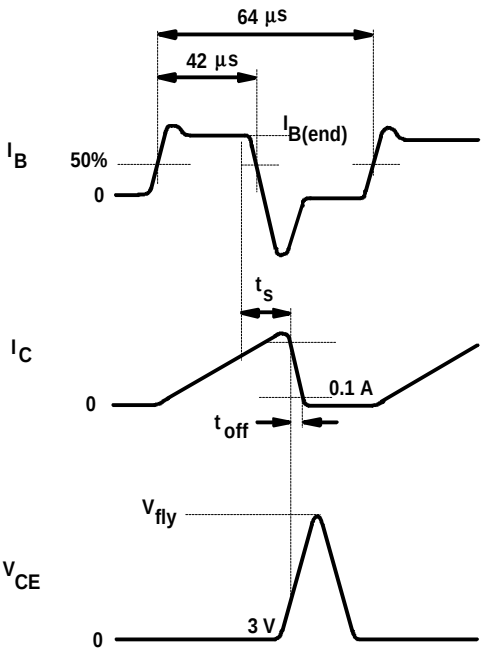


Figure 1. Inductive-Load Switching Test Circuit



t_{off} is the time for the collector current I_C to decrease to 0.1 A after the collector to emitter voltage V_{CE} has risen 3 V into its flyback excursion.

Figure 2. Inductive-Load Switching Waveforms

TYPICAL CHARACTERISTICS

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

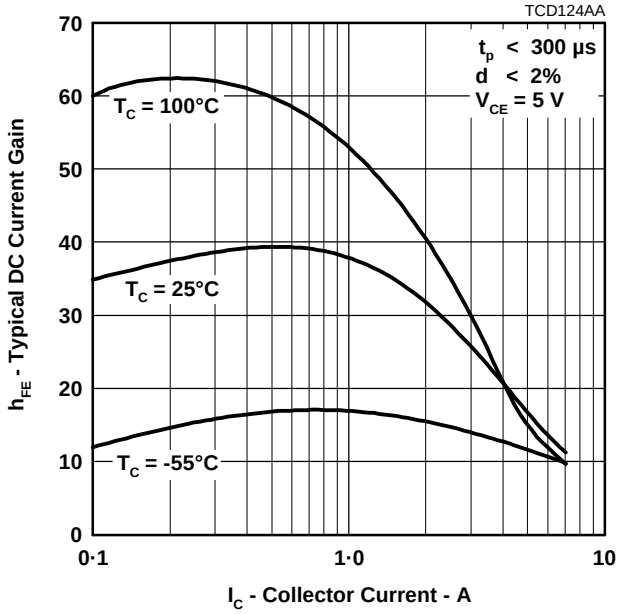


Figure 3.

TYPICAL DC CURRENT GAIN vs COLLECTOR CURRENT

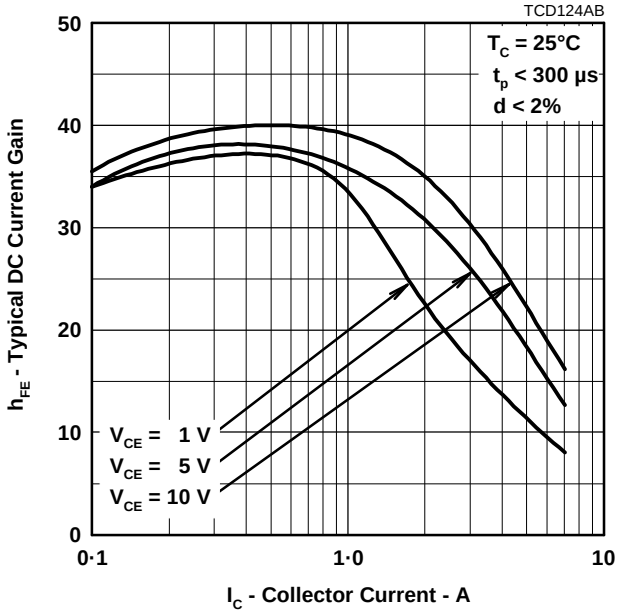


Figure 4.

COLLECTOR-EMITTER SATURATION VOLTAGE vs CASE TEMPERATURE

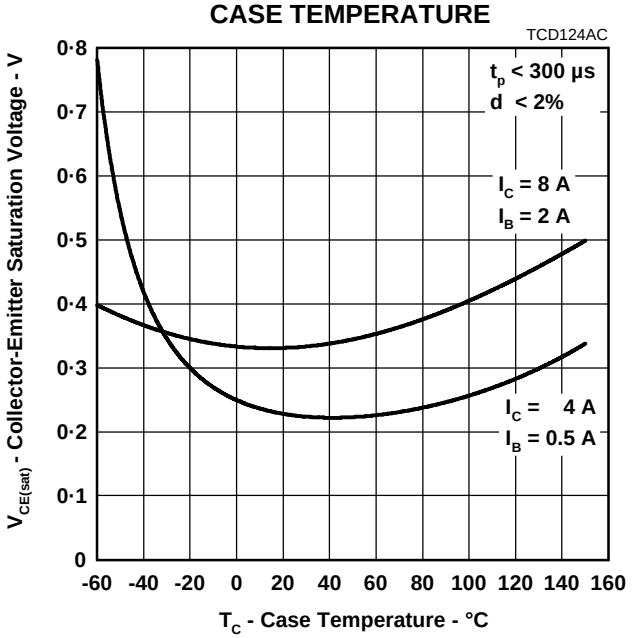


Figure 5.

MAXIMUM SAFE OPERATING REGIONS

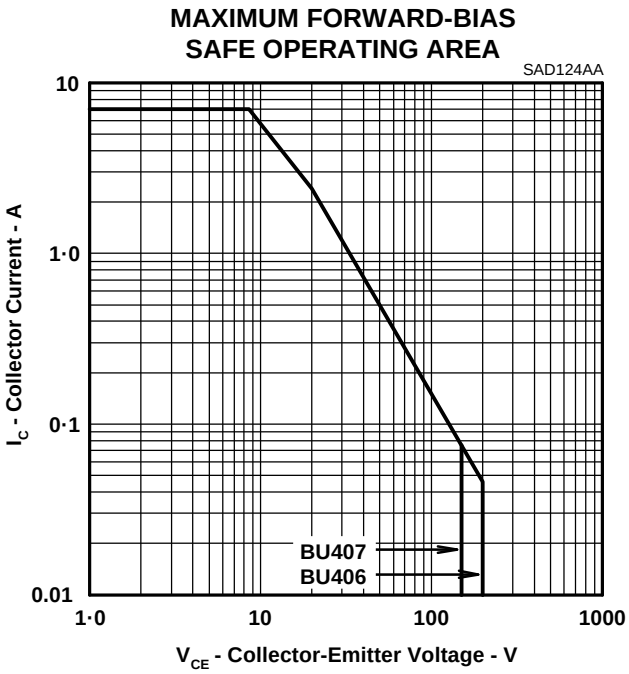
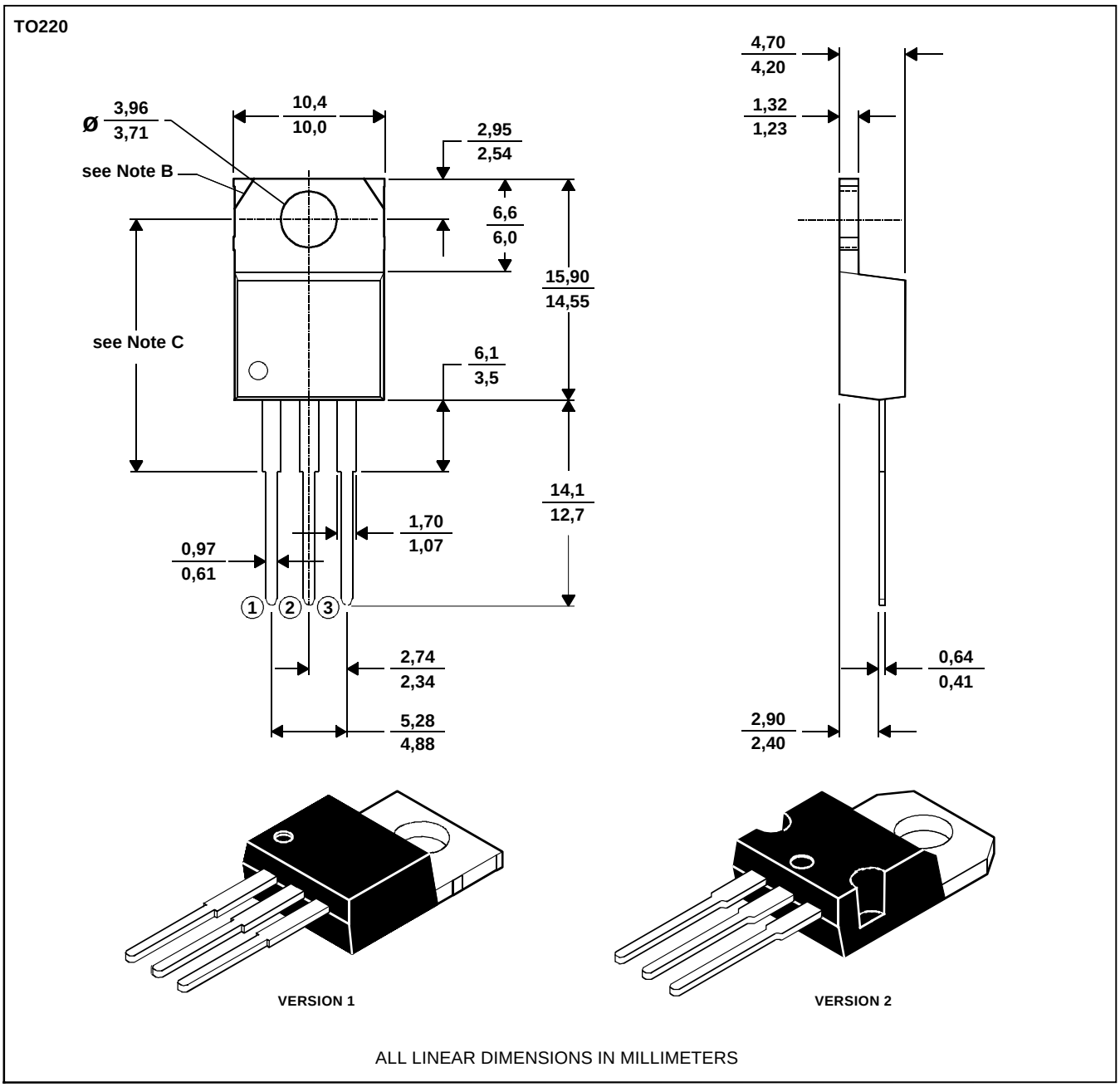


Figure 6.

MECHANICAL DATA

TO-220
3-pin plastic flange-mount package

This single-in-line package consists of a circuit mounted on a lead frame and encapsulated within a plastic compound. The compound will withstand soldering temperature with no deformation, and circuit performance characteristics will remain stable when operated in high humidity conditions. Leads require no additional cleaning or processing when used in soldered assembly.



NOTES: A. The centre pin is in electrical contact with the mounting tab.
B. Mounting tab corner profile according to package version.
C. Typical fixing hole centre stand off height according to package version.
Version 1, 18.0 mm. Version 2, 17.6 mm.

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