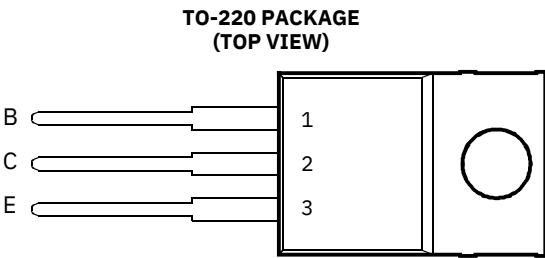


BD240, BD240A, BD240B, BD240C
PNP SILICON POWER TRANSISTORS

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- **Designed for Complementary Use with the BD241 Series**
- **30 W at 25°C Case Temperature**
- **2 A Continuous Collector Current**
- **4 A Peak Collector Current**
- **Customer-Specified Selections Available**



Pin 2 is in electrical contact with the mounting base.

MDTRACA

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

		RATING SYMBOL VALUE UNIT		
BD240 -55	Collector-emitter voltage (RBE = 100 Ω)VV			
BD240A -70				
BD240B CER -90				
BD240C -115				
BD240 -45	Collector-emitter voltage (IC = -30 mA)VV			
BD240A -60				
BD240B CEO -80				
BD240C -100				
Emitter-base voltageVEBO-5V				
Continuous collector currentIC-2A				
Peak collector current (see Note 1)ICM-4A				
Continuous base currentIB-0.6A				
Continuous device dissipation at (or below) 25°C case temperature (see Note 2)Ptot30W				
Continuous device dissipation at (or below) 25°C free air temperature (see Note 3)Ptot2W				
Unclamped inductive load energy (see Note 4)½LIC232mJ				
Operating junction temperature rangeTj-65 to +150°C				
Storage temperature rangeTstg-65 to +150°C				
Lead temperature 3.2 mm from case for 10 secondsTL250°C				

NOTES:1.This value applies for $t_p \leq 0.3$ ms, duty cycle $\leq 10\%$.
2.Derate linearly to 150°C case temperature at the rate of 0.24 W/°C.
3.Derate linearly to 150°C free air temperature at the rate of 16 mW/°C.
4.This rating is based on the capability of the transistor to operate safely in a circuit of: L = 20 mH, IB(on) = -0.4 A, RBE = 100 Ω, VBE(off) = 0, RS = 0.1 Ω, VCC = -20 V.

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.



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electrical characteristics at 25°C case temperature

	PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
BD240 -45						
Collector-emitter BD240A -60	$V_{(BR)CEO}$	$I_C = -3$ mA breakdown voltage (see Note 5)				V
BD240C -100						
Collector-emitter	$V_{CE(sat)}$	$V_{BE} = 0$ BD240-0.2				
ICE-70	V_{BE}	$I_C = -0.2$ CES				mA
		cut-off current	$V_{CE} = -90$	$V_{BE} = 0$ BD240B-0.2		
			$V_{CE} = -115$	$V_{BE} = 0$ BD240C-0.2		
ICEBCEO		Collector cut-off	$V_{CE} = -30$	$V_{I} = 0$ BD240/240A-0.3		mA
		current	$V_{CE} = -60$	$V_{I} = 0$ BD240B/240C-0.3		μA
Emitter cut-off						
I_{EBO}	$V_{CE} = -5$	$V_{I} = 0-1$				
Forward current	$V_{CE} = -4$	$V_{I} = -0.2$ A 40FE (see Notes 5 and 6)				
transfer ratio	$V_{CE} = -4$	$V_{I} = -1$ A 15				
Collector-emitter						V
saturation voltage	$V_{CE(sat)}$	$I_C = -0.2$ A $I_{E} = -1$ A (see Notes 5 and 6)-0.7				
Base-emitter						V
voltage	V_{BE}	$I_C = -4$ A $V_{I} = -1$ A (see Notes 5 and 6)-1.3				
Small signal forward						
h_{FE}		current transfer ratio	$V_{CE} = -10$	$V_{I} = -0.2$ A $f = 1$ kHz 20		
Small signal forward						
h_{FE}		current transfer ratio	$V_{CE} = -10$	$V_{I} = -0.2$ A $f = 1$ MHz 3		

NOTES:5. These parameters must be measured using pulse techniques, $t_p = 300 \mu s$, duty cycle $\leq 2\%$.
6. These parameters must be measured using voltage-sensing contacts, separate from the current carrying contacts.

thermal characteristics

PARAMETER	MIN	TYP	MAX	UNIT
R_{JC} Junction to case thermal resistance			X	T
θ_{JA} Junction to free air thermal resistance			4.17	°C/W
R_{θ}			62.5	°C/W

resistive-load-switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNIT
t_{on} Turn-on time	$I_C = -200$ mA $I_B(on) = -20$ mA $I_B(off) = 20$ mA		0.2		μs
t_{off} Turn-off time	$V_{BE}(off) = 3.4$ V $R_L = 150 \Omega$ $t_p = 20 \mu s$, $dc \leq 2\%$		0.4		μs

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

PRODUCT INFORMATION

TYPICAL CHARACTERISTICS

**TYPICAL DC CURRENT GAIN
 VS
 COLLECTOR CURRENT**

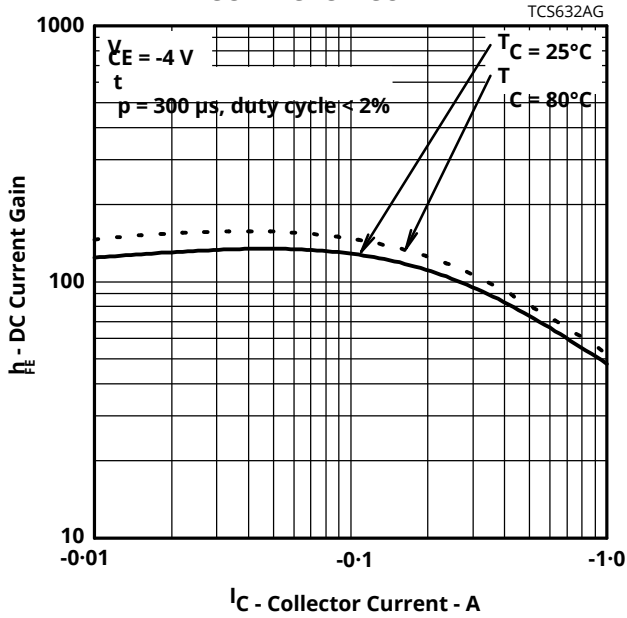


Figure 1.

**COLLECTOR-EMITTER SATURATION VOLTAGE
 VS
 BASE CURRENT**

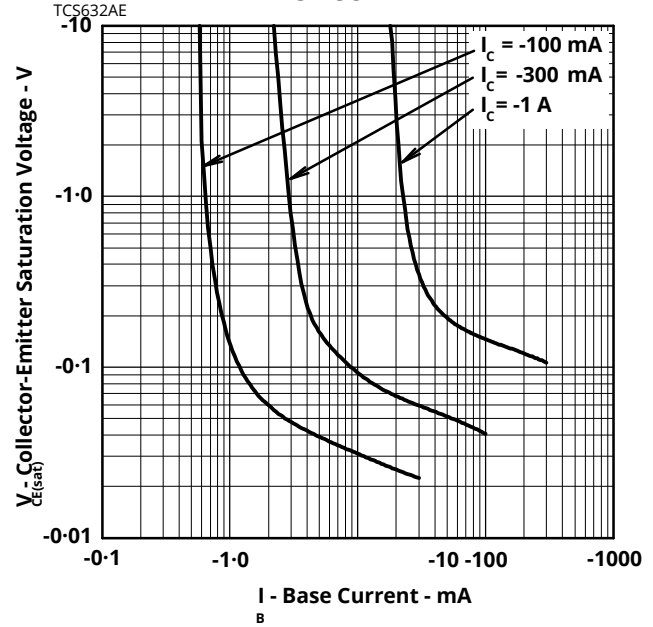


Figure 2.

**BASE-EMITTER VOLTAGE
 VS
 COLLECTOR CURRENT**

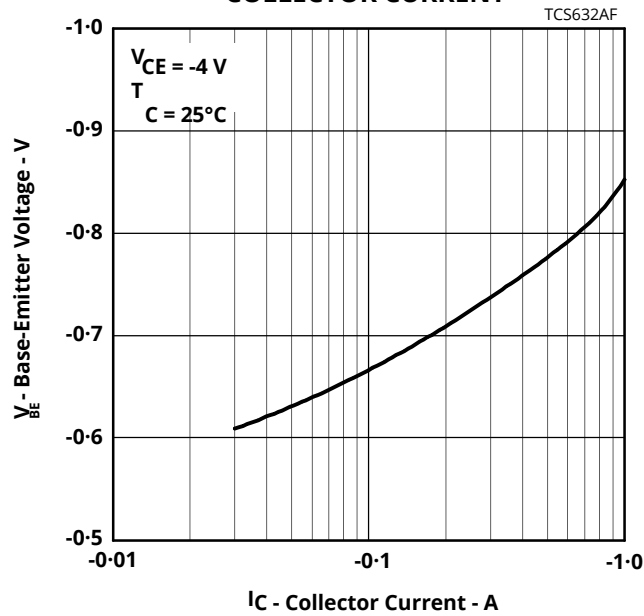
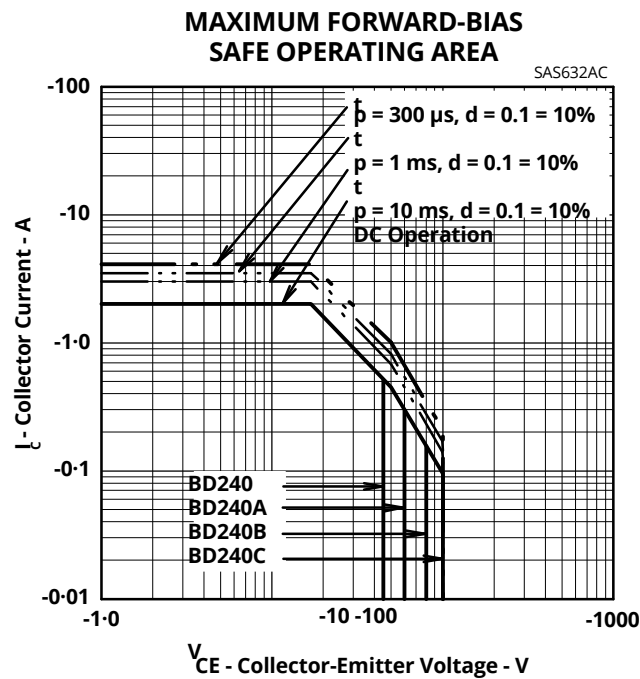


Figure 3.

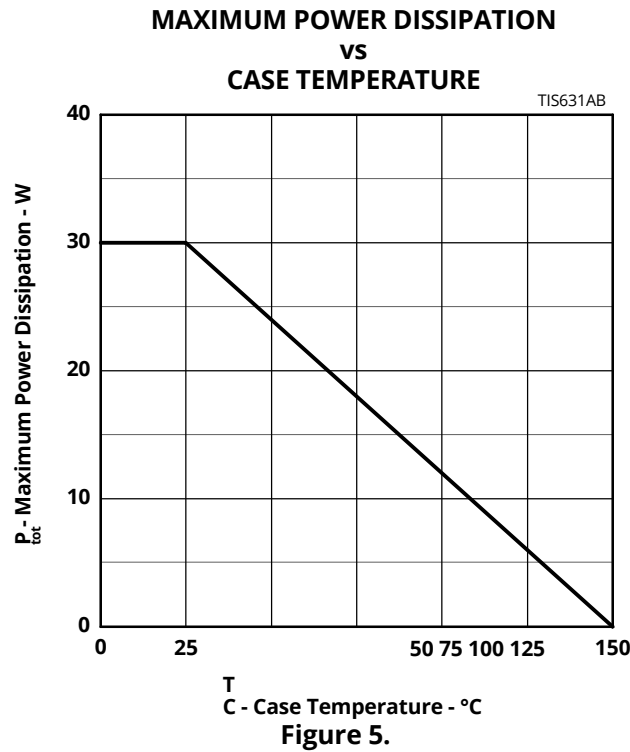
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MAXIMUM SAFE OPERATING REGIONS



THERMAL INFORMATION



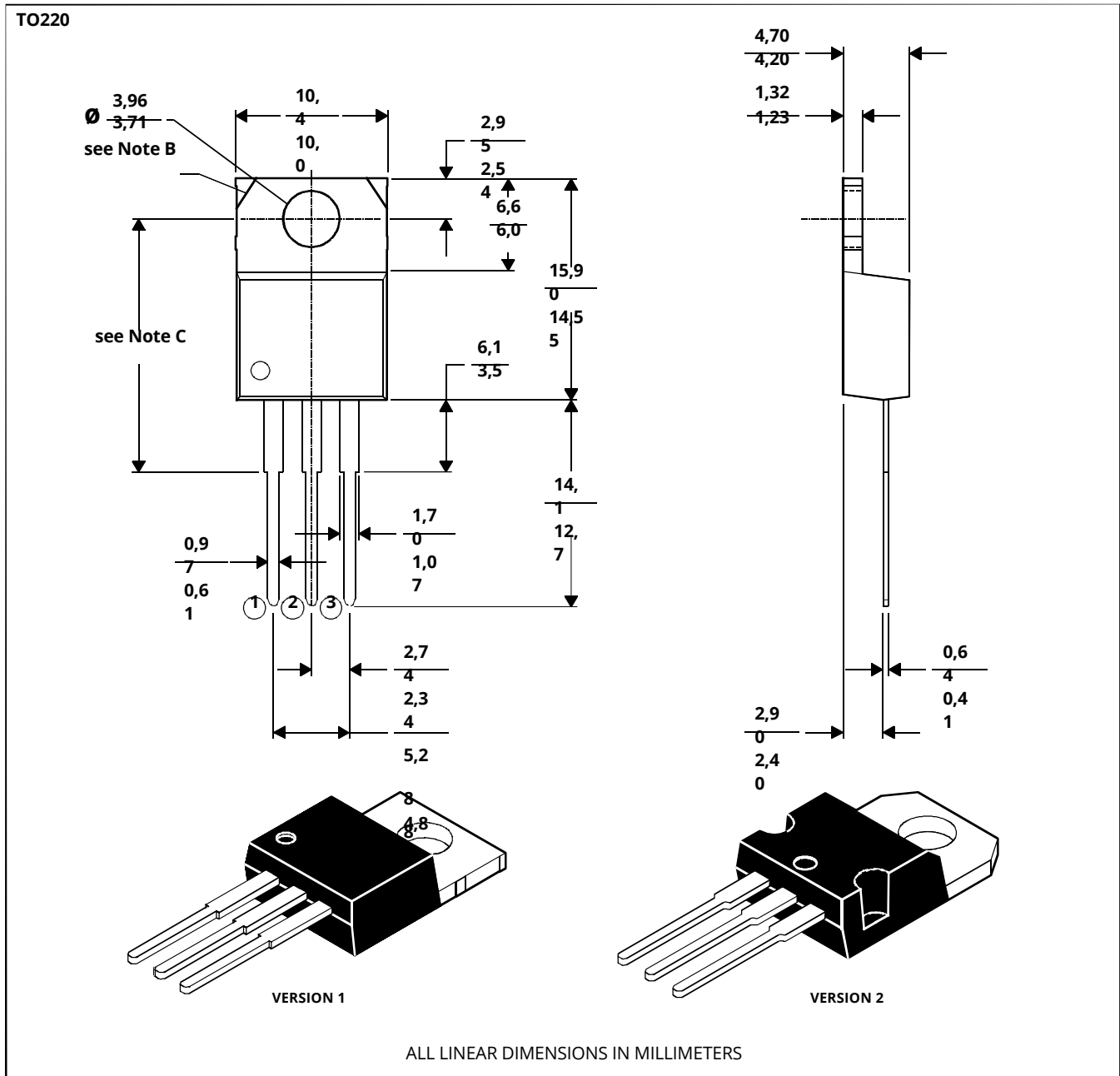
PRODUCT INFORMATION

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.

MDXXBE

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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