

Silicon PNP Darlington Power Transistors

TIP145/146/147

DESCRIPTION

- With TO-3PN package
- DARLINGTON
- High DC current gain
- Complement to type TIP140/141/142

APPLICATIONS

- Designed for general-purpose amplifier and low frequency switching applications.

PINNING

PIN	DESCRIPTION
1	Base
2	Collector;connected to mounting base
3	Emitter

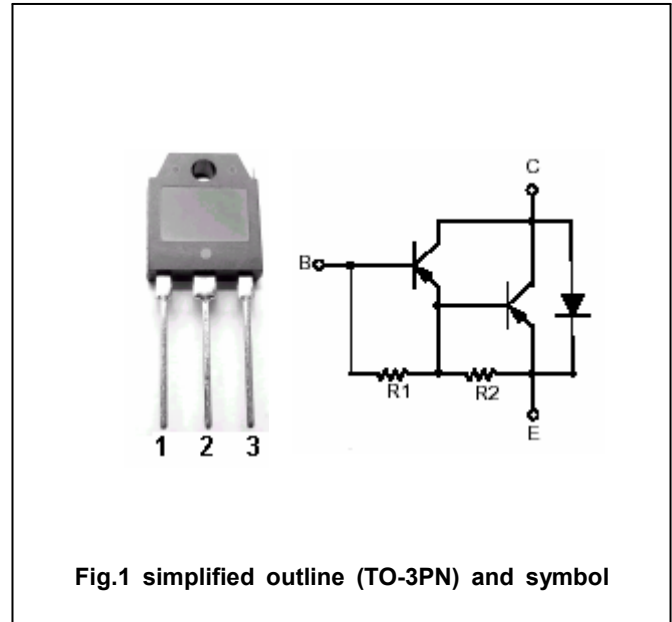


Fig.1 simplified outline (TO-3PN) and symbol

ABSOLUTE MAXIMUM RATINGS($T_C=25^\circ\text{C}$)

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	TIP145	-60	V
		TIP146	-80	
		TIP147	-100	
V_{CEO}	Collector-emitter voltage	TIP145	-60	V
		TIP146	-80	
		TIP147	-100	
V_{EBO}	Emitter-base voltage	Open collector	-5	V
I_C	Collector current-DC		-10	A
I_{CM}	Collector current-peak		-15	A
I_B	Base current-DC		-0.5	A
P_C	Collector power dissipation	$T_C=25^\circ\text{C}$	125	W
T_j	Junction temperature		150	$^\circ\text{C}$
T_{stg}	Storage temperature		-65~150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

SYMBOL	PARAMETER	MAX	UNIT
$R_{th\ j-c}$	Thermal resistance junction to case	1.0	$^\circ\text{C}/\text{W}$
$R_{th\ j-A}$	Thermal resistance case to ambient	35.7	$^\circ\text{C}/\text{W}$

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CHARACTERISTICS

T_j=25 °C unless otherwise specified

SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT	
V _{CEO(SUS)}	Collector-emitter sustaining voltage	TIP145	-60			V	
		TIP146	-80				
		TIP147	-100				
V _{CE(sat)-1}	Collector-emitter saturation voltage	I _C =-5A, I _B =-10mA			-2.0	V	
V _{CE(sat)-2}	Collector-emitter saturation voltage	I _C =-10A, I _B =-40mA			-3.0	V	
V _{BE(sat)}	Base-emitter saturation voltage	I _C =-10A, I _B =-40mA			-3.5	V	
V _{BE}	Base-emitter on voltage	I _C =-10A; V _{CE} =-4V			-3.0	V	
I _{CBO}	Collector cut-off current	TIP145	V _{CB} =-60V, I _E =0			-1	mA
		TIP146	V _{CB} =-80V, I _E =0				
		TIP147	V _{CB} =-100V, I _E =0				
I _{CEO}	Collector cut-off current	TIP145	V _{CE} =-30V, I _B =0			-2	mA
		TIP146	V _{CE} =-40V, I _B =0				
		TIP147	V _{CE} =-50V, I _B =0				
I _{EBO}	Emitter cut-off current	V _{EB} =-5V; I _C =0			-2	mA	
h _{FE-1}	DC current gain	I _C =-5A; V _{CE} =-4V	1000				
h _{FE-2}	DC current gain	I _C =-10A; V _{CE} =-4V	500				

Switching times

t _d	Delay time	V _{CC} = -30 V, I _C = -5.0 A, I _B = -20 mA ;Duty Cycle ≤ 20% I _{B1} = I _{B2} , R _C & R _B Varied, T _J = 25 °C		0.15		μs
t _r	Rise time			0.55		μs
t _{stg}	Storage time			2.5		μs
t _f	Fall time			2.5		μs

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PACKAGE OUTLINE

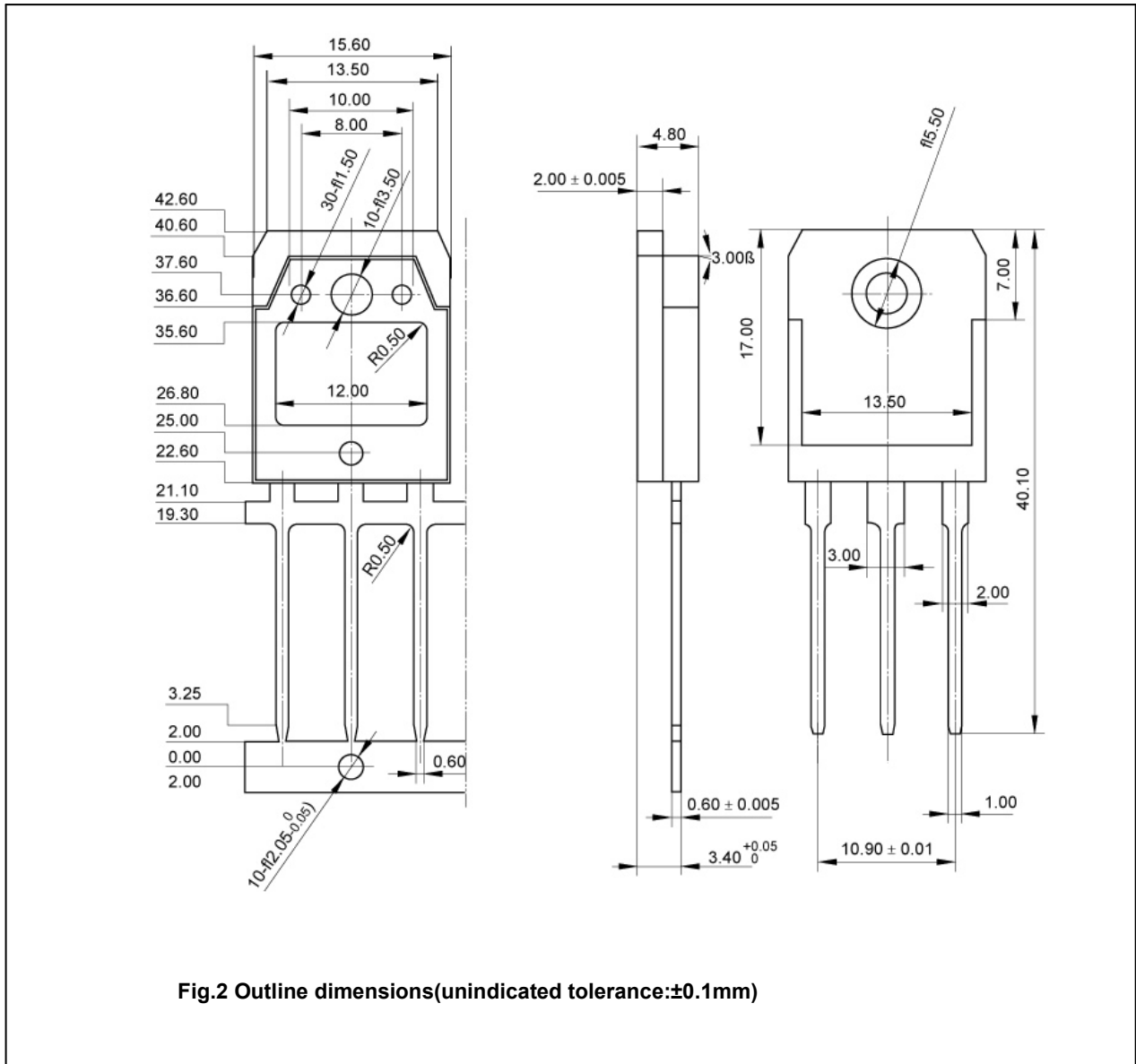


Fig.2 Outline dimensions(unindicated tolerance:±0.1mm)

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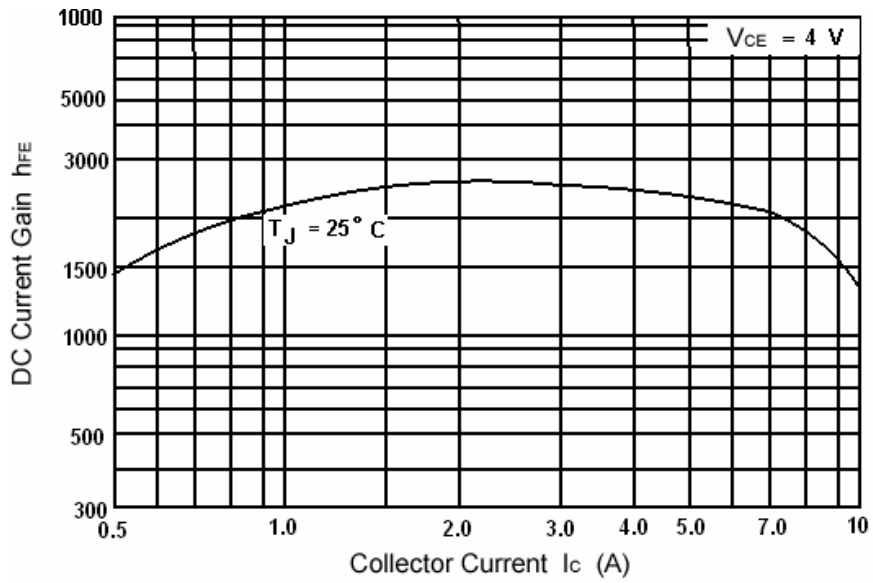


Fig.3 DC current Gain

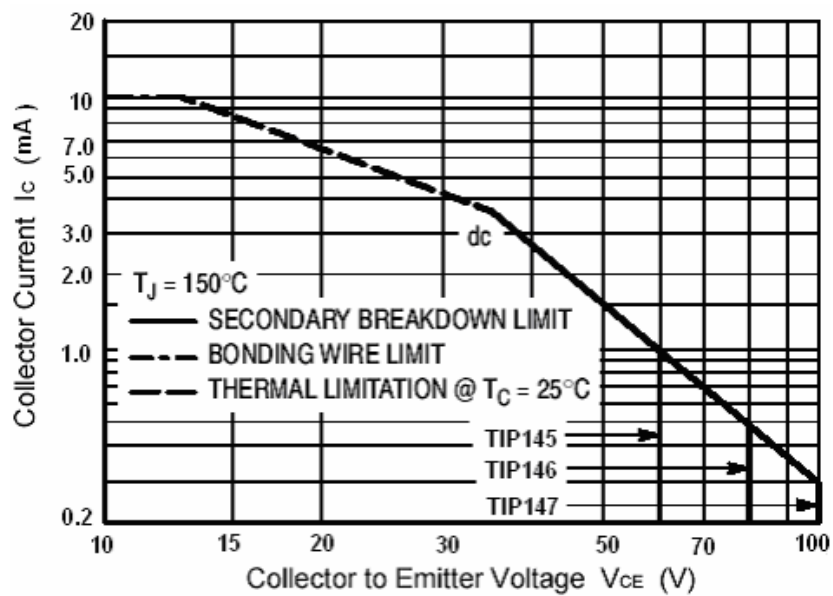


Fig.4 Safe Operating Area