

Silicon NPN Power Transistors

TIP160/161/162

DESCRIPTION

- With TO-3PN package
- DARLINGTON
- 10A rated continuous collector current

APPLICATIONS

- For use in automotive ignition, switching and motor control applications

PINNING

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

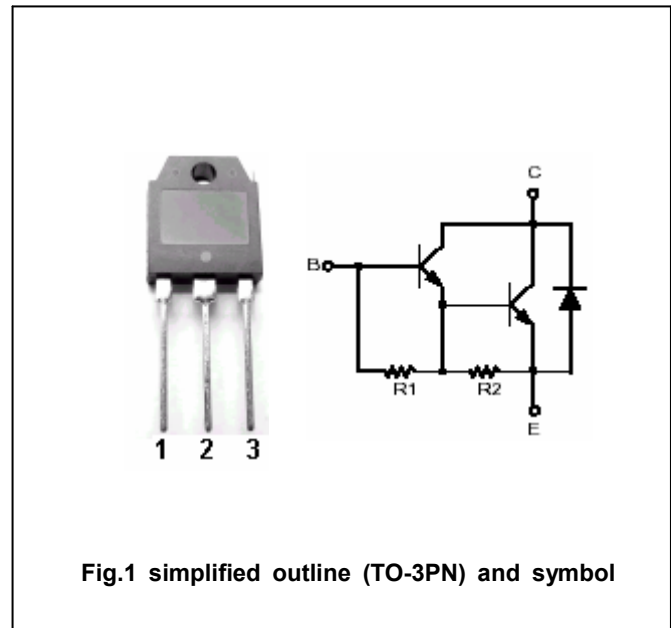


Fig.1 simplified outline (TO-3PN) and symbol

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

SYMBOL	PARAMETER	CONDITIONS	VALUE	UNIT
V_{CBO}	Collector-base voltage	TIP160	320	V
		TIP161	350	
		TIP162	380	
V_{CEO}	Collector-emitter voltage	TIP160	320	V
		TIP161	350	
		TIP162	380	
V_{EBO}	Emitter-base voltage	Open collector	5	V
I_C	Collector current-DC		10	A
I_{CM}	Collector current-Pulse		15	A
I_B	Base current-DC		1	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	$^\circ\text{C}/\text{W}$

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CHARACTERISTICS

T_j=25°C unless otherwise specified

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SYMBOL	PARAMETER	CONDITIONS	MIN	TYP.	MAX	UNIT
V _{(BR)CEO}	Collector-emitter breakdown voltage	TIP160	320			V
		TIP161	350			
		TIP162	380			
V _{CE(sat)-1}	Collector-emitter saturation voltage	I _C =6.5A, I _B =0.1A			2.8	V
V _{CE(sat)-2}	Collector-emitter saturation voltage	I _C =10A, I _B =1A			2.9	V
V _{BE(sat)}	Base-emitter saturation voltage	I _C =6.5A, I _B =0.1A			2.2	V
V _F	Diode forward voltage	I _F =10A			3.5	V
I _{CEO}	Collector cut-off current	TIP160			1.0	mA
		TIP161	V _{CE} =350V, I _B =0			
		TIP162	V _{CE} =380V, I _B =0			
I _{EBO}	Emitter cut-off current	V _{EB} =5V; I _C =0			100	mA
h _{FE}	DC current gain	I _C =4A; V _{CE} =2.2V	200			

Switching times

t _d	Delay time	V _{CC} = 33 V, I _C = 6.5 A, I _{B1} = -I _{B2} = 100 mA t _p = 20 μs ; Duty Cycles ≤ 2.0%		0.3		μs
t _r	Rise time			1.5		μs
t _s	Storage time			2.3		μs
t _f	Fall time			2.8		μs

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PACKAGE OUTLINE

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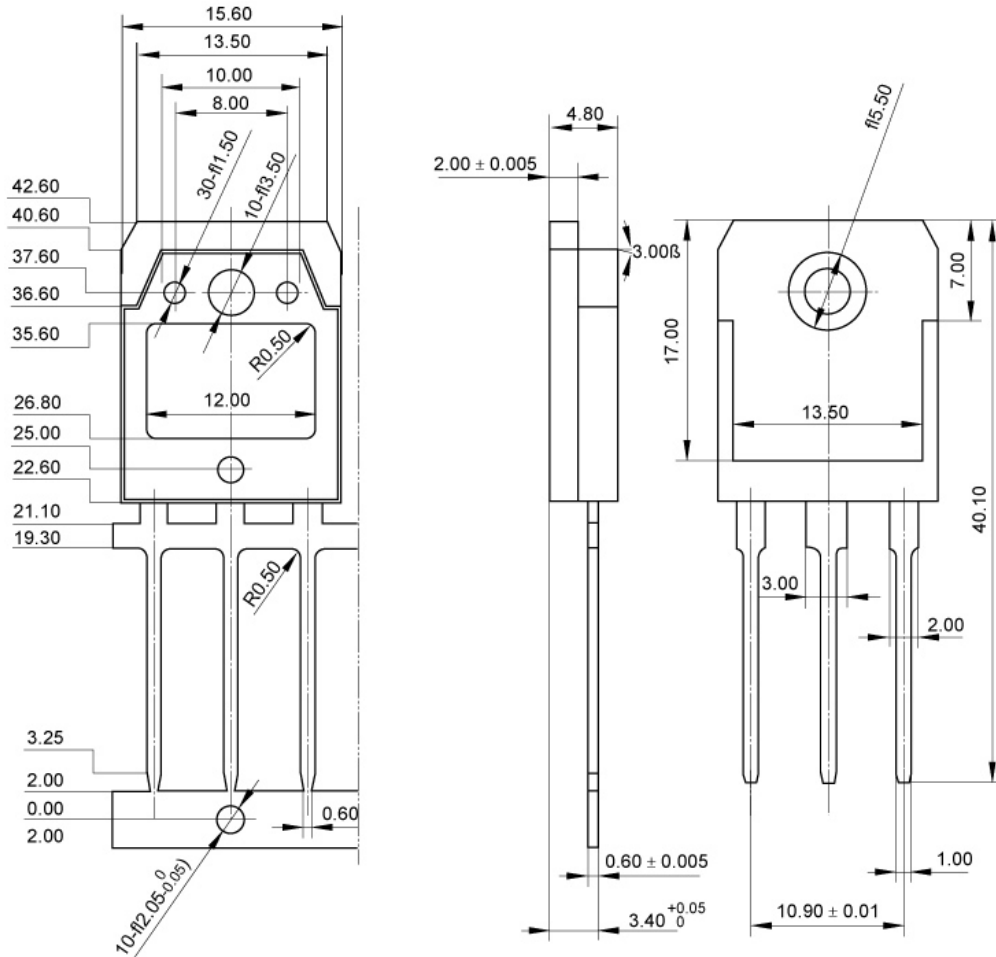


Fig.2 Outline dimensions(unindicated tolerance: ± 0.1 mm)