

Complementary power transistors

Features

- Low collector-emitter saturation voltage
- Complementary NPN PNP transistors

Applications

■ General purpose

Description

The devices are manufactured in epitaxial-base planar technology and are suitable for power linear and switching applications.

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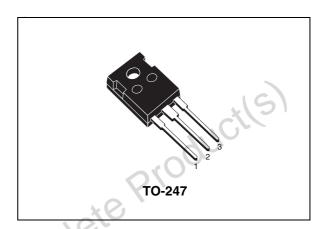


Figure 1. Internal schematic diagrams

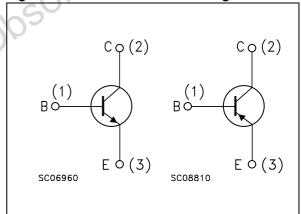


Table 1. Device summary

Order code	Marking	Package	Packaging
TIP33C	TIP33C	TO-247	Tube
TIP34C	TIP34C	10-247	Tube

Electrical ratings TIP34C

1 Electrical ratings

Table 2. Absolute maximum ratings

Symbol	Parameter		Value	Unit
		NPN	TIP33C	
		PNP	TIP34C	
V_{CBO}	Collector-base voltage (I _E = 0)	140	V	
V _{CES}	Collector-emitter voltage (V _{BE} = 0)		140	٧
V _{CEO}	Collector-emitter voltage (I _B = 0)		100	V
V _{EBO}	Emitter-base voltage (I _C = 0)	5	V	
I _C	Collector current	10	Α	
I _{CM}	Collector peak current (t _P < 5 ms)		15	Α
I _B	Base current	3	Α	
P _{TOT}	Total dissipation at T _{case} = 25 °C		80	W
T _{stg}	Storage temperature	-65 to 150	°C	
TJ	Max. operating junction temperature	150	°C	

For PNP type voltage and current values are negative.

Table 3. Thermal data

Sym	bol	Paramete	er	Value	Unit
R _{thj-}	case Thermal I	resistance junction-case	max	1.56	°C/W
	610				
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Obso					

2 Electrical characteristics

 $(T_{case} = 25 \, ^{\circ}C; \text{ unless otherwise specified})$

Table 4. Electrical characteristics

Symbol	Parameter	Test conditions	Min.	Тур.	Max.	Unit
I _{CES}	Collector cut-off current (V _{BE} = 0)	V _{CE} = 140 V			0.4	mA
I _{CEO}	Collector cut-off current (I _B = 0)	V _{CE} = 60 V			0.7	mA
I _{EBO}	Emitter cut-off current (I _C = 0)	V _{EB} = 5 V		(-11	mA
V _{CEO(sus)} ⁽¹⁾	Collector-emitter sustaining voltage (I _B = 0)	I _C = 30 mA	100	90		V
V _{CE(sat)} ⁽¹⁾	Collector-emitter saturation voltage	$I_C = 3 \text{ A}$ $I_B = 0.3 \text{ A}$ $I_C = 10 \text{ A}$ $I_B = 2.5 \text{ A}$			1 4	V V
V _{BE(on)} ⁽¹⁾	Base-emitter voltage	$I_C = 3 A$ $V_{CE} = 4 V$ $I_C = 10 A$ $V_{CE} = 4 V$			1.6 3	V V
h _{FE} ⁽¹⁾	DC current gain	$I_C = 1 \text{ A}$ $V_{CE} = 4 \text{ V}$ $I_C = 3 \text{ A}$ $V_{CE} = 4 \text{ V}$	40 20		100	
h _{fe}	Small signal current gain	$I_C = 0.5 \text{ A}$ $V_{CE} = 10 \text{ V}$ $f = 1 \text{ kHz}$	3			
fTO	Transition frequency	$I_C = 0.5 \text{ A}$ $V_{CE} = 10 \text{ V}$ $f = 1 \text{ MHz}$	3			MHz
t _{on}	Resistive load Turn-on time Storage time Fall time	$V_{CC} = 30 \text{ V}$ $I_{C} = 6 \text{ A}$ $I_{B1} = -I_{B2} = 0.6 \text{ A}$ $V_{BB} = -6 \text{ V}$ $I_{C} = 6 \text{ A}$ $I_{C} = 6 \text$		0.6 0.4 1		µs µs µs

^{1.} Pulsed duration = 300 ms, duty cycle \geq 1.5%.

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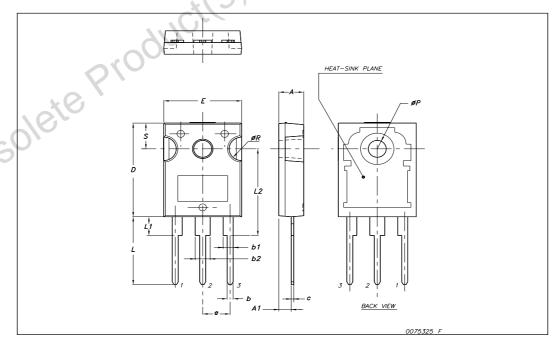
3 Package mechanical data

In order to meet environmental requirements, ST offers these devices in ECOPACK® packages. These packages have a Lead-free second level interconnect. The category of second level interconnect is marked on the package and on the inner box label, in compliance with JEDEC Standard JESD97. The maximum ratings related to soldering conditions are also marked on the inner box label. ECOPACK is an ST trademark. ECOPACK specifications are available at: Obsolete Product(s). www.st.com

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TO-247 Mechanical data

Dim.	mm.					
	Min.	Тур	Max.			
Α	4.85		5.15			
A1	2.20		2.60			
b	1.0		1.40			
b1	2.0		2.40			
b2	3.0		3.40			
С	0.40		0.80			
D	19.85		20.15			
E	15.45		15.75			
е		5.45				
L	14.20	10.1	14.80			
L1	3.70	-0/0	4.30			
L2		18.50				
øΡ	3.55	()A	3.65			
øR	4.50		5.50			
S	16	5.50				



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Revision history TIP34C

4 Revision history

Table 5. Document revision history

Date	Revision	Changes
01-Oct-1999	2	
20-Feb-2008	3	Package change from TO-218 to TO-247.

Obsolete Product(s). Obsolete Product(s)

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