



ELECTRONICS, INC.
44 FARRAND STREET
BLOOMFIELD, NJ 07003
(973) 748-5089
<http://www.nteinc.com>

TIP33A, TIP34A TIP33B, TIP34B TIP33C, TIP34C Silicon Complementary High-Power Transistors TO247 Type Package

Description:

The TIP33 (NPN) and TIP34 (PNP) series complementary high-power transistors are designed for use in general purpose power amplifier and switching applications.

Features:

- Collector-Emitter Sustaining Voltage:
 $V_{CEO(sus)} = 60V$ Min (TIP33A, TIP34A)
 $80V$ Min (TIP33B, TIP34B)
 $100V$ Min (TIP33C, TIP34C)
- DC Current Gain: $h_{FE} = 40$ Min @ $I_C = 1.0A$
- Current Gain-Bandwidth Product: $f_T = 3Mhz$ Min @ $I_C = 0.5A$

Absolute Maximum Ratings:

Collector-Emitter Voltage, V_{CEO}	
TIP33A, TIP34A	60V
TIP33B, TIP34B	80V
TIP33C, TIP34C	100V
Collector-Base Voltage, V_{CBO}	
TIP33A, TIP34A	60V
TIP33B, TIP34B	80V
TIP33C, TIP34C	100V
Emitter-Base Voltage, V_{EBO}	5V
Collector Current, I_C	
Continuous	10A
Peak	15A
Base Current, I_B	3A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	80W
Derate Above $+25^\circ C$	0.64W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.56 $^\circ C/W$

Electrical Characteristics: ($T_C = +25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Sustaining Voltage TIP33A, TIP34A	V _{CEO(sus)}	I _C = 30mA, I _B = 0, Note 1	60	–	–	V
TIP33B, TIP34B			80	–	–	V
TIP33C, TIP34C			100	–	–	V
Collector Cutoff Current TIP33A, TIP34A	I _{CEO}	V _{CE} = 30V, I _B = 0	–	–	0.7	mA
TIP33B, TIP34B, TIP33C, TIP34C		V _{CE} = 60V, I _B = 0	–	–	0.7	mA
Collector Cutoff Current TIP33A, TIP34A	I _{CES}	V _{CE} = 60V, V _{EB} = 0	–	–	0.4	mA
TIP33B, TIP34B		V _{CE} = 80V, V _{EB} = 0	–	–	0.4	mA
TIP33C, TIP34C		V _{CE} = 100V, V _{EB} = 0	–	–	0.4	mA
Emitter Cutoff Current	I _{EBO}	V _{EB} = 5V, I _C = 0	–	–	1.0	mA
ON Characteristics (Note 1)						
DC Current Gain	h _{FE}	V _{CE} = 4V, I _B = 1.0A	40	–	–	
		V _{CE} = 4V, I _B = 3.0A	20	–	100	
Collector-Emitter Saturation Voltage	V _{CE(sat)}	I _C = 3A, I _B = 0.3A	–	–	1.0	V
		I _C = 10A, I _B = 2.5A	–	–	4.0	V
Base-Emitter ON Voltage	V _{BE(on)}	I _C = 3A, V _{CE} = 4V	–	–	1.6	V
		I _C = 10A, V _{CE} = 4V	–	–	3.0	V
Dynamic Characteristics						
Current Gain-Bandwidth Product	f _T	I _C = 0.5A, V _{CE} = 10V, f _{TEST} = 1Mhz, Note 2	3.0	–	–	MHz
Small Signal Current Gain	h _{fe}	I _C = 0.5A, V _{CE} = 10V, f = 1kHz	20	–	–	

Note 1. Pulse Test: Pulse width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.

Note 2. $f_T = |h_{fe}| \bullet f_{TEST}$

