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**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, $T_J$ .....	$-65^\circ$ to $+150^\circ C$
Storage Temperature Range, $T_{stg}$ .....	$-65^\circ$ 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
<b>OFF Characteristics</b>						
Collector-Emitter Sustaining Voltage TIP33A, TIP34A	$V_{CE(sus)}$	$I_C = 30\text{mA}, I_B = 0$ , Note 1	60	-	-	V
TIP33B, TIP34B			80	-	-	V
TIP33C, TIP34C			100	-	-	V
Collector Cutoff Current TIP33A, TIP34A	$I_{CEO}$	$V_{CE} = 30\text{V}, I_B = 0$	-	-	0.7	mA
TIP33B, TIP34B, TIP33C, TIP34C		$V_{CE} = 60\text{V}, I_B = 0$	-	-	0.7	mA
Collector Cutoff Current TIP33A, TIP34A	$I_{CES}$	$V_{CE} = 60\text{V}, V_{EB} = 0$	-	-	0.4	mA
TIP33B, TIP34B		$V_{CE} = 80\text{V}, V_{EB} = 0$	-	-	0.4	mA
TIP33C, TIP34C		$V_{CE} = 100\text{V}, V_{EB} = 0$	-	-	0.4	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}, I_C = 0$	-	-	1.0	mA
<b>ON Characteristics (Note 1)</b>						
DC Current Gain	$h_{FE}$	$V_{CE} = 4\text{V}, I_B = 1.0\text{A}$	40	-	-	
		$V_{CE} = 4\text{V}, I_B = 3.0\text{A}$	20	-	100	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 3\text{A}, I_B = 0.3\text{A}$	-	-	1.0	V
		$I_C = 10\text{A}, I_B = 2.5\text{A}$	-	-	4.0	V
Base-Emitter ON Voltage	$V_{BE(on)}$	$I_C = 3\text{A}, V_{CE} = 4\text{V}$	-	-	1.6	V
		$I_C = 10\text{A}, V_{CE} = 4\text{V}$	-	-	3.0	V
<b>Dynamic Characteristics</b>						
Current Gain-Bandwidth Product	$f_T$	$I_C = 0.5\text{A}, V_{CE} = 10\text{V}, f_{TEST} = 1\text{MHz}$ , Note 2	3.0	-	-	MHz
Small Signal Current Gain	$h_{fe}$	$I_C = 0.5\text{A}, V_{CE} = 10\text{V}, f = 1\text{kHz}$	20	-	-	

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

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

