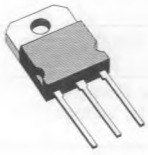
SGS-THOMSON
MICROELECTRONICS

TIP33A/B/C
TIP34A/B/C

NPN MEDIUM POWER TRANSISTORS

ADVANCE DATA

- 10A RATED COLLECTOR CURRENT
- HIGH SPEED SWITCHING



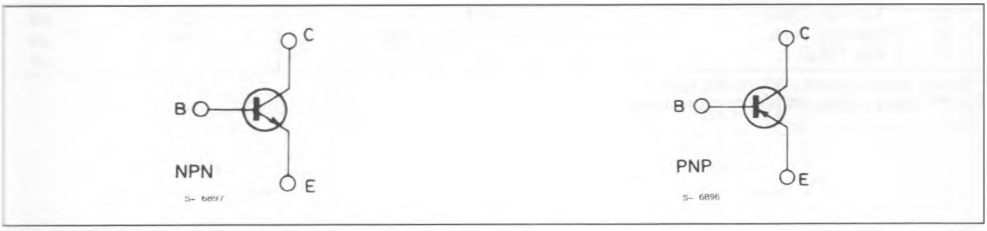
TO-218

DESCRIPTION

The TIP33A, TIP33B and TIP33C are silicon epitaxial base NPN power transistors in TO-218 plastic package intended for use in linear and switching applications.

The complementary PNP types are TIP34A, TIP34B and TIP34C respectively.

INTERNAL SCHEMATIC DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	NPN PNP	Value			Unit
			TIP33A TIP34A	TIP33B TIP34B	TIP33C TIP34C	
V_{CBO}	Collector-base Voltage	$I_E = 0$	100	120	140	V
V_{CES}	Collector-emitter Voltage	$V_{BE} = 0$	100	120	140	V
V_{CEO}	Collector-emitter Voltage	$I_B = 0$	60	80	100	V
V_{EBO}	Emitter-base Voltage	$I_C = 0$	7			V
I_C	Collector Current		10			A
I_{CM}	Collector Peak Current t_p < ?ms		12			A
I_B	Base Current		3			A
P_{tot}	Total Dissipation at T_c < 25°C		80			W
T_{stg}	Storage Temperature		– 65 to 150			°C
T_j	Max. Operating Junction Temperature		150			°C

For PNP types voltage and current values are negative.

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-case	max	1.56	C/W

ELECTRICAL CHARACTERISTICS (T_{case} = 25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CES}	Collector Cutoff Current (V_{BE} = 0)	V_{CE} = 100V for **TIP33A/34A** V_{CE} = 120V for **TIP33B/34B** V_{CE} = 140V for **TIP33C/34C**			400 400 400	µA µA µA
I_{CEO}	Collector Cutoff Current (I_B = 0)	V_{CE} = 30V for **TIP33A/34A** V_{CE} = 60V for **TIP33B/34B** V_{CE} = 60V for **TIP33C/34C**			0.7 0.7 0.7	mA mA mA
I_{EBO}	Emitter Cutoff Current (I_C = 0)	V_{EB} = 5V			1	mA
$V_{CEO(sus)}$*	Collector Emitter Sustaining Voltage	I_C = 30mA for **TIP33A/34A** for **TIP33B/34B** for **TIP33C/34C**	60 80 100			V V V
$V_{CE(sat)}$*	Collector-emitter Saturation Voltage	I_C = 3A I_B = 0.3A I_C = 10A I_B = 2.5A			1 4	V V
$V_{BE(on)}$*	Base-emitter Voltage	I_C = 3A V_{CE} = 4V I_C = 10A V_{CE} = 4V			1.6 3	V V
h_{FE}*	DC Current Gain	I_C = 1A V_{CE} = 4V I_C = 3A V_{CE} = 4V	40 20		 100	
h_{fe}	Small Signal Current Gain	I_C = 0.5A V_{CE} = 10V f = 1KHz	20			
f_T	Transition Frequency	I_C = 0.5A V_{CE} = 10V f = 1MHz	3			MHz
	RESISTIVE LOAD					
t_{on}	Turn-on Time	V_{CC} = 30V I_C = 6A		0.6		µs
t_s	Storage Time	V_{BB} = − 6V I_{B1} = − I_{B2} = 0.6A		0.4		µs
t_f	Fall Time	t_p = 20µs		1		µs

* Pulsed : pulse duration = 300µs, duty cycle = 1.5%.
For PNP types voltage and current values are negative.