

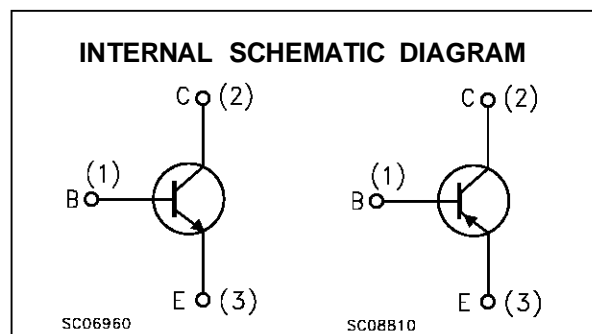
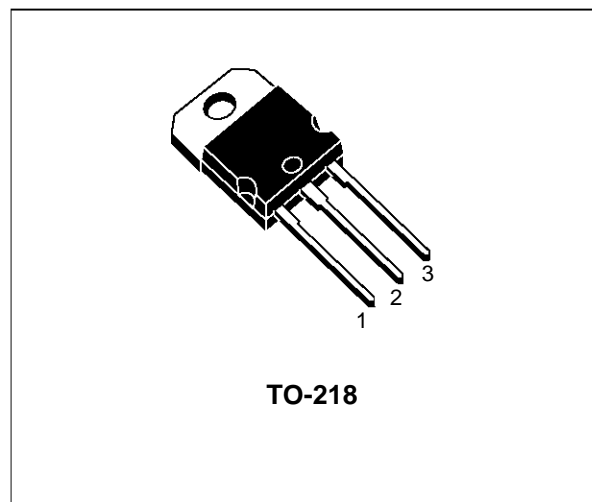
## COMPLEMENTARY SILICON POWER TRANSISTORS

■ SGS-THOMSON PREFERRED SALESTYPES

**DESCRIPTION**

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

The complementary PNP types is TIP34C.



**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	V
$V_{CEO}$	Collector-Emitter Voltage ( $I_B = 0$ )		100	V
$V_{EBO}$	Emitter-Base Voltage ( $I_C = 0$ )		7	V
$I_C$	Collector Current		10	A
$I_{CM}$	Collector Peak Current		12	A
$I_B$	Base Current		3	A
$P_{tot}$	Total Dissipation at $T_c \leq 25^\circ C$		80	W
$T_{stg}$	Storage Temperature		-65 to 150	$^\circ C$
$T_j$	Max. Operating Junction Temperature		150	$^\circ C$

## TIP33C/TIP34C

### THERMAL DATA

$R_{thj-case}$	Thermal Resistance Junction-case	Max	1.56	$^{\circ}\text{C}/\text{W}$
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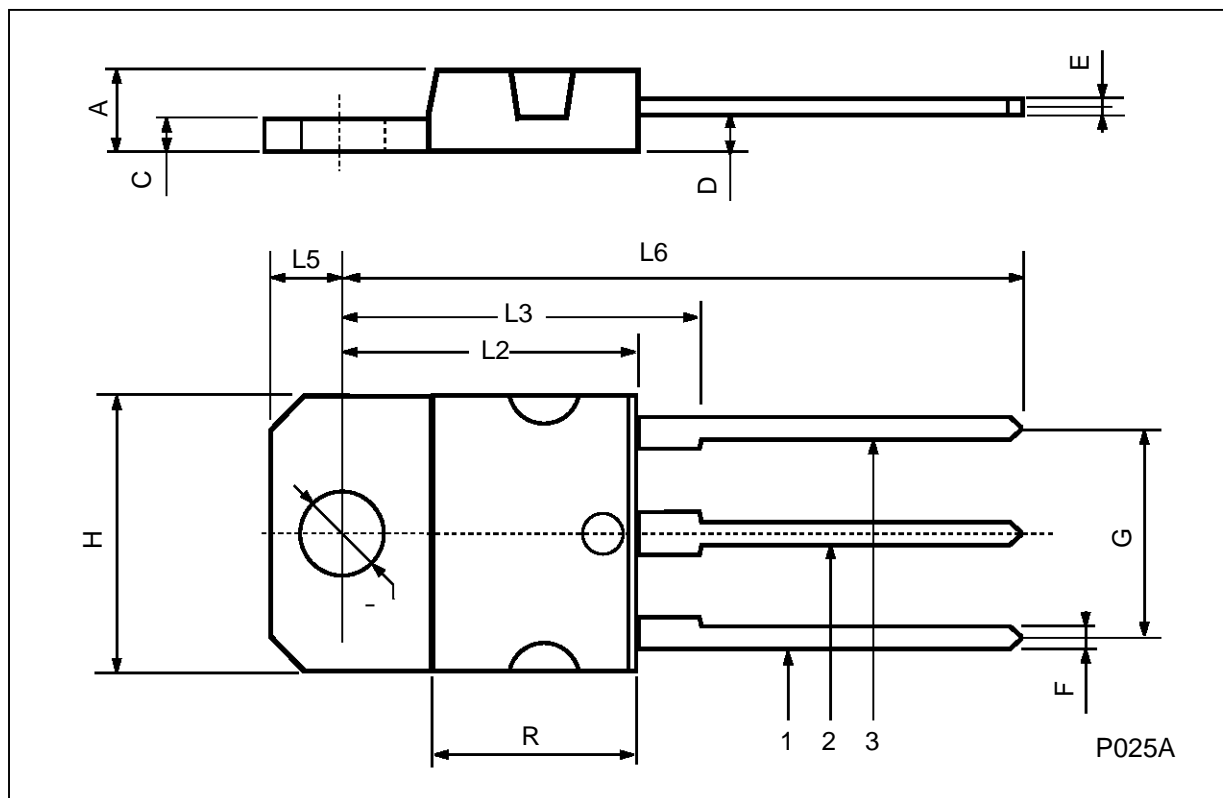
### ELECTRICAL CHARACTERISTICS ( $T_{case} = 25^{\circ}\text{C}$ unless otherwise specified)

Symbol	Parameter	Test Conditions		Min.	Typ.	Max.	Unit
$I_{CES}$	Collector Cut-off Current ( $V_{BE} = 0$ )	$V_{CE} = 140\text{ V}$				400	$\mu\text{A}$
$I_{CEO}$	Collector Cut-off Current ( $I_B = 0$ )	$V_{CE} = 60\text{ V}$				0.7	mA
$I_{EBO}$	Emitter Cut-off Current ( $I_C = 0$ )	$V_{EB} = 5\text{ V}$				1	mA
$V_{CEO(sus)}^*$	Collector-Emitter Sustaining Voltage	$I_C = 30\text{ mA}$		100			V
$V_{CE(sat)}^*$	Collector-Emitter Saturation Voltage	$I_C = 3\text{ A}$	$I_B = 0.3\text{ A}$			1	V
		$I_C = 10\text{ A}$	$I_B = 2.5\text{ A}$			4	V
$V_{BE(on)}^*$	Base-Emitter Voltage	$I_C = 3\text{ A}$	$V_{CE} = 4\text{ V}$			1.6	V
		$I_C = 10\text{ A}$	$V_{CE} = 4\text{ V}$			3	V
$h_{FE}^*$	DC Current Gain	$I_C = 1\text{ A}$	$V_{CE} = 4\text{ V}$	40			
		$I_C = 3\text{ A}$	$V_{CE} = 4\text{ V}$	20		100	
$h_{fe}$	Small Signal Current Gain	$I_C = 0.5\text{ A}$ $f = 1\text{ MHz}$	$V_{CE} = 10\text{ V}$	20			
$f_T$	Transition frequency	$I_C = 0.5\text{ A}$ $f = 1\text{ MHz}$	$V_{CE} = 10\text{ V}$	3			MHz
$t_{on}$ $t_s$ $t_f$	RESISTIVE LOAD						
	Turn-on Time	$V_{CC} = 30\text{ V}$	$I_C = 6\text{ A}$		0.6		$\mu\text{s}$
	Storage Time	$V_{BB} = -6\text{ V}$	$I_{B1} = -I_{B2} = 0.6\text{ A}$		0.4		$\mu\text{s}$
	Fall Time	$t_p = 20\text{ }\mu\text{s}$			1		$\mu\text{s}$

\* Pulsed: Pulse duration = 300  $\mu\text{s}$ , duty cycle 1.5 %  
For PNP types voltage and current values are negative.

## TO-218 (SOT-93) MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	4.7		4.9	0.185		0.193
C	1.17		1.37	0.046		0.054
D		2.5			0.098	
E	0.5		0.78	0.019		0.030
F	1.1		1.3	0.043		0.051
G	10.8		11.1	0.425		0.437
H	14.7		15.2	0.578		0.598
L2	–		16.2	–		0.637
L3		18			0.708	
L5	3.95		4.15	0.155		0.163
L6		31			1.220	
R	–		12.2	–		0.480
∅	4		4.1	0.157		0.161



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