

COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

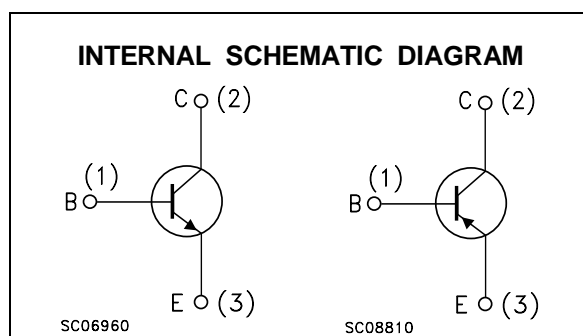
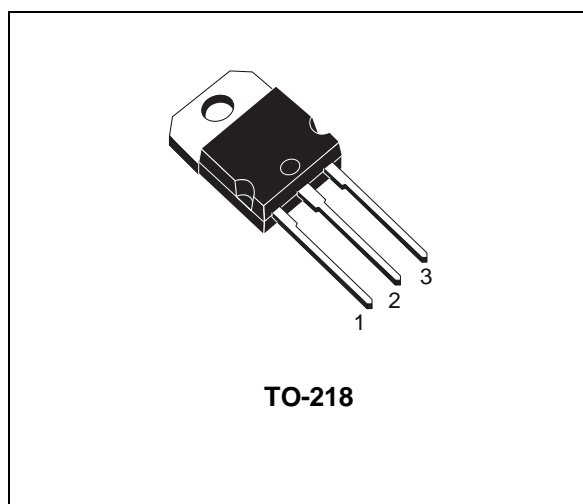
APPLICATIONS

- GENERAL PURPOSE SWITCHING

DESCRIPTION

The TIP33C is a silicon Epitaxial-Base NPN power transistor mounted in TO-218 plastic package. It is intended for use in linear and switching applications.

The complementary PNP type 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 $T_c \leq 25^\circ\text{C}$		80	W
T_{stg}	Storage Temperature		-65 to 150	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature		150	$^\circ\text{C}$

For PNP types voltage and current values are negative.

TIP33C / TIP34C

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-case	Max	1.56	°C/W
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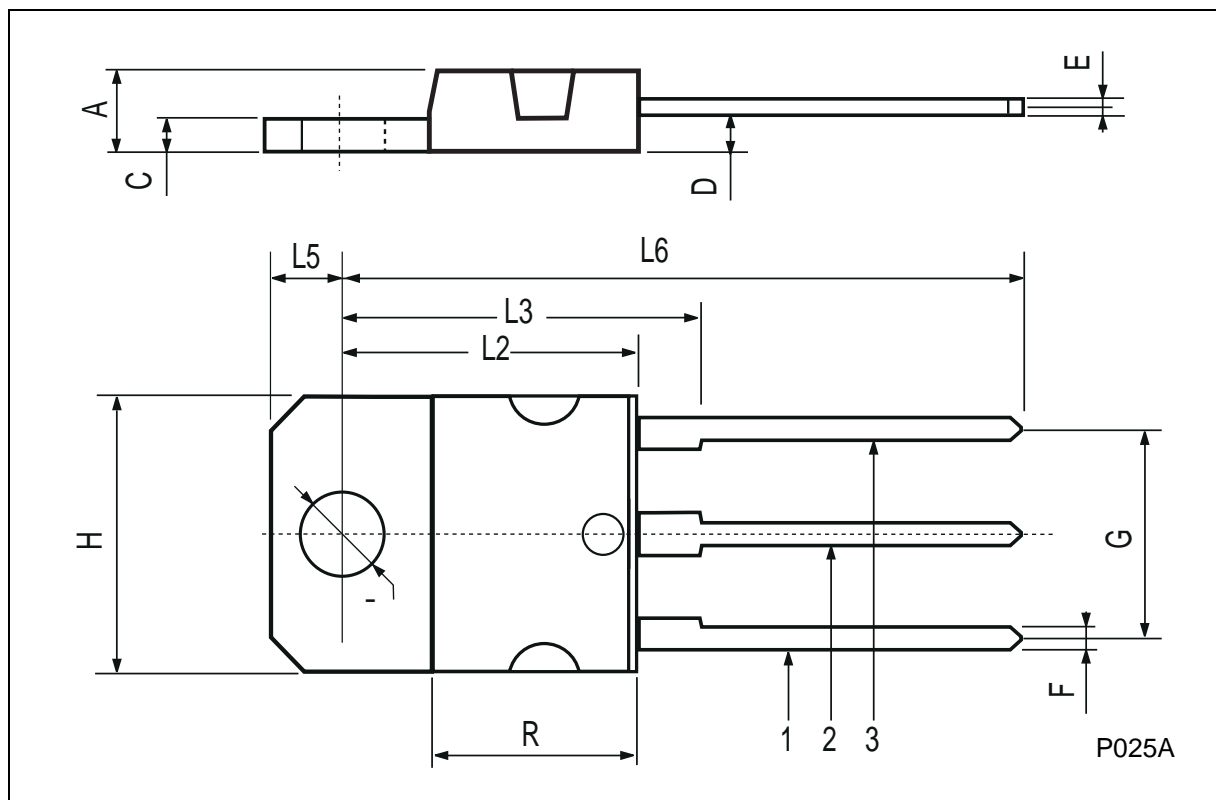
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I _{CES}	Collector Cut-off Current (V _{BE} = 0)	V _{CE} = 140 V			400	μA
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			1	mA
V _{CEO(sus)*}	Collector-Emitter Sustaining Voltage (I _B = 0)	I _C = 30 mA	100			V
V _{CE(sat)*}	Collector-Emitter Saturation Voltage	I _C = 3 A I _C = 10 A	I _B = 0.3 A I _B = 2.5 A		1 4	V V
V _{BE(on)*}	Base-Emitter Voltage	I _C = 3 A I _C = 10 A	V _{CE} = 4 V V _{CE} = 4 V		1.6 3	V V
h _{FE} *	DC Current Gain	I _C = 1 A I _C = 3 A	V _{CE} = 4 V V _{CE} = 4 V	40 20		100
h _{fe}	Small Signal Current Gain	I _C = 0.5 A f = 1 KHz	V _{CE} = 10 V	20		
f _T	Transition frequency	I _C = 0.5 A f = 1 MHz	V _{CE} = 10 V	3		MHz
t _{on} t _s t _f	RESISTIVE LOAD Turn-on Time Storage Time Fall Time	V _{CC} = 30V V _{BB} = - 6 V t _p = 20 μs	I _C = 6 A I _{B1} = - I _{B2} = 0.6 A		0.6 0.4 1	μs μs μs

* Pulsed: Pulse duration = 300 μs, duty cycle 1.5 %

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
Ø	4		4.1	0.157		0.161



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