

COMPLEMENTARY SILICON POWER TRANSISTORS

- STMicroelectronics PREFERRED SALESTYPES
- COMPLEMENTARY PNP - NPN DEVICES

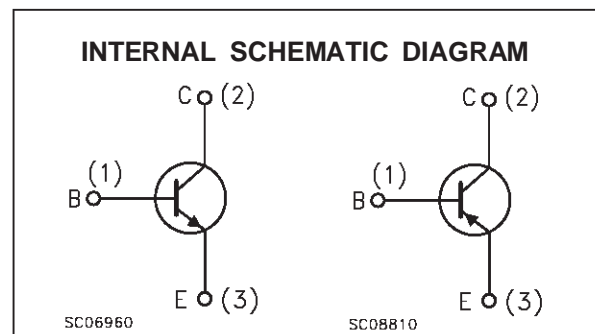
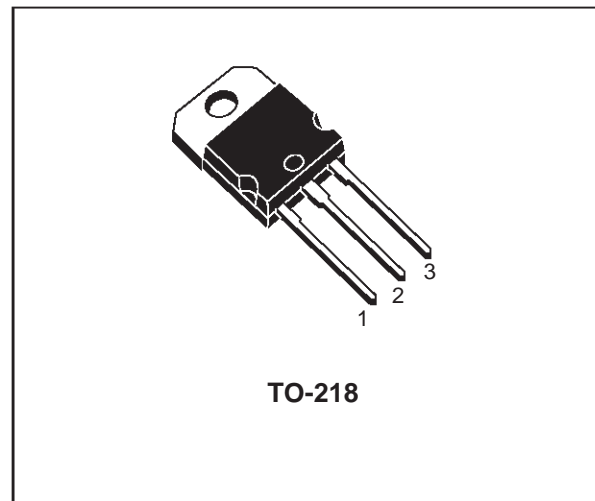
APPLICATIONS

- 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
-----------------------	----------------------------------	-----	------	------

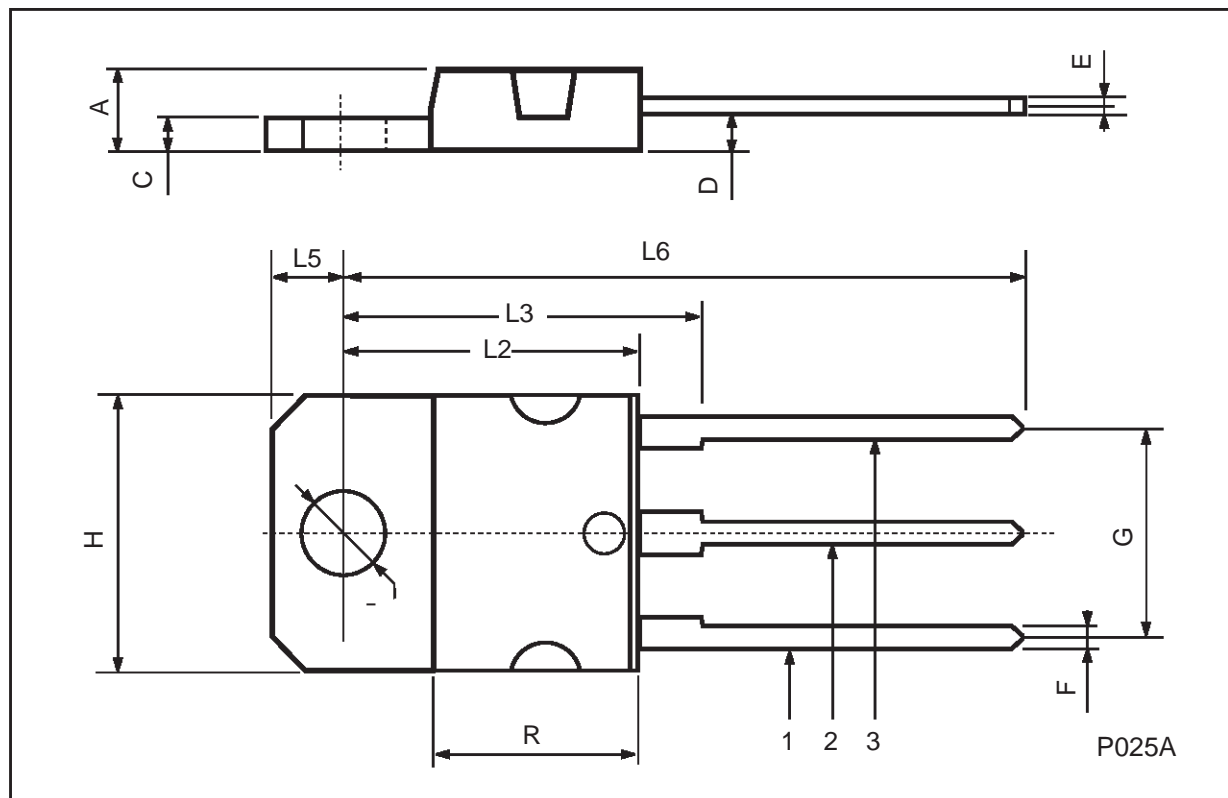
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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



Information furnished is believed to be accurate and reliable. However, STMicroelectronics assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of STMicroelectronics. Specification mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. STMicroelectronics products are not authorized for use as critical components in life support devices or systems without express written approval of STMicroelectronics.

The ST logo is a trademark of STMicroelectronics

© 1999 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - China - Finland - France - Germany - Hong Kong - India - Italy - Japan - Malaysia - Malta - Morocco -
Singapore - Spain - Sweden - Switzerland - United Kingdom - U.S.A.

<http://www.st.com>