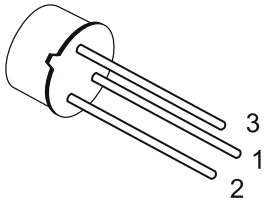
2N4033

SMALL SIGNAL PNP TRANSISTOR

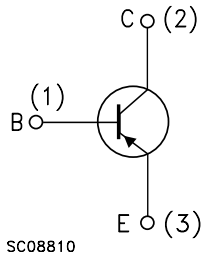
DESCRIPTION

The 2N4033 is a silicon Planar Epitaxial PNP transistor in Jedec TO-39 metal case primary intended for large signal, low noise industrial applications.



TO-39

INTERNAL SCHEMATIC DIAGRAM



Obsolete Product(s) - Obsolete Product(s)

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CBO}	Collector-Base Voltage (I_E = 0)	-80	V
V_{CEO}	Collector-Emitter Voltage (I_B = 0)	-80	V
V_{EBO}	Emitter-Base Voltage (I_C = 0)	-5	V
I_C	Collector Current	-1	A
P_{tot}	Total Dissipation at $T_{amb} \leq 45\ ^oC$ at $T_C \leq 45\ ^oC$	0.8 4	W W
T_{stg}	Storage Temperature	-55 to 175	^oC
T_j	Max. Operating Junction Temperature	175	^oC

www.BDTIC.com/ST

THERMAL DATA

$R_{thj\text{-}case}$	Thermal Resistance Junction-Case	Max	37.5	°C/W
$R_{thj\text{-}amb}$	Thermal Resistance Junction-Ambient	Max	187.5	°C/W

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

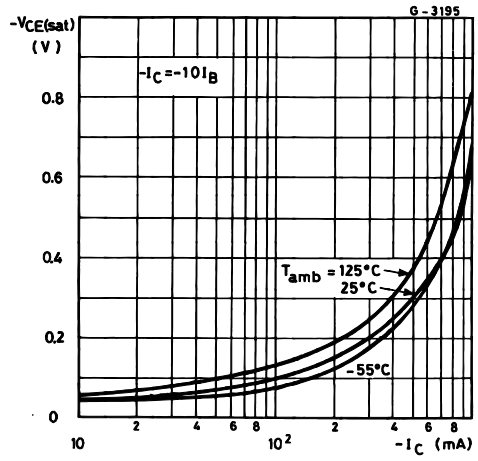
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	Collector Cut-off Current (I_E = 0)	V_{CE} = -60 V V_{CE} = -60 V T_C = 150 °C			-50 -50	nA µA
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage (I_E = 0)	I_C = -10 µA	-80			V
$V_{(BR)CEO}$*	Collector-Emitter Breakdown Voltage (I_B = 0)	I_C = -10 mA	-80			V
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage (I_C = 0)	I_E = -10 µA	-5			V
$V_{CE(sat)}$*	Collector-Emitter Saturation Voltage	I_C = -150 mA I_B = -15 mA I_C = -500 mA I_B = -50 mA			-0.15 -0.5	V V
$V_{BE(sat)}$*	Base-Emitter Saturation Voltage	I_C = -150 mA I_B = -15 mA I_C = -500 mA I_B = -50 mA			-0.9 -1.1	V V
h_{FE}*	DC Current Gain	I_C = -100 µA V_{CE} = -5 V I_C = -100 mA V_{CE} = -5 V I_C = -500 mA V_{CE} = -5 V I_C = -1 A V_{CE} = -5 V I_C = -100 mA V_{CE} = -5 V T_{amb} = -55 °C	75 100 70 25 40		300	
f_T	Transition Frequency	I_C = -50 mA V_{CE} = -10 V f = 100 MHz	150		500	MHz
C_{EBO}	Emitter-Base Capacitance	I_E = 0 V_{EB} = -0.5 V f = 1MHz			110	pF
C_{CBO}	Collector-Base Capacitance	I_C = 0 V_{CB} = -10 V f = 1MHz			20	pF
t_s**	Storage Time	I_C = -500 mA V_{CC} = -30 V I_{B1} = -I_{B2} = -50 mA			350	ns
t_f**	Fall Time	I_C = -500 mA V_{CC} = -30 V I_{B1} = -I_{B2} = -50 mA			50	ns
t_{on}**	Turn-on Time	I_C = -500 mA V_{CC} = -30 V I_{B1} = -I_{B2} = -50 mA			100	ns

* Pulsed: Pulse duration = 300 µs, duty cycle ≤ 1 %
** See Test Circuit

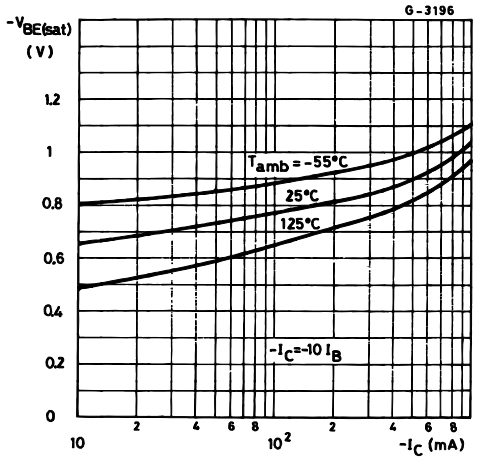
Obsolete Product(s) - Obsolete Product(s)

www.BDTIC.com/ST

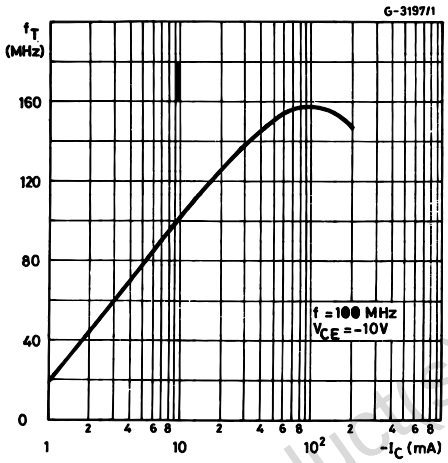
Collector Emitter Saturation Voltage.



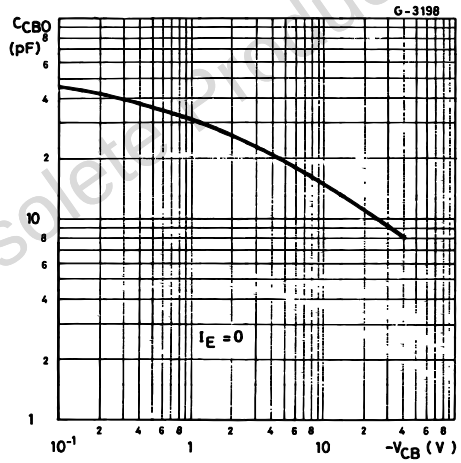
Base Emitter Saturation Voltage.



Transition Frequency.



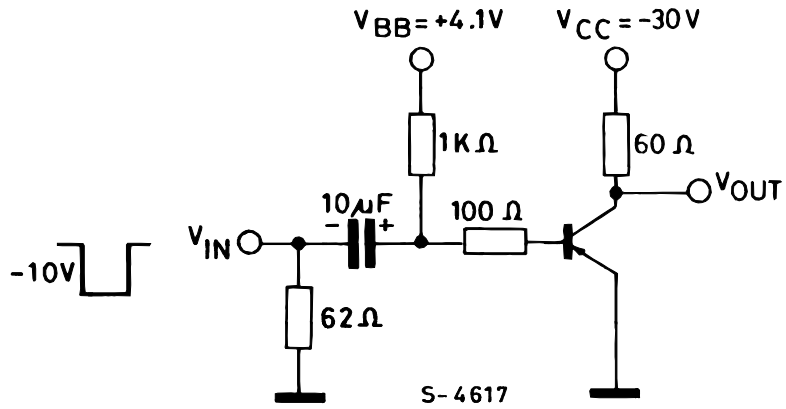
Collector Base Capacitance.



Obsolete Product(s) - Obsolete Product(s)

www.BDTIC.com/ST

Test Circuit for t_{on}, t_s, t_f.



PULSE GENERATOR :
t_r, t_f < 20 ns
PW = 1.0 µs
Z_{IN} = 50 Ω
DC < 2 %

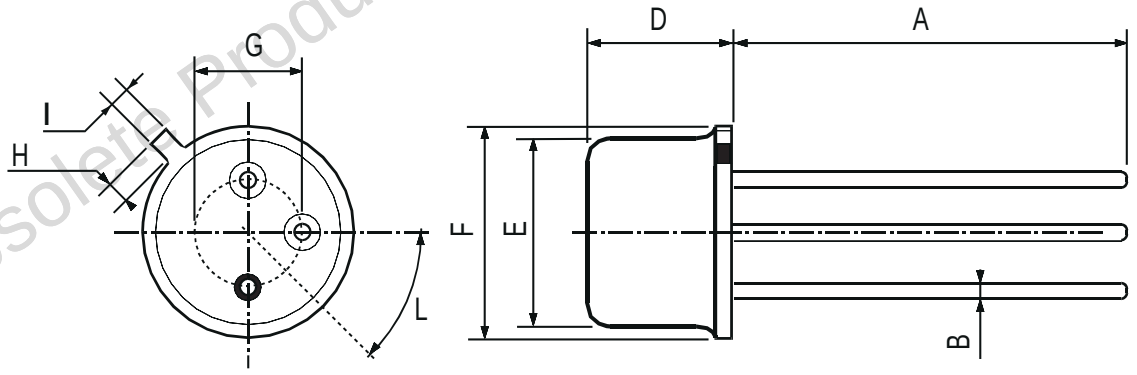
TO OSCILLOSCOPE :
t_r ≈ 10 ns
Z_{IN} > 100 KΩ

Obsolete Product(s) - Obsolete Product(s)

www.BDTIC.com/ST

TO-39 MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A	12.7			0.500		
B			0.49			0.019
D			6.6			0.260
E			8.5			0.334
F			9.4			0.370
G	5.08			0.200		
H			1.2			0.047
I			0.9			0.035
L	45^{o} (typ.)					



P008B

Obsolete Product(s) - Obsolete Product(s)

www.BDTIC.com/ST

Obsolete Product(s) - Obsolete Product(s)

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

© 2002 STMicroelectronics – Printed in Italy – All Rights Reserved

STMicroelectronics GROUP OF COMPANIES

Australia - Brazil - Canada - China - Finland - France - Germany - Hong Kong - India - Israel - Italy - Japan - Malaysia - Malta - Morocco - Singapore - Spain - Sweden - Switzerland - United Kingdom - United States.

http://www.st.com

www.BDTIC.com/ST