

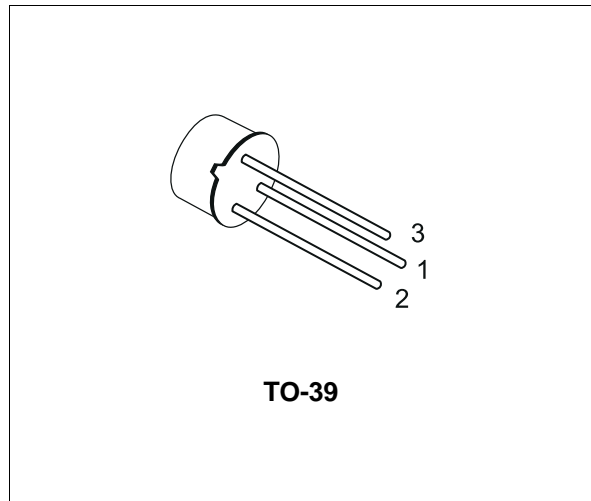


2N4033

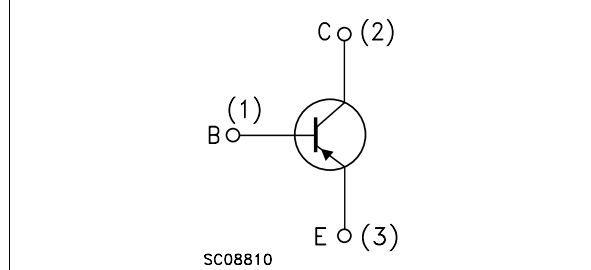
SMALL SIGNAL PNP TRANSISTOR

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.



INTERNAL SCHEMATIC DIAGRAM



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 $T_{amb} \leq 45\text{ }^\circ\text{C}$ at $T_C \leq 45\text{ }^\circ\text{C}$	0.8 4	W W
T_{stg}	Storage Temperature	-55 to 175	$^\circ\text{C}$
T_j	Max. Operating Junction Temperature	175	$^\circ\text{C}$

THERMAL DATA

R _{thj-case}	Thermal Resistance Junction-Case	Max	37.5	°C/W
R _{thj-amb}	Thermal Resistance Junction-Ambient	Max	187.5	°C/W

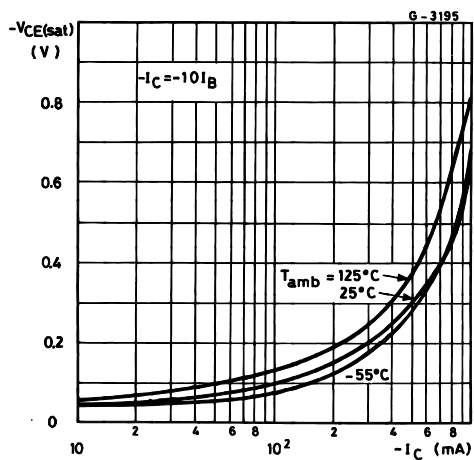
ELECTRICAL CHARACTERISTICS (T_{case} = 25 °C unless otherwise specified)

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 _{r**}	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

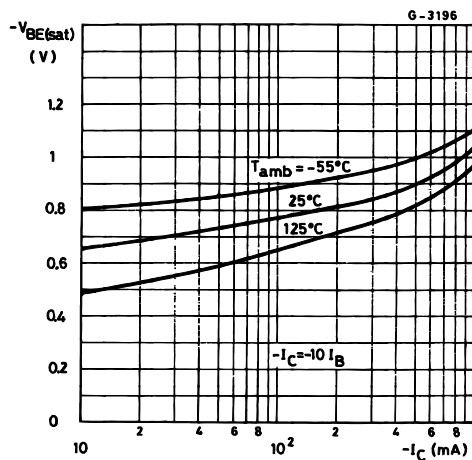
* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 1 %

** See Test Circuit

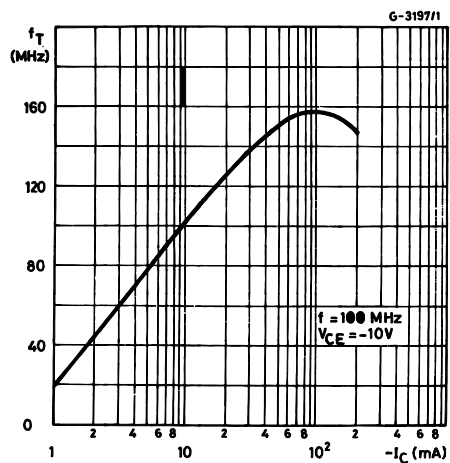
Collector Emitter Saturation Voltage.



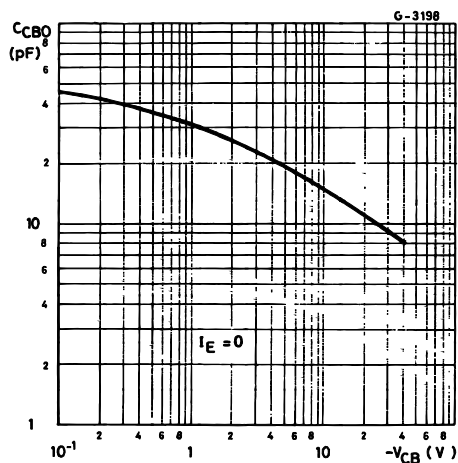
Base Emitter Saturation Voltage.



Transition Frequency.

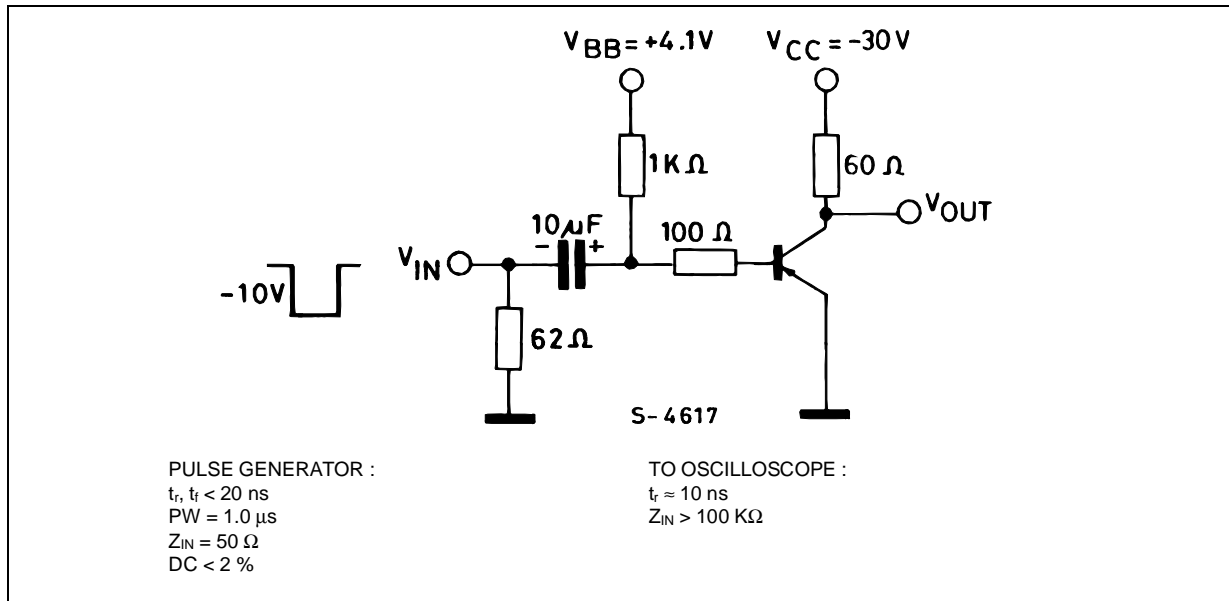


Collector Base Capacitance.



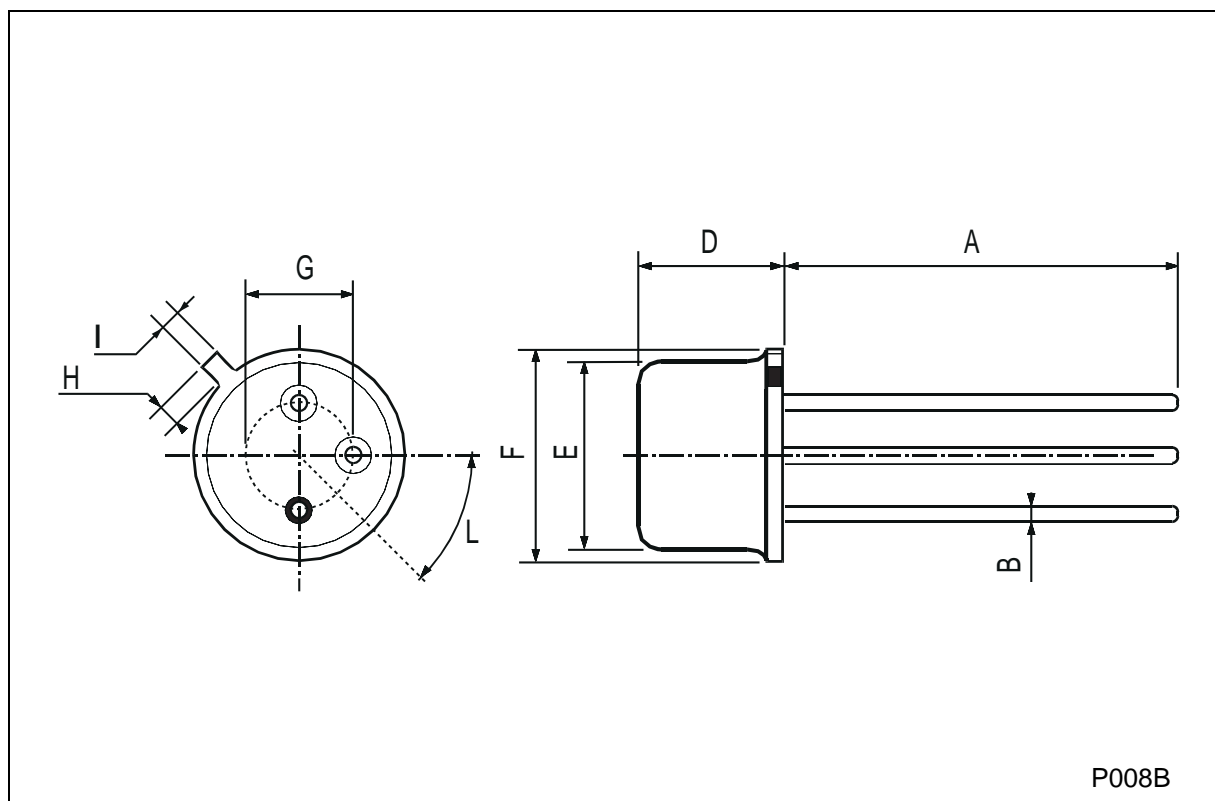
2N4033

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



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° (typ.)					



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