

**Type 2N4033**  
**Geometry 6700**  
**Polarity PNP**  
**Qual Level: JAN - JANTXV**

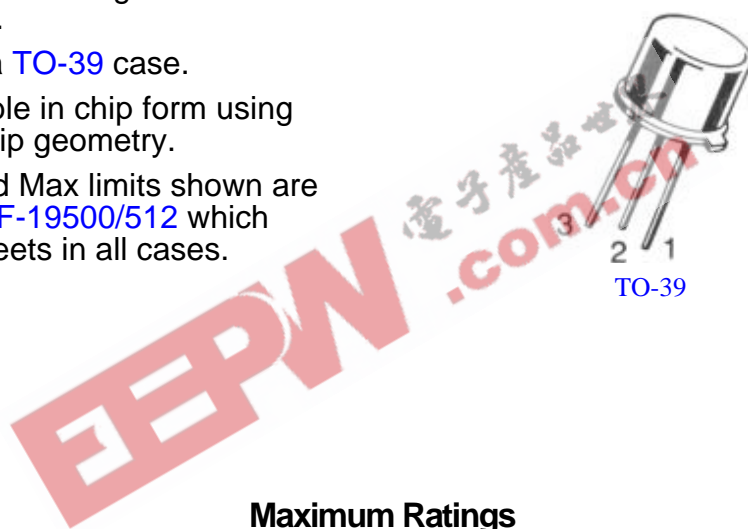
**Generic Part Number:**  
**2N4033**

**REF: MIL-PRF-19500/512**

**Features:**

[Request Quotation](#)

- General-purpose transistor for high speed switching and driver applicatons.
- Housed in a [TO-39](#) case.
- Also available in chip form using the 6700 chip geometry.
- The Min and Max limits shown are per [MIL-PRF-19500/512](#) which Semicoa meets in all cases.



**Maximum Ratings**

$T_C = 25^{\circ}C$  unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	$V_{CEO}$	80	V
Collector-Base Voltage	$V_{CBO}$	80	V
Emitter-Base Voltage	$V_{EBO}$	5.0	V
Collector Current, Continuous	$I_C$	1.0	mA
Power Dissipation at 25°C ambient Derate above 25°C	$P_T$	0.8 4.56	Watt mW/°C
Operating Junction Temperature	$T_J$	-55 to +200	°C
Storage Temperature	$T_{STG}$	-55 to +200	°C

### Electrical Characteristics

 $T_C = 25^\circ\text{C}$  unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage $I_C = 10\ \mu\text{A}$ , pulsed	$V_{(BR)CBO}$	80	---	V
Collector-Emitter Breakdown Voltage $I_C = 10\ \text{mA}$ , pulsed	$V_{(BR)CEO}$	80	---	V
Emitter-Base Breakdown Voltage $I_C = 10\ \mu\text{A}$ , pulsed	$V_{(BR)EBO}$	5.0	---	V
Collector-Base Cutoff Current $V_{CB} = 60\ \text{V}$	$I_{CBO1}$	---	10	nA
$V_{CB} = 60\ \text{V}$ , $T_A = +150^\circ\text{C}$	$I_{CBO2}$	---	25	$\mu\text{A}$
Collector-Emitter Cutoff Current $V_{CE} = 60\ \text{V}$ , $V_{BE} = 2.0\ \text{V}$	$I_{CEX1}$	---	25	nA
Base-Emitter Cutoff Current $V_{BE} = 3\ \text{V}$	$I_{EBO}$	---	25	nA

ON Characteristics	Symbol	Min	Max	Unit
<b>Forward current Transfer Ratio</b>				
$I_C = 100\ \mu\text{A}$ , $V_{CE} = 5\ \text{V}$	$h_{FE1}$	50	---	---
$I_C = 100\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ (pulse test)	$h_{FE2}$	100	300	---
$I_C = 500\ \text{mA}$ , $V_{CE} = 5\ \text{V}$ (pulse test)	$h_{FE3}$	70	---	---
$I_C = 1.0\ \text{A}$ , $V_{CE} = 5\ \text{V}$ (pulse test)	$h_{FE4}$	25	---	---
$I_C = 500\ \text{mA}$ , $V_{CE} = 5.0\ \text{V}$ (pulse test), $T_A = -55^\circ\text{C}$	$h_{FE5}$	30	---	---
<b>Collector-Emitter Saturation Voltage</b>				
$I_C = 150\ \text{mA}$ , $I_B = 15\ \text{mA}$ (pulse test)	$V_{CE(sat)1}$	---	0.15	V dc
$I_C = 500\ \text{mA}$ , $I_B = 50\ \text{mA}$ (pulse test)	$V_{CE(sat)2}$	---	0.5	V dc
$I_C = 1.0\ \text{A}$ , $I_B = 100\ \text{mA}$ (pulse test)	$V_{CE(sat)3}$	---	1.0	V dc
<b>Base-Emitter Saturation Voltage</b>				
$I_C = 150\ \text{mA}$ , $I_B = 15\ \text{mA}$ (pulse test)	$V_{BE(sat)1}$	---	0.9	V dc
$I_C = 500\ \text{mA}$ , $I_B = 50\ \text{mA}$ (pulse test)	$V_{BE(sat)2}$	---	1.2	V dc

Small Signal Characteristics	Symbol	Min	Max	Unit
Magnitude of Common Emitter Small Signal Short Circuit Forward Current Transfer Ratio $V_{CE} = 10\ \text{V}$ , $I_C = 50\ \text{mA}$ , $f = 100\ \text{MHz}$	$ h_{fe} $	1.5	6.0	---
Open Circuit Output Capacitance $V_{CB} = 10\ \text{V}$ , $I_E = 0$ , $100\ \text{kHz} < f < 1\ \text{MHz}$	$C_{OBO}$	---	20	pF
Input Capacitance, Output Open Circuited $V_{EB} = 0.5\ \text{V}$ , $I_C = 0$ , $100\ \text{kHz} < f < 1\ \text{MHz}$	$C_{IBO}$	---	80	pF

Switching Characteristics	Symbol	Min	Max	Unit
Delay Time $I_C = 500\ \text{mA}$ , $I_{B1} = 50\ \text{mA}$	$t_d$	---	15	ns
Rise Time $I_C = 500\ \text{mA}$ , $I_{B1} = 50\ \text{mA}$	$t_r$	---	25	ns
Storage Time $I_C = 500\ \text{mA}$ , $I_{B1} = I_{B2} = 50\ \text{mA}$	$t_s$	---	175	ns
Fall Time $I_C = 500\ \text{mA}$ , $I_{B1} = I_{B2} = 50\ \text{mA}$	$t_f$	---	35	ns