



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



## PNP SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/ 512

### Devices

2N4029

2N4033

### Qualified Level

JAN  
JANTX  
JANTXV

### MAXIMUM RATINGS

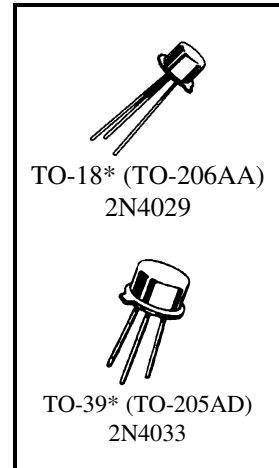
Ratings	Symbol	VALUE		Unit
Collector-Emitter Voltage	$V_{CEO}$	80		Vdc
Collector-Base Voltage	$V_{CBO}$	80		Vdc
Emitter-Base Voltage	$V_{EBO}$	5.0		Vdc
Collector Current	$I_C$	1.0		Adc
		2N4029 <sup>1</sup>	2N4033 <sup>2</sup>	
Total Power Dissipation @ $T_A = +25^{\circ}\text{C}$	$P_T$	0.5	0.8	W
Operating & Storage Junction Temperature Range	$T_J, T_{stg}$	-55 to +200		$^{\circ}\text{C}$

### THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	25.0	$^{\circ}\text{C}/\text{W}$

1) Derate linearly 2.86 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$

2) Derate linearly 4.56 mW/ $^{\circ}\text{C}$  for  $T_A > +25^{\circ}\text{C}$



\*See appendix A for package outline

### ELECTRICAL CHARACTERISTICS ( $T_A = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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### OFF CHARACTERISTICS

Collector-Base Cutoff Current $V_{CB} = 80 \text{ Vdc}$ $V_{CB} = 60 \text{ Vdc}$	$I_{CBO}$		10 10	$\mu\text{Adc}$ $\eta\text{Adc}$
Emitter-Base Cutoff Current $V_{BE} = 5.0 \text{ Vdc}$ $V_{BE} = 3.0 \text{ Vdc}$	$I_{EBO}$		25 10	$\mu\text{Adc}$ $\eta\text{Adc}$
Collector-Emitter Cutoff Voltage $V_{BE} = 40 \text{ Vdc}; V_{CE} = 60 \text{ Vdc}$	$I_{CEX}$		25	$\eta\text{Adc}$

**ELECTRICAL CHARACTERISTICS (con't)**

Characteristics	Symbol	Min.	Max.	Unit
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**DC CHARACTERISTICS**<sup>(3)</sup>

Forward-Current Transfer Ratio $I_C = 100 \mu\text{Adc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 100 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 500 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 1.0 \text{ Adc}, V_{CE} = 5.0 \text{ Vdc}$	$h_{FE}$	50 100 70 25	300	
Collector-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$ $I_C = 1.0 \text{ Adc}, I_B = 100 \text{ mAdc}$	$V_{CE(sat)}$		0.15 0.50 1.0	Vdc
Base-Emitter Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 500 \text{ mAdc}, I_B = 50 \text{ mAdc}$	$V_{BE(sat)}$		0.9 1.2	Vdc

**DYNAMIC CHARACTERISTICS**

Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio $I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 100 \text{ MHz}$	$ h_{fe} $	1.5	6.0	
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{obo}$		20	pF
Input Capacitance $V_{EB} = 0.5 \text{ Vdc}, I_C = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	$C_{ibo}$		80	pF

**SWITCHING CHARACTERISTICS**

On-Time $V_{CC} = 31.9 \text{ Vdc}; I_C = 500 \text{ mAdc}; I_{B1} = 50 \text{ mAdc}$	$t_d$		15	$\eta\text{s}$
Rise Time $V_{CC} = 31.9 \text{ Vdc}; I_C = 500 \text{ mAdc}; I_{B1} = 50 \text{ mAdc}$	$t_r$		25	$\eta\text{s}$

(3) Pulse Test: Pulse Width = 300 $\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .