



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



NPN MEDIUM POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/581

Devices

2N4237

2N4238

2N4239

Qualified Level

JANTX
JANTXV

MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise noted)

Ratings	Symbol	2N4237	2N4238	2N4239	Units
Collector-Emitter Voltage	V_{CEO}	40	60	80	Vdc
Collector-Base Voltage	V_{CBO}	50	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	6.0			Vdc
Collector Current	I_C	1.0			Adc
Base Current	I_B	0.5			Adc
Total Power Dissipation @ $T_A = +25^\circ\text{C}^{(1)}$ @ $T_C = +25^\circ\text{C}^{(2)}$	P_T	1.0			W
		6.0			W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200			$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	29	$^\circ\text{C/W}$

1) Derate linearly 5.7 mW/ $^\circ\text{C}$ for $T_A > +25^\circ\text{C}$

2) Derate linearly 34 mW/ $^\circ\text{C}$ for $T_C > +25^\circ\text{C}$



TO-39*

*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-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	$V_{(BR)CEO}$		50	Vdc
2N4237			80	
2N4238			100	
2N4239				
Emitter-Base Cutoff Current $V_{EB} = 6.0 \text{ Vdc}$	I_{EBO}		0.5	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 90 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	I_{CEX}		100	nAdc
$V_{CE} = 50 \text{ Vdc}$				
2N4237				
$V_{CE} = 80 \text{ Vdc}$				
2N4238				
$V_{CE} = 10 \text{ Vdc}$				
2N4239				
Collector-Base Cutoff Current $V_{CE} = 50 \text{ Vdc}$	I_{CBO}		100	nAdc
2N4237			100	
$V_{CE} = 80 \text{ Vdc}$			100	
2N4238			100	
$V_{CE} = 10 \text{ Vdc}$				
2N4239				

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽³⁾

Forward Current Transfer Ratio $I_C = 250 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$ $I_C = 500 \text{ mAdc}, V_{CE} = 1.0 \text{ Vdc}$	h_{FE}	30 30	150	
Collector-Emitter Saturation Voltage $I_C = 500 \text{ Adc}, I_B = 50 \text{ Adc}$ $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$	$V_{CE(sat)}$		0.3 0.6	Vdc
Base-Emitter Saturation Voltage $I_C = 500 \text{ Adc}, I_B = 50 \text{ Adc}$ $I_C = 1.0 \text{ Adc}, I_B = 0.1 \text{ Adc}$	$V_{BE(sat)}$		1.0 1.5	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short Circuit Forward-Current Transfer Ratio $I_C = 100 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}, f = 10 \text{ MHz}$	$ h_{fe} $	3.0		
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, f = 100 \text{ kHz}$	C_{obo}		100	pF

SAFE OPERATING AREA**DC Tests** $T_C = +25^{\circ}\text{C}$, 1 Cycle, $t \geq 0.5 \text{ s}$ **Test 1** $V_{CE} = 6.0 \text{ Vdc}, I_C = 1.0 \text{ Adc}$ **Test 2** $V_{CE} = 12 \text{ Vdc}, I_C = 500 \text{ mAdc}$ **Test 3** $V_{CE} = 30 \text{ Vdc}, I_C = 166 \text{ mAdc}$ 2N4237 $V_{CE} = 50 \text{ Vdc}, I_C = 100 \text{ mAdc}$ 2N4238 $V_{CE} = 70 \text{ Vdc}, I_C = 71 \text{ mAdc}$ 2N4239