

**SEMICONDUCTOR  
TECHNICAL DATA**

**2N3735, 2N3737**

**CRYSTALONCS**  
2805 Veterans Highway  
Suite 14  
Ronkonkoma, N.Y. 11774

**NPN Silicon  
Small-Signal Transistors**

...designed for general-purpose switching and amplifier applications.

MAXIMUM RATINGS			
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V <sub>CEO</sub>	40	Vdc
Collector-Base Voltage	V <sub>CBO</sub>	75	Vdc
Emitter-Base Voltage	V <sub>EBO</sub>	5.0	Vdc
Collector Current — Continuous	I <sub>C</sub>	1.5	Adc
Device Dissipation	P <sub>T</sub>	1.0	Watts
@ T <sub>A</sub> = 25 C	2N3735	5.71	mW/ C
Derate above 25 C		0.5	Watts
	2N3737	2.86	mW/ C
Derate above 25 C		2.9	Watts
@ T <sub>C</sub> = 25 C	2N3735	16.6	mW/ C
Derate above 25 C		1.9	Watts
	2N3737	11.3	mW/ C
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-65 to 200	-C



**2N3735**  
CASE 79-04, STYLE 1  
TO-205AD (TO-39)



**2N3737**  
CASE 26-03, STYLE 1  
TO-206AB (TO-46)

**CRITICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)**

Characteristic	Symbol	Min	Max	Unit
<b>OFF CHARACTERISTICS</b>				
Collector-Emitter Breakdown Voltage <sup>(1)</sup> (I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0)	V <sub>(BR)CEO</sub>	40	—	Vdc
Collector-Base Breakdown Voltage (I <sub>C</sub> = 10 mA, I <sub>E</sub> = 0)	V <sub>(BR)CBO</sub>	75	—	Vdc
Emitter-Base Breakdown Voltage (I <sub>E</sub> = 10 mA, I <sub>C</sub> = 0)	V <sub>(BR)EBO</sub>	5.0	—	Vdc
Collector Cutoff Current (V <sub>CB</sub> = 30 Vdc, I <sub>E</sub> = 0)	I <sub>CBO</sub>	—	0.25	μAdc
Collector Cutoff Current (V <sub>CE</sub> = 30 Vdc, V <sub>EB</sub> = 2.0 Vdc)	I <sub>CEX</sub>	—	0.2	μAdc
(V <sub>CE</sub> = 30 Vdc, V <sub>EB</sub> = 2.0 Vdc, T <sub>A</sub> = 150 C)		—	250	μAdc
Emitter Cutoff Current (V <sub>EB</sub> = 4.0 Vdc, I <sub>C</sub> = 0)	I <sub>EBO</sub>	—	0.1	μAdc

<sup>(1)</sup> Pulsed. Pulse Width: 250 to 350 μs. Duty Cycle: 1.0 to 2.0%.

(continues)

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CRYSTALONCS  
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2N3735JAN, 2N3737JAN SERIES

ELECTRICAL CHARACTERISTICS — continued (T <sub>A</sub> = 25° C unless otherwise noted.)				
Characteristic	Symbol	Min	Max	Unit
<b>ON CHARACTERISTICS</b>				
DC Current Gain <sup>(1)</sup> (I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 150 mA, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 Vdc) (I <sub>C</sub> = 1.0 A, V <sub>CE</sub> = 1.5 Vdc) (I <sub>C</sub> = 1.5 A, V <sub>CE</sub> = 5.0 Vdc) (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 Vdc, T <sub>A</sub> = -65° C)	h <sub>FE</sub>	35 40 40 20 20 15	— — 140 80 — —	—
Collector-Emitter Saturation Voltage (I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA) (I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA) <sup>(1)</sup> (I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA) <sup>(1)</sup> (I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA) <sup>(1)</sup>	V <sub>CE(sat)</sub>	— — — —	0.2 0.3 0.5 0.9	Vdc
Base-Emitter Saturation Voltage (I <sub>C</sub> = 10 mA, I <sub>B</sub> = 1.0 mA) (I <sub>C</sub> = 150 mA, I <sub>B</sub> = 15 mA) <sup>(1)</sup> (I <sub>C</sub> = 500 mA, I <sub>B</sub> = 50 mA) <sup>(1)</sup> (I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA) <sup>(1)</sup>	V <sub>BE(sat)</sub>	— — — 0.9	0.8 1.0 1.2 1.4	Vdc
<b>SMALL-SIGNAL CHARACTERISTICS</b>				
Collector-Base Capacitance (V <sub>CB</sub> = 10 Vdc, I <sub>E</sub> = 0, f = 0.1 to 1.0 MHz)	C <sub>obo</sub>	—	90	pF
Input Capacitance (V <sub>EB</sub> = 0.5 Vdc, I <sub>C</sub> = 0, f = 0.1 to 1.0 MHz)	C <sub>ibo</sub>	—	80	pF
Small-Signal Current Transfer Ratio, Magnitude (I <sub>C</sub> = 50 mA, V <sub>CE</sub> = 10 Vdc, f = 100 MHz)	h <sub>fe</sub>	2.5	6.0	—
<b>SWITCHING CHARACTERISTICS</b> (See Figure 9) (V <sub>CC</sub> = 30 Vdc, I <sub>C</sub> = 1.0 A, I <sub>B</sub> = 100 mA, V <sub>BE</sub> = 2.0 Vdc)				
Delay Time	t <sub>d</sub>	—	80	ns
Rise Time	t <sub>r</sub>	—	40	ns
Turn-Off Time	t <sub>(off)</sub>	—	60	ns

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ASSURANCE TESTING (Pre/Post Burn-In)				
Burn-In Conditions: T <sub>A</sub> = 30 ± 5° C, V <sub>CB</sub> = 40 Vdc, 10 Vdc JANS				
P <sub>T</sub> = 1.0 W 2N3735, 0.5 W 2N3737				
Characteristics Tested	Symbol	Initial and End Point Limits		Unit
		Min	Max	
Collector Cutoff Current (V <sub>CB</sub> = 30 Vdc)	I <sub>CBO</sub>	—	250	nAdc
DC Current Gain <sup>(1)</sup> (I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 1.0 Vdc)	h <sub>FE</sub>	40	140	—
Delta from Pre-Burn-In Measured Values		Min	Max	
Delta Collector Cutoff Current	ΔI <sub>CBO</sub>	—	±100 or ±25 whichever is greater	% of Initial Value nAdc
Delta DC Current Gain <sup>(1)</sup>	Δh <sub>FE</sub>	—	±15	% of Initial Value

(1) Pulsed. Pulse Width 250 to 350 μs. Duty Cycle 1.0 to 2.0%.