TECHNICAL DATA SHEET

6 Lake Street, Lawrence, MA 01841
1-800-446-1158 / (978) 620-2600 / Fax: (978) 689-0803
Website: http: //www.microsemi.com

NPN SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/395

DEVICES

2N3735 **2N3735L**
2N3737 **2N3737UB**

LEVELS

JAN
JANTX
JANTXV
JANS

ABSOLUTE MAXIMUM RATINGS ***(T_C = +25°C unless otherwise noted)***

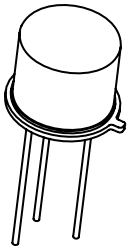
Parameters / Test Conditions		Symbol	Min.	Unit
Collector-Emitter Voltage		V_{CEO}	40	Vdc
Collector-Base Voltage		V_{CBO}	75	Vdc
Emitter-Base Voltage		V_{EBO}	5	Vdc
Collector Current		I_C	1.5	Adc
Total Power Dissipation @ T_A = +25°C	2N3735, 2N3735L 2N3737 2N3737UB	P_T	1.0 (1) 0.5 (3) 0.5 (5)	W W W
Total Power Dissipation @ TC = +25°C	2N3735, 2N3735L 2N3737 2N3737UB	P_T	2.9 (2) 1.9 (4) N/A	W W W
Operating & Storage Junction Temperature Range		T_J, T_{stg}	-65 to +200	°C

* Electrical characteristics for "L" suffix devices are identical to the "non L" corresponding devices.

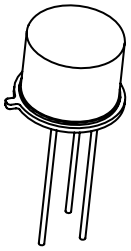
(1) Derate linearly at 5.71 mW/°C above T_A = +25°C
(2) Derate linearly at 16.6 mW/°C above T_A = +25°C
(3) Derate linearly at 2.86 mW/°C above T_A = +25°C
(4) Derate linearly at 11.3 mW/°C above T_A = +25°C
(5) Derate linearly at 3.07 mW/°C above T_A = +25°C
(6) T_A = +55°C for UB on printed circuit board (PCB). PCB = FR4 .0625 inch (1.59MM) 1 – layer 1 oz Cu, horizontal, still air, pads (UB) = .034 inch (0.86 mm) x .048 inch (1.2 mm), $R_{\theta JA}$ with a defined thermal resistance condition included is measured at P_T = 500mW.

ELECTRICAL CHARACTERISTICS ***(T_A = +25°C, unless otherwise noted)***

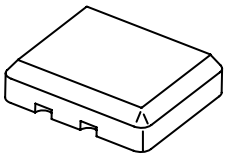
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERTICS				
Collector-Emitter Breakdown Voltage I_C = 10mAdc	$V_{(BR)CEO}$	40		Vdc
Collector-Base Cutoff Current V_{CB} = 75Vdc V_{CB} = 30Vd	I_{CBO}		10 250	µAdc ηAdc



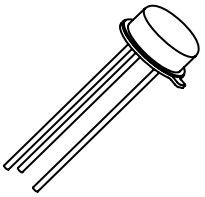
TO-5*
2N3735L



TO-39* (TO-205AD)
2N3735



3 PIN
2N3737UB



TO-46 (TO-206AB)
2N3737

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ELECTRICAL CHARACTERISTICS ***(T_A = +25°C, unless otherwise noted)***

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERTICS				
Collector- Emitter Cutoff Current V_{CE} = 30Vdc, V_{EB} = 2.0Vdc V_{CE} = 30Vdc, V_{EB} = 2.0Vdc TA = +150°C	I_{CEX}		200 250	nAdc µAdc
Emitter-Base Cutoff Current V_{EB} = 5.0Vdc V_{EB} = 4.0Vdc	I_{EBO}		10 100	µAdc nAdc
ON CHARACTERISTICS (1)				
Forward-Current Transfer Ratio I_C = 10mAdc, V_{CE} = 1.0Vdc I_C = 150mAdc, V_{CE} = 1.0Vdc I_C = 500mAdc, V_{CE} = 1.0Vdc I_C = 1.0Adc, V_{CE} = 1.5Vdc I_C = 1.5Adc, V_{CE} = 5.0Vdc	h_{FE}	 35 40 40 20 20	 150 80	
Collector-Emitter Saturation Voltage I_C = 10mAdc, I_B = 1.0mAdc I_C = 150mAdc, I_B = 15.0mAdc I_C = 500mAdc, I_B = 50.0mAdc I_C = 1.0Adc, I_B = 100mAdc	$V_{CE(sat)}$		 0.2 0.3 0.5 0.9	Vdc
Base-Emitter Saturation Voltage I_C = 10mAdc, I_B = 1.0mAdc I_C = 150mAdc, I_B = 15.0mAdc I_C = 500mAdc, I_B = 50.0mAdc I_C = 1.0Adc, I_B = 100mAdc	$V_{BE(sat)}$		 0.8 1.0 1.2 1.4	Vdc

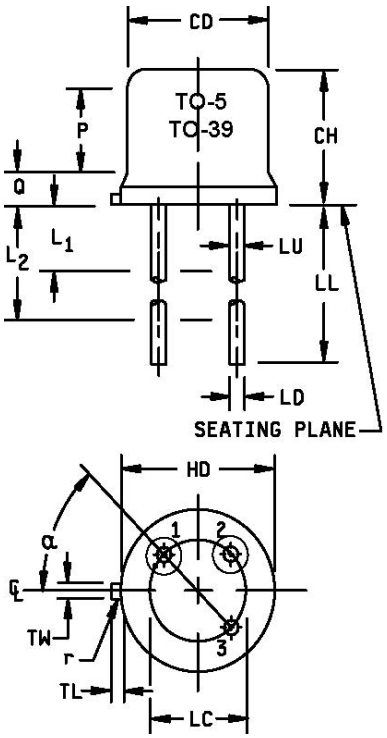
DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio I_C = 50mAdc, V_{CE} = 10Vdc, f = 100MHz	$\|h_{fe}\|$	2.5	6.0	
Delay Response I_C = 1.0Adc, V_{BE} = 2Vdc, I_{B2}= 100mA V_{CC} = 30Vdc	t_d		8	ηs
Turn-Off Time I_C = 1.0Adc, I_{B1} = I_{B2} = 100mAdc, V_{CC} = 30Vdc	t_{off}		60	ηs
Rise Time I_C = 1.0Adc, V_{BE} = 2Vdc, V_{CC} = 30Vdc	t_r		40	ηs
Output Capacitance V_{CB} = 10Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0MHz	C_{obo}		9	pF
Input Capacitance V_{EB} = 0.5Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0MHz	C_{ibo}		80	pF

(1) Pulse Test: Pulse Width = 300µs, Duty Cycle ≤ 2.0%

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PACKAGE DIMENSIONS



2N3735 Dimensions TO-39

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.355	7.75	9.02	
CH	.240	.260	6.10	6.60	
HD	.355	.370	9.02	9.40	
LC	.200 TP		5.08 TP		6
LD	.016	.021	0.41	0.53	7
LL	.500	.750	12.70	19.05	7
LU	.016	.019	0.41	0.48	7
L_1		.050		1.27	7
L_2	.250		6.35		7
P	.100		2.54		
TL	.029	.045	0.74	1.14	3
TW	.028	.034	0.71	0.86	9
Q		.040		1.02	4
r		.010		0.25	10
α	45° TP		45° TP		6

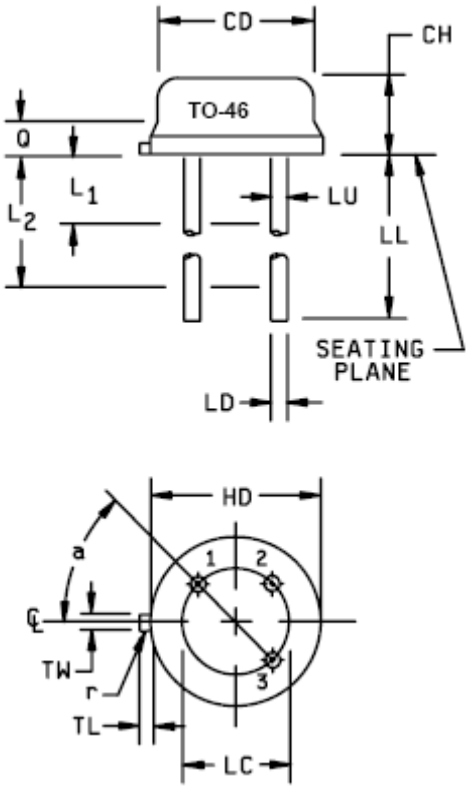
2N3735L Dimensions TO-5

Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.305	.355	7.75	9.02	
CH	.240	.260	6.10	6.60	
HD	.355	.370	9.02	9.40	
LC	.200 TP		5.08 TP		6
LD	.016	.021	0.41	0.53	7
LL	1.500	1.750	38.10	44.45	7
LU	.016	.019	0.41	0.48	7
L_1		.050		1.27	7
L_2	.250		6.35		7
P	.100		2.54		
TL	.029	.045	0.74	1.14	3
TW	.028	.034	0.71	0.86	9
Q		.040		1.02	4
R		.010		0.25	10
α	45° TP		45° TP		6

FIGURE 1: Physical dimensions – TO-39, TO-5

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PACKAGE DIMENSIONS



Ltr	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
CD	.178	.195	4.52	4.95	
CH	.065	.085	1.65	2.16	
HD	.209	.230	5.31	5.84	
LC	.100 TP		2.54 TP		5
LD	.016	.021	0.41	0.53	
LL	.500	1.750	12.70	44.45	6
LU	.016	.019	0.41	0.48	6
L_1		.050		1.27	6
L_2	.250		6.35		6
Q		.040		1.02	3
TL	.028	.048	0.71	1.22	8
TW	.036	.046	0.91	1.17	4
r		.010		0.25	9
α	45° TP		45° TP		5

NOTES:

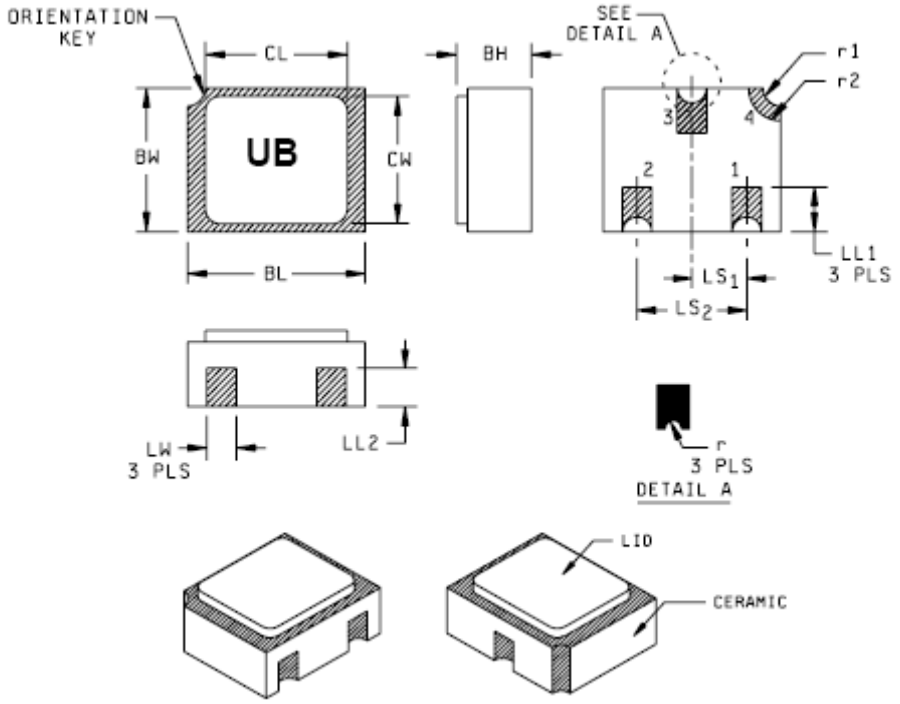
1 Dimensions are in inches.
2 Millimeters are given for general information only.
3 Symbol TL is measured from HD maximum.
4 Details of outline in this zone are optional.
5 Leads at gauge plane .054 inch (1.37 mm) +.001 inch (0.03 mm) -.000 inch (0.00 mm) below seating plane shall be within .007 inch (0.18 mm) radius of TP relative to tab. Device may be measured by direct methods or by gauge.
6 Symbol LU applies between L1 and L2. Dimension LD applies between L2 and LL minimum.
7 Lead number three is electrically connected to case.
8 Beyond r maximum, TW shall be held for a minimum length of .011 inch (0.28 mm).
9 Symbol r applied to both inside corners of tab.
10 In accordance with ASME Y14.5M, diameters are equivalent to ϕx symbology.
11 Lead 1 is emitter, lead 2 is base, and lead 3 is collector.

FIGURE 2: Physical dimensions – TO-46 2N3737

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PACKAGE DIMENSIONS



NOTES:

1. Dimensions are in inches.
2. Millimeters are given for general information only.
3. Hatched areas on package denote metalized areas.
4. Lid material: Kovar.
5. Pad 1 = Base, Pad 2 = Emitter, Pad 3 = Collector, Pad 4 = Shielding connected to the lid.
6. In accordance with ASME Y14.5m, diameters are Equivalent to ϕx symbology.

Symbol	Dimensions				Notes
	Inches		Millimeters		
	Min	Max	Min	Max	
BH	.046	.056	1.17	1.42	
BL	.115	.128	2.92	3.25	
BW	.085	.108	2.16	2.74	
CL		.128		3.25	
CW		.108		2.74	
LL1	.022	.038	0.56	0.96	
LL2	.017	.035	0.43	0.89	
LS1	.036	.040	0.91	1.02	
LS2	.071	.079	1.81	2.01	
LW	.016	.024	0.41	0.61	
r		.008		.203	
R1		.012		.305	
R2		.022		.559	