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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





6 Lake Street, Lawrence, MA 01841 1-800-446-1158 / (978) 620-2600 / Fax: (978) 689-0803 Website: http: //www.microsemi.com *Gort Road Business Park, Ennis, Co. Clare, Ireland Tel:* +353 (0) 65 6840044 *Fax:* +353 (0) 65 6822298

PNP SILICON SWITCHING TRANSISTOR Qualified per MIL-PRF-19500/357

DEVICES				LEVELS
2N3634	2N3635	2N3636	2N3637	JAN
2N3634L	2N3635L	2N3636L	2N3637L	JANTX
2N3634UB	2N3635UB	2N3636UB	2N3637UB	JANTXV
				JANS

ABSOLUTE MAXIMUM RATINGS ($T_c = +25^{\circ}C$ unless otherwise noted)

Parameters / Test Conditions	Symbol	2N3634* 2N3635*	2N3636* 2N3637*	Unit
Collector-Emitter Voltage	V _{CEO}	140	175	Vdc
Collector-Base Voltage	V _{CBO}	140	175	Vdc
Emitter-Base Voltage	V _{EBO}	5.0	5.0	Vdc
Collector Current	I _C	1.0	1.0	Adc
Total Power Dissipation (a) T _A = +25°C (a) T _C = +25°CUB: (a) T _C = +25°C	P _T **	1.0 5.0 1.5		W W W
Operating & Storage Junction Temperature Range	T _J , T _{stg}	-65 to	+200	°C



TO-5* 2N3634L, 2N3635L 2N3636L, 2N3637L



TO-39* (TO-205AD) 2N3634, 2N3635 2N3636, 2N3637



3 PIN 2N3634UB, 2N3635UB 2N3636UB, 2N3637UB

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

** Consult 19500/357 for De-Rating curves.

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

Parameters / Test C	Symbol	Min.	Max.	Unit				
OFF CHARACTERTICS								
Collector-Emitter Breakdown Vo $I_C = 10$ mAdc	ltage 2N3634, 2N3635 2N3636, 2N3637	V _{(BR)CEO}	140 175		Vdc			
Collector-Base Cutoff Current $V_{CB} = 100$ Vdc $V_{CB} = 140$ Vdc $V_{CB} = 175$ Vdc	2N3634, 2N3635 2N3636, 2N3637	I _{CBO}		100 10 10	ηAdc μAdc μAdc			
Emitter-Base Cutoff Current $V_{EB} = 3.0Vdc$ $V_{EB} = 5.0Vdc$		I _{EBO}		50 10	ηAdc μAdc			
Collector-Emitter cutoff Current $V_{CE} = 100Vdc$		I _{CEO}		10	μAdc			



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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (1)				
Forward-Current Transfer Ratio $I_C = 0.1 \text{mAdc}, V_{CE} = 10 \text{Vdc}$ 2N3634, 2N3636 $I_C = 1.0 \text{mAdc}, V_{CE} = 10 \text{Vdc}$ $I_C = 10 \text{mAdc}, V_{CE} = 10 \text{Vdc}$ $I_C = 50 \text{mAdc}, V_{CE} = 10 \text{Vdc}$ $I_C = 150 \text{mAdc}, V_{CE} = 10 \text{Vdc}$	h _{FE}	25 45 50 50 30	150	
$\begin{split} I_{C} &= 0.1 \text{mAdc}, \ V_{CE} &= 10 \text{Vdc} \\ I_{C} &= 1.0 \text{mAdc}, \ V_{CE} &= 10 \text{Vdc} \\ I_{C} &= 10 \text{mAdc}, \ V_{CE} &= 10 \text{Vdc} \\ I_{C} &= 50 \text{mAdc}, \ V_{CE} &= 10 \text{Vdc} \\ I_{C} &= 150 \text{mAdc}, \ V_{CE} &= 10 \text{Vdc} \\ \end{split}$		55 90 100 100 60	300	
Collector-Emitter Saturation Voltage $I_C = 10$ mAdc, $I_B = 1.0$ mAdc $I_C = 50$ mAdc, $I_B = 5.0$ mAdc	V _{CE(sat)}		0.3 0.6	Vdc
Base-Emitter Saturation Voltage $I_C = 10$ mAdc, $I_B = 1.0$ mAdc $I_C = 50$ mAdc, $I_B = 5.0$ mAdc	$V_{BE(sat)}$	0.65	0.8 0.9	Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit	
Forward Current Transfer Ratio					
$I_{C} = 30 \text{mAdc}, V_{CE} = 30 \text{Vdc}, f = 100 \text{MHz}$	2N3634, 2N3636	$ \mathbf{h}_{\mathrm{fe}} $	1.5	8.0	
	2N3635, 2N3637	1 101	2.0	8.5	
Forward Current Transfer Ratio					
$I_{C} = 10 \text{mAdc}, V_{CE} = 10 \text{Vdc}, f = 1.0 \text{kHz}$	2N3634, 2N3636	h _{fe}	40	160	
	2N3635, 2N3637		80	320	
Small-Signal Short-Circuit Input Impedance					
$I_{C} = 10 \text{mAdc}, V_{CE} = 10 \text{Vdc}, f = 1.0 \text{kHz}$	2N3634, 2N3636	h _{ie}	100	600	Ω
	2N3635, 2N3637		200	1200	
Small-Signal Open-Circuit Input Impedance					
$I_{C} = 10 \text{mAdc}, V_{CE} = 10 \text{Vdc}, f = 1.0 \text{kHz}$		h _{oe}		200	μs
Output Capacitance		~			_
$V_{CB} = 20Vdc, I_E = 0, 100 \text{ kHz} \le f \le 1.0 \text{ MHz}$		C _{obo}		10	pF
Lune & Comparison					
Input Capacitance		G			-
$V_{EB} = 1.0 V dc, I_C = 0, 100 \text{ kHz} \le f \le 1.0 \text{ MHz}$		C _{ibo}		75	pF
Noice Eigune					
NOISE FIGURE $V = 0.5 \text{ mAdo } \mathbf{P} = 1.01 \Omega$	$f = 100 H_{z}$			5.0	
$v_{CE} = 10 v dc, I_C = 0.5 \text{mAdc}, R_g = 1.0 \text{k} \Omega \Omega$	f = 1.0kHz	NF		3.0	dB
	f = 10 kHz			3.0	

(1) Pulse Test: Pulse Width = $300\mu s$, Duty Cycle $\leq 2.0\%$



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SAFE OPERATING AREA

DC Tests $T_C = 25^{\circ}C$, 1 Cycle, t = 1.0s Test 1 $V_{CE} = 100Vdc$, $I_C = 30mAdc$ $V_{CE} = 130Vdc$, $I_C = 20mAdc$ Test 2 $V_{CE} = 50Vdc$, $I_C = 95mAdc$ Test 3 $V_{CE} = 5.0Vdc$, $I_C = 1.0Adc$

2N3634, 2N3635 2N3636, 2N3637



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PACKAGE DIMENSIONS



Ltr	Inches		Millimeters		Notes
	Min	Mari	NIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII		Noics
	Min	Max	Min	Max	
CD	.305	.335	7.75	8.51	
СН	.240	.260	6.10	6.60	
HD	.335	.370	8.51	9.40	
LC	.200	ТҮР	5.08 TYP		7
LD	.016	.021	0.41	0.53	6
LL		See notes 7	7, 9, and 10		
LU	.016	.019	0.41	0.48	7
L ₁		050		1.27	7
L ₂	.250		6.35		7
Р	.100		2.54		5
Q		.050		1.27	
r		.010		0.254	8
TL	.029	.045	0.74	1.14	4
TW	.028	.034	0.71	0.86	3
α	45° TP 45° TP			6	
Term 1	Emitter				
Term 2	Base				
Term 3	Collector				

NOTES:

- 1. Dimensions are in inches.
- 2. Millimeters are given for general information only.
- 3. Beyond r maximum, TW must be held to a minimum length of .021 inch (0.53 mm).
- 4. TL measured from maximum HD.
- 5. CD shall not vary more than \pm .010 inch (0.25 mm) in zone P. This zone is controlled for automatic handling.
- 6. Leads at gauge plane .054 .055 inch (1.37 1.40 mm) below seating plane shall be within .007 inch (0.18 mm) radius of true position (TP) at a maximum material condition (MMC) relative to the tab at MMC. The device may be measured by direct methods or by gauge and gauging procedure.
- 7. LU applies between L1 and L2. LD applies between L2 and L minimum. Diameter is uncontrolled in L1 and beyond LL minimum.
- 8. r (radius) applies to both inside corners of tab.
- 9. For transistor types 2N3634 through 2N3637, LL is .500 inch (12.70 mm) minimum, and .750 inch (19.05 mm) maximum (TO-39).
- For transistor types 2N3634L through 2N3637L, LL is 1.500 inches (38.10 mm) minimum, and 1.750 inches (44.45 mm) maximum (TO-5).
- 11. In accordance with ASME Y14.5M, diameters are equivalent to φx symbology.

FIGURE 1: Physical dimensions (TO-5 and TO-39)



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NOTES:

- 1. Dimensions are in inches.
- 2. Millimeters are given for general information only.
- 3. Hatched areas on package denote metallized areas.
- 4. Pad 1 = Base, Pad 2 = Emitter, Pad 3 = Collector, Pad 4 = Shielding connected to the lid.
- 5. In accordance with ASME Y14.5M, diameters are. equivalent to φx symbology

	Dimensions				
Ltr	Inches		Millimeters		Notes
	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	
LL ₁	.022	.038	0.56	0.96	
LL ₂	.017	.035	0.43	0.89	
LS_1	.036	.040	0.91	1.02	
LS_2	.071	.079	1.81	2.01	
LW	.016	.024	0.41	0.61	
r		.008		.203	
r ₁		.012		.305	
r ₂		.022		.559	

FIGURE 2: Physical dimensions, surface mount 2N3634UB through 2N3637UB (UB version).