

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

DEVICES

2N3634	2N3635	2N3636	2N3637
2N3634L	2N3635L	2N3636L	2N3637L
2N3634UB	2N3635UB	2N3636UB	2N3637UB

LEVELS

JANSM – 3K Rads (Si)
JANSD – 10K Rads (Si)
JANSP – 30K Rads (Si)
JANSL – 50K Rads (Si)
JANSR – 100K Rads (Si)

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

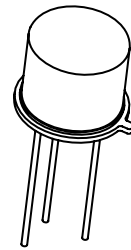
Parameters / Test Conditions	Symbol	2N3634* 2N3635*	2N3636* 2N3637*	Unit
Collector-Emitter Voltage	V_{CEO}	140	175	Vdc
Collector-Base Voltage	V_{CBO}	140	175	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	5.0	Vdc
Collector Current	I_C	1.0	1.0	Adc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ @ $T_C = +25^\circ\text{C}$ UB: @ $T_C = +25^\circ\text{C}$	P_T **		1.0 5.0 1.5	W W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^\circ\text{C}$

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

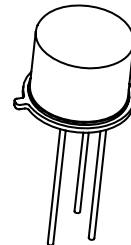
** Consult 19500/357 for De-Rating curves.

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

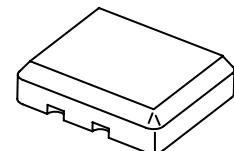
Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 10\text{mA}$	$V_{(BR)CEO}$	140 175		Vdc
Collector-Base Cutoff Current $V_{CB} = 100\text{Vdc}$ $V_{CB} = 140\text{Vdc}$ $V_{CB} = 175\text{Vdc}$	I_{CBO}		100 10 10	ηAdc μAdc μAdc
Emitter-Base Cutoff Current $V_{EB} = 3.0\text{Vdc}$ $V_{EB} = 5.0\text{Vdc}$	I_{EBO}		50 10	ηAdc μAdc
Collector-Emitter cutoff Current $V_{CE} = 100\text{Vdc}$	I_{CEO}		10	μAdc



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



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



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

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽¹⁾				
Forward-Current Transfer Ratio $I_C = 0.1\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 1.0\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 10\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 50\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 150\text{mA dc}, V_{CE} = 10\text{V dc}$	2N3634, 2N3636	25 45 50 50 30	150	
h_{FE}				
$I_C = 0.1\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 1.0\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 10\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 50\text{mA dc}, V_{CE} = 10\text{V dc}$ $I_C = 150\text{mA dc}, V_{CE} = 10\text{V dc}$	2N3635, 2N3637	55 90 100 100 60	300	
Collector-Emitter Saturation Voltage $I_C = 10\text{mA dc}, I_B = 1.0\text{mA dc}$ $I_C = 50\text{mA dc}, I_B = 5.0\text{mA dc}$	$V_{CE(sat)}$		0.3 0.6	Vdc
Base-Emitter Saturation Voltage $I_C = 10\text{mA dc}, I_B = 1.0\text{mA dc}$ $I_C = 50\text{mA dc}, I_B = 5.0\text{mA dc}$	$V_{BE(sat)}$	0.65	0.8 0.9	Vdc

DYNAMIC CHARACTERISTICS

Forward Current Transfer Ratio $I_C = 30\text{mA dc}, V_{CE} = 30\text{V dc}, f = 100\text{MHz}$	2N3634, 2N3636 2N3635, 2N3637	$ h_{fe} $	1.5 2.0	8.0 8.5	
Forward Current Transfer Ratio $I_C = 10\text{mA dc}, V_{CE} = 10\text{V dc}, f = 1.0\text{kHz}$	2N3634, 2N3636 2N3635, 2N3637	h_{fe}	40 80	160 320	
Small-Signal Short-Circuit Input Impedance $I_C = 10\text{mA dc}, V_{CE} = 10\text{V dc}, f = 1.0\text{kHz}$	2N3634, 2N3636 2N3635, 2N3637	h_{ie}	100 200	600 1200	Ω
Small-Signal Open-Circuit Input Impedance $I_C = 10\text{mA dc}, V_{CE} = 10\text{V dc}, f = 1.0\text{kHz}$		h_{oe}		200	μs
Output Capacitance $V_{CB} = 20\text{V dc}, I_E = 0, 100\text{ kHz} \leq f \leq 1.0\text{MHz}$		C_{obo}		10	pF
Input Capacitance $V_{EB} = 1.0\text{V dc}, I_C = 0, 100\text{ kHz} \leq f \leq 1.0\text{MHz}$		C_{ibo}		75	pF
Noise Figure $V_{CE} = 10\text{V dc}, I_C = 0.5\text{mA dc}, R_g = 1.0\text{k}\Omega$	$f = 100\text{Hz}$ $f = 1.0\text{kHz}$ $f = 10\text{kHz}$	NF		5.0 3.0 3.0	dB

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



TECHNICAL DATA SHEET

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SAFE OPERATING AREA

DC Tests

$T_C = 25^\circ\text{C}$, 1 Cycle, $t = 1.0\text{s}$

Test 1

$V_{CE} = 100\text{Vdc}$, $I_C = 30\text{mAdc}$

2N3634, 2N3635

$V_{CE} = 130\text{Vdc}$, $I_C = 20\text{mAdc}$

2N3636, 2N3637

Test 2

$V_{CE} = 50\text{Vdc}$, $I_C = 95\text{mAdc}$

Test 3

$V_{CE} = 5.0\text{Vdc}$, $I_C = 1.0\text{Adc}$