

NPN MEDIUM POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/349

DEVICES

2N3506	2N3507
2N3506A	2N3507A
2N3506L	2N3507L
2N3506AL	2N3507AL

LEVELS

JAN
JANTX
JANTXV

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

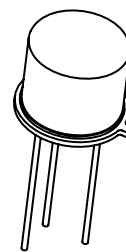
Parameters / Test Conditions	Symbol	2N3506	2N3507	Unit
Collector-Emitter Voltage	V_{CEO}	40	50	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Collector Current	I_C	3.0		Adc
Total Power Dissipation @ $T_A = 25^\circ\text{C}$ ⁽¹⁾ @ $T_C = 25^\circ\text{C}$ ⁽²⁾	P_T	1.0 5.0		W
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		$^\circ\text{C}$

Note:

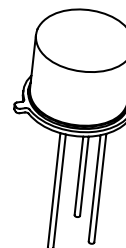
- Derate linearly 5.71 mW/ $^\circ\text{C}$ for $T_A > +25^\circ\text{C}$
- Derate linearly 55.5 mW/ $^\circ\text{C}$ for $T_C > +25^\circ\text{C}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 10\text{mA}$	$V_{(BR)CEO}$	40 50		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 40\text{Vdc}$ $V_{CE} = 60\text{Vdc}$	I_{CEX}		1.0 1.0	μAdc
Collector-Base Breakdown Voltage $I_C = 100\mu\text{Adc}$	$V_{(BR)CBO}$	60 80		Vdc
Emitter-Base Breakdown Voltage $I_E = 10\mu\text{Adc}$	$V_{(BR)EBO}$	5		Vdc
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio $I_C = 500\text{mA}$, $V_{CE} = 1\text{Vdc}$	h_{FE}	50 35	250 175	
Forward-Current Transfer Ratio $I_C = 1.5\text{Adc}$, $V_{CE} = 2\text{Vdc}$	h_{FE}	40 30	200 150	
Forward-Current Transfer Ratio $I_C = 2.5\text{Adc}$, $V_{CE} = 3\text{Vdc}$	h_{FE}	30 25		



TO-5 (L-Versions)



TO-39 (TO-205-AD)



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

TECHNICAL DATA SHEET

NPN MEDIUM POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/349

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio $I_C = 3.0\text{Adc}$, $V_{CE} = 5\text{Vdc}$	h_{FE}	25 20		
Forward-Current Transfer Ratio $I_C = 500\text{mAdc}$, $V_{CE} = 1.0\text{Vdc}$	h_{FE}	25 17		
Forward-Current Transfer Ratio $I_C = 500\text{mAdc}$, $V_{CE} = 2\text{Vdc}$	h_{FE}	25 17		
Collector-Emitter Saturation Voltage $I_C = 500\text{mAdc}$, $I_B = 50\text{mAdc}$	$V_{CE(sat)}$		0.5	Vdc
Collector-Emitter Saturation Voltage $I_C = 1.5\text{Adc}$, $I_B = 150\text{mAdc}$	$V_{CE(sat)}$		1.0	Vdc
Collector-Emitter Saturation Voltage $I_C = 2.5\text{Adc}$, $I_B = 250\text{mAdc}$	$V_{CE(sat)}$		1.5	Vdc
Base-Emitter Saturation Voltage $I_C = 500\text{mAdc}$, $I_B = 50\text{mAdc}$	$V_{BE(sat)}$		1.0	Vdc
Base-Emitter Saturation Voltage $I_C = 1.5\text{Adc}$, $I_B = 150\text{mAdc}$	$V_{BE(sat)}$	0.8	1.3	Vdc
Base-Emitter Saturation Voltage $I_C = 2.5\text{Adc}$, $I_B = 250\text{mAdc}$	$V_{BE(sat)}$		2.0	Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 100\text{mAdc}$, $V_{CE} = 5\text{Vdc}$, $f = 20\text{MHz}$	$ h_{fe} $	3.0	15	
Output Capacitance $V_{CB} = 10\text{Vdc}$, $I_E = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{obo}		40	pF
Input Capacitance $V_{EB} = 3.0\text{Vdc}$, $I_C = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{ibo}		300	pF

SWITCHING CHARACTERISTICS (4)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Delay Time $I_C = 1.5\text{Adc}$, $I_{B1} = 150\text{mAdc}$	t_d		15	ns
Rinse Time $I_C = 1.5\text{Adc}$, $I_{B1} = 150\text{mAdc}$	t_r		30	ns
Storage Time $I_C = 1.5\text{Adc}$, $I_{B1} = I_{B2} = 150\text{mAdc}$	t_s		55	ns
Fall Time $I_C = 1.5\text{Adc}$, $I_{B1} = I_{B2} = 150\text{mAdc}$	t_f		35	ns

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

(4) Consult MIL-PRF-19500/349 For Additional Information.