SEMICOA SEMICONDUCTORS

Data Sheet No. 2N3506

Type 2N3506
Geometry 1506
Polarity NPN
Qual Level: JAN - JANTXV

Generic Part Number: 2N3506

REF: MIL-PRF-19500/349

Features:

Request Quotation

- General-purpose silicon transistor for switching and amplifier applications.
- Housed in TO-39 case.
- Also available in chip form using the 1506 chip geometry.
- The Min and Max limits shown are per MIL-PRF-19500/349 which Semicoa meets in all cases.

TO-39

Maximum Ratings

T_C = 25°C unless otherwise specified

Rating	Symbol	Rating	Unit
Collector-Emitter Voltage	V_{CEO}	40	V
Collector-Base Voltage	V_{CBO}	60	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Collector Current, Continuous	I_C	3.0	A
Power Dissipation, T_A = 25°C	P_T	1.0	W
Derate above 25°C		5.71	mW/°C
Operating Junction Temperature	T_J	-65 to +200	°C
Storage Temperature	T_{STG}	-65 to +200	°C

Electrical Characteristics

T_C = 25°C unless otherwise specified

OFF Characteristics	Symbol	Min	Max	Unit
Collector-Base Breakdown Voltage I_C = 10 µA	$V_{(BR)CBO}$	60	---	V
Collector-Emitter Breakdown Voltage I_C = 10 mA	$V_{(BR)CEO}$	40	---	V
Emitter-Base Breakdown Voltage I_E = 10 µA	$V_{(BR)EBO}$	5.0	---	V
Collector-Emitter Cutoff Current V_{CE} = 40 V, V_{EB} = 4 V	I_{CEX1}	---	1.0	µA
Collector-Emitter Cutoff Current V_{CE} = 40 V, V_{EB} = 4 V, T_A = +150°C	I_{CEX2}	---	1.0	µA
Collector Current Continuous V_{CB} = 50 V	I_C	3.0	---	A
ON Characteristics	**Symbol**	**Min**	**Max**	**Unit**
DC Current Gain				
I_C = 500 mA, V_{CE} = 1 V (pulsed)	h_{FE1}	50	250	---
I_C = 1.5 A, V_{CE} = 2 V (pulsed)	h_{FE2}	40	200	---
I_C = 2.5 A, V_{CE} = 3 V (pulsed)	h_{FE3}	30	---	---
I_C = 3.0 A, V_{CE} = 5 V (pulsed)	h_{FE4}	25	---	---
I_C = 500 mA, V_{CE} = 1 V (pulsed), T_A = -55°C	h_{FE5}	25	---	---
Base-Emitter Saturation Voltage				
I_C = 500 mA, I_B = 50 mA (pulsed)	$V_{BE(sat)1}$	---	1.0	V dc
I_C = 1.5 A, I_B = 150 mA (pulsed)	$V_{BE(sat)2}$	0.9	1.4	V dc
I_C = 2.5 A, I_B = 250 mA (pulsed)	$V_{BE(sat)3}$	---	2.0	V dc
Collector-Emitter Saturation Voltage				
I_C = 500 mA, I_B = 50 mA (pulsed)	$V_{CE(sat)1}$	---	0.5	V dc
I_C = 1.5 A, I_B = 150 mA (pulsed)	$V_{CE(sat)2}$	---	1.0	V dc
I_C = 2.5 A, I_B = 250 mA (pulsed)	$V_{CE(sat)3}$	---	1.5	V dc
Small Signal Characteristics	**Symbol**	**Min**	**Max**	**Unit**
Magnitude of Common Emitter, Small Signal, Short Circuit Forward Current Transfer Ratio V_{CE} = 5 V, I_C = 100 mA, f = 20 MHz	$\|h_{FE}\|$	3.0	15	---
Open Circuit Output Capacitance V_{CB} = 10 V, I_E = 0, 100 kHz < f < 1 MHz	C_{OBO}	---	40	pF
Input Capacitance, Output Open Circuited V_{EB} = 3 V, I_C = 0, 100 kHz < f < 1 MHz	C_{IBO}	---	300	pF
Pulse Response Characteristics	**Symbol**	**Min**	**Max**	**Unit**
Delay Time I_C = 1.5 A, I_{B1} = 150 mA	t_d	---	15	ns
Rise Time I_C = 1.5 A, I_{B1} = 150 mA	t_r	---	30	ns
Storage Time I_C = 1.5 mA, I_{B2} = I_{B1} = 150 mA	t_s	---	55	ns
Fall Time I_C = 1.5 mA, I_{B2} = I_{B1} = 150 mA	t_f	---	35	ns