

Description

Semicoa Semiconductors offers:

- Screening and processing per MIL-PRF-19500 Appendix E
- JAN level (2N2060J)
- JANTX level (2N2060JX)
- JANTXV level (2N2060JV)
- QCI to the applicable level
- 100% die visual inspection per MIL-STD-750 method 2072 for JANTXV
- Radiation testing (total dose) upon request

Please contact Semicoa for special configurations
www.**SEMICOA**.com or (714) 979-1900

Applications

- Matched, Dual Transistors
- Low power
- NPN silicon transistor



Features

- Hermetically sealed TO-77 metal can
- Also available in chip configuration
- Chip geometry 0410
- Reference document: MIL-PRF-19500/270

Benefits

- Qualification Levels: JAN, JANTX, and JANTXV
- Radiation testing available

Absolute Maximum Ratings		T _C = 25°C unless otherwise specified	
Parameter	Symbol	Rating	Unit
Collector-Emitter Voltage	V _{CEO}	60	Volts
Collector-Base Voltage	V _{CBO}	100	Volts
Emitter-Base Voltage	V _{EBO}	7	Volts
Collector Current, Continuous	I _C	500	mA
Power Dissipation, T _A = 25°C Derate linearly above 25°C	P _T	540 one section 600 both sections 3.08 one section 3.48 both sections	mW mW mW/°C mW/°C
Power Dissipation, T _C = 25°C Derate linearly above 25°C	P _T	1.5 one section 2.12 both sections 8.6 one section 12.1 both sections	W W mW/°C mW/°C
Operating Junction Temperature Storage Temperature	T _J T _{STG}	-65 to +200	°C

ELECTRICAL CHARACTERISTICS

characteristics specified at $T_A = 25^\circ\text{C}$

Off Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 30\text{ mA}$	60			Volts
Collector-Emitter Breakdown Voltage	$V_{(BR)CER}$	$I_C = 10\text{ mA}$, $R_{BE} = 10\ \Omega$	80			Volts
Collector-Base Cutoff Current	I_{CBO1}	$V_{CB} = 100\text{ Volts}$			10	μA
	I_{CBO2}	$V_{CB} = 80\text{ Volts}$			2	nA
	I_{CBO3}	$V_{CB} = 80\text{ Volts}$, $T_A = 150^\circ\text{C}$			10	μA
Collector-Emitter Cutoff Current	I_{CEO}	$V_{CE} = \text{xx Volts}$				μA
Collector-Emitter Cutoff Current	I_{CEX}	$V_{CE} = \text{xx Volts}$, $V_{EB} = \text{x Volts}$				μA
Collector-Emitter Cutoff Current	I_{CES}	$V_{CE} = \text{xx Volts}$				nA
Emitter-Base Cutoff Current	I_{EBO1}	$V_{EB} = 7\text{ Volts}$			10	μA
	I_{EBO2}	$V_{EB} = 5\text{ Volts}$			2	nA

On Characteristics						
Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
DC Current Gain	h_{FE1}	$I_C = 10\ \mu\text{A}$, $V_{CE} = 5\text{ Volts}$	25		75	
	h_{FE2}	$I_C = 100\ \mu\text{A}$, $V_{CE} = 5\text{ Volts}$	30		90	
	h_{FE3}	$I_C = 1\text{ mA}$, $V_{CE} = 5\text{ Volts}$	40		120	
	h_{FE4}	$I_C = 10\text{ mA}$, $V_{CE} = 5\text{ Volts}$	50		150	
	h_{FE5}	$I_C = 100\ \mu\text{A}$, $V_{CE} = 5\text{ Volts}$ $T_A = -55^\circ\text{C}$	10			
Base-Emitter Voltage Differential	$ V_{BE1} - V_{BE2} _1$	$V_{CE} = 5\text{ Volts}$, $I_C = 100\ \mu\text{A}$			5	mVolts
	$ V_{BE1} - V_{BE2} _2$	$V_{CE} = 5\text{ Volts}$, $I_C = 1\text{ mA}$				
Base-Emitter Voltage Differential change with temperature	$ V_{BE1} - V_{BE2} _1$	$V_{CE} = 5\text{ Volts}$, $I_C = 100\ \mu\text{A}$ $T_A = 25^\circ\text{C}$ and -55°C			.8	mVolts
	$ V_{BE1} - V_{BE2} _2$	$V_{CE} = 5\text{ Volts}$, $I_C = 1\text{ mA}$ $T_A = 25^\circ\text{C}$ and $+125^\circ\text{C}$			1	

Dynamic Characteristics						
Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Magnitude – Common Emitter, Short Circuit Forward Current Transfer Ratio	$ h_{FE} $	$V_{CE} = 10 \text{ Volts}, I_C = 50 \text{ mA}, f = 20 \text{ MHz}$	3		25	
Small Signal Short Circuit Forward Current Transfer Ratio	h_{FE}	$V_{CE} = 5 \text{ Volts}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$	50		150	
Open Circuit Output Capacitance	C_{OBO}	$V_{CB} = 10 \text{ Volts}, I_E = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$			15	pF
Open Circuit Input Capacitance	C_{IBO}	$V_{EB} = 0.5 \text{ Volts}, I_C = 0 \text{ mA}, 100 \text{ kHz} < f < 1 \text{ MHz}$			85	pF
Noise Figure	NF ₁	$V_{CE} = 10 \text{ Volts}, I_C = 300 \mu\text{A}, f = 1 \text{ kHz}, R_g = 510 \Omega$			8	dB
	NF ₂	$V_{CE} = 10 \text{ Volts}, I_C = 300 \mu\text{A}, f = 10 \text{ kHz}, R_g = 1 \text{ k}\Omega$			8	
Short Circuit Input Impedance	h_{ib}	$V_{CB} = 5 \text{ V}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$	20		30	Ω
Short Circuit Input Impedance	h_{ie}	$V_{CB} = 5 \text{ V}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$	1		4	k Ω
Open Circuit Output Admittance	h_{oe}	$V_{CB} = 5 \text{ V}, I_C = 1 \text{ mA}, f = 1 \text{ kHz}$			16	μmhos