

**61084**

**SURFACE MOUNT (NPN)  
GENERAL PURPOSE TRANSISTOR  
(2N2222AUA)**

**Mii**  
OPTOELECTRONIC PRODUCTS  
DIVISION

**Features:**

- Hermetically sealed
- Miniature package to minimize circuit board area
- Ceramic surface mount package
- MIL-PRF-19500 screening available

**Applications**

- Analog switches
- Signal conditioning
- Small signal amplifiers
- High density packaging

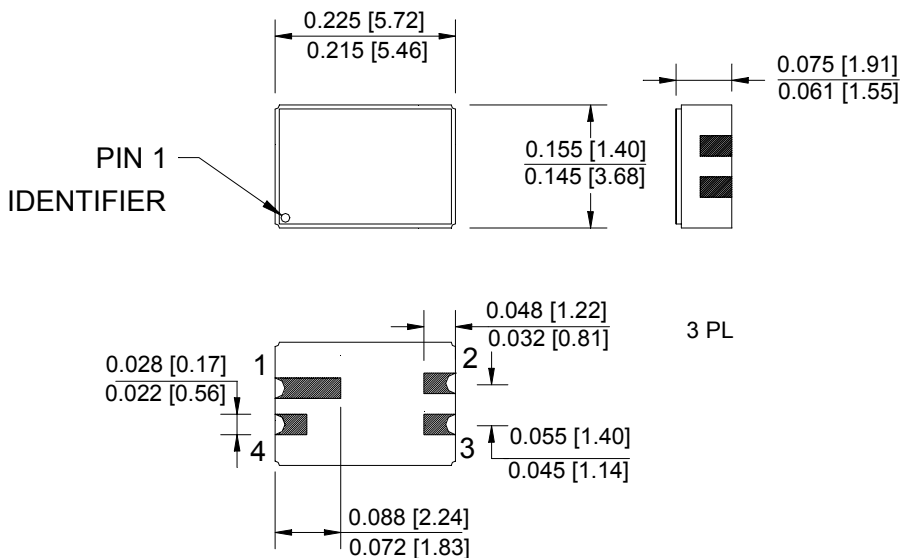
**DESCRIPTION**

The **61084** is a hermetically sealed ceramic surface mount general purpose switching transistor. This miniature ceramic package is ideal for designs where board space and device weight are important requirements. This device is available custom binned to customer specifications or screened to MIL-PRF-19500.

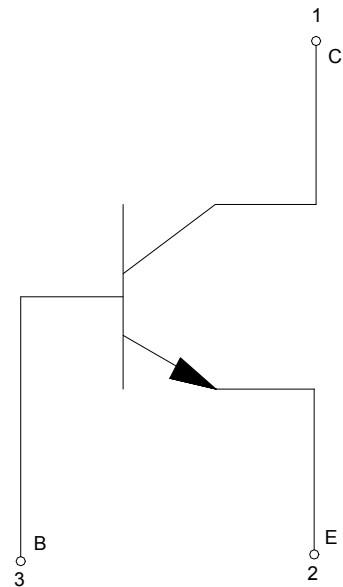
**ABSOLUTE MAXIMUM RATINGS**

Collector-Base Voltage .....	75V
Collector-Emitter Voltage .....	50V
Emitter-Collector Voltage .....	6V
Continuous Collector Current .....	800mA
Power Dissipation (Derate at the rate of 3.33 mW/°C above 25°C) .....	500mW
Maximum Junction Temperature .....	+200°C
Operating Temperature (See part selection guide for actual operating temperature) .....	-65°C to +200°C
Storage Temperature .....	-65°C to +200°C
Lead Soldering Temperature (vapor phase reflow for 30 seconds) .....	215°C

**Package Dimensions**



**Schematic Diagram**



**ELECTRICAL CHARACTERISTICS**  $T_A = 25^\circ\text{C}$  unless otherwise specified.

PARAMETER	SYMBOL	MIN	MAX	UNITS	TEST CONDITIONS	NOTE
Collector-Base Breakdown Voltage	$BV_{CBO}$	75		V	$I_C = 10\mu\text{A}, I_E = 0$	
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	50		V	$I_C = 10\text{mA}, I_B = 0\mu\text{A}$	
Emitter-Base Breakdown Voltage	$BV_{EBO}$	6		V	$I_C = 0, I_E = 10\mu\text{A}$	
Collector-Base Cutoff Current	$I_{CBO}$		10	nA	$V_{CB} = 60\text{V}, I_E = 0$	
			10	$\mu\text{A}$	$V_{CB} = 60\text{V}, I_E = 0, T_A = 150^\circ\text{C}$	
Collector-Emitter Cutoff Current	$I_{CES}$		50	nA	$V_{CE} = 50\text{V}$	
Emitter-Base Cutoff Current	$I_{EBO}$		10	nA	$V_{EB} = 4.0\text{V}, I_C = 0$	
Forward-Current Transfer Ratio	$h_{fe1}$	50		-	$V_{CE} = 10\text{V}, I_C = 0.1\text{mA}$	
	$h_{fe2}$	75	325	-	$V_{CE} = 10\text{V}, I_C = 1\text{mA}$	
	$h_{fe3}$	100		-	$V_{CE} = 10\text{V}, I_C = 10\text{mA}$	
	$h_{fe4}$	100	300	-	$V_{CE} = 10\text{V}, I_C = 150\text{mA}$	1
	$h_{fe5}$	30		-	$V_{CE} = 10\text{V}, I_C = 500\text{mA}$	1
	$h_{fe6}$	35		-	$V_{CE} = 10\text{V}, I_C = 1\text{mA} @ -55^\circ\text{C}$	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		0.30	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$	1
			1.0	V	$I_C = 500, I_B = 50\text{mA}$	1
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	0.6	1.20	V	$I_C = 150\text{mA}, I_B = 15\text{mA}$	1
			2.0	V	$I_C = 500\text{mA}, I_E = 50\text{mA}$	1

**SMALL-SIGNAL CHARACTERISTICS**

Small Signal Forward Current Transfer Ratio	$h_{fe}$	50		-	$V_{CE} = 10\text{V}, I_C = 1\text{mA}, f = 1\text{kHz}$	
Small Signal Forward Current Transfer Ratio	$h_{fe}$	2.5		-	$V_{CE} = 20\text{V}, I_C = 20\text{mA}, f = 100\text{kHz}$	
Open Circuit Output Capacitance	$C_{OBO}$		8	pF	$V_{CB} = 10\text{V}, 100\text{kHz}, \leq f \leq 1\text{MHz}$	
Input Capacitance (Output Open Capacitance)	$C_{IBO}$		25	pF	$V_{EB} = 0.5\text{V}, 100\text{kHz}, \leq f \leq 1\text{MHz}$	
Turn-On Time	$t_{on}$		35	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA}, I_{B1} = 15\text{mA}$	
Turn-Off Time	$t_{off}$		300	ns	$V_{CC} = 30\text{V}, I_C = 150\text{mA}, I_{B1} = I_{B2} = 15\text{mA}$	

**NOTES:**

- Pulse width  $\leq 300\mu\text{s}$ , duty cycle  $\leq 2.0\%$ .

**RECOMMENDED OPERATING CONDITIONS:**

PARAMETER	SYMBOL	MIN	MAX	UNITS
Bias Voltage-Collector/Emitter	$I_C$	10	150	mA
Collector-Emitter Voltage	$V_{CE}$	5	20	V

**SELECTION GUIDE**

PART NUMBER	PART DESCRIPTION
61084-001	2N2222AUA PNP transistor, commercial version
61084-002	2N2222AUA PNP transistor, JAN level screening
61084-101	2N2222AUA PNP transistor, JANTX level screening
61084-102	2N2222AUA PNP transistor, JANTXV level screening
61084-300	2N2222AUA PNP transistor, JANS level screening