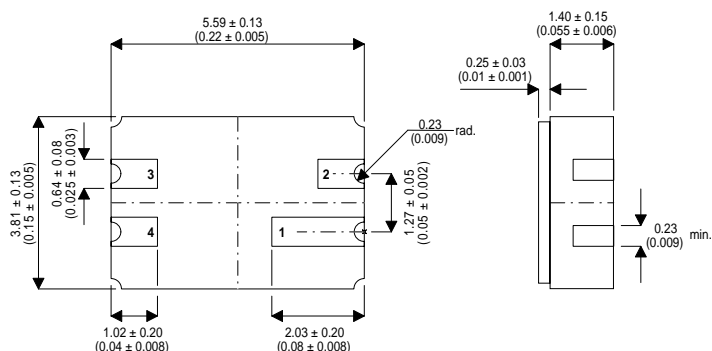


**HIGH SPEED, MEDIUM POWER, NPN
SWITCHING TRANSISTOR IN A
HERMETICALLY SEALED
CERAMIC SURFACE MOUNT PACKAGE
FOR HIGH RELIABILITY APPLICATIONS**

MECHANICAL DATA
Dimensions in mm (inches)



LCC3 PACKAGE
Underside View

PAD 1 – Collector PAD 3 – Emitter
PAD 2 – N/C PAD 4 – Base

FEATURES

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HERMETIC CERAMIC SURFACE MOUNT PACKAGE
- CECC SCREENING OPTIONS
- SPACE QUALITY LEVELS OPTIONS
- HIGH SPEED SATURATED SWITCHING

APPLICATIONS:

Hermetically sealed surface mount version of the popular 2N2222A for high reliability / space applications requiring small size and low weight devices.

ABSOLUTE MAXIMUM RATINGS ($T_{case} = 25^{\circ}C$ unless otherwise stated)

V_{CBO}	Collector – Base Voltage	75V
V_{CEO}	Collector – Emitter Voltage ($I_B = 0$)	40V
V_{EBO}	Emitter – Base Voltage ($I_B = 0$)	6V
I_C	Collector Current	800mA
P_D	Total Device Dissipation	350mW
P_D	Derate above $50^{\circ}C$	2.0mW / $^{\circ}C$
R_{ja}	Thermal Resistance Junction to Ambient	$350^{\circ}C/W$
T_{stg}	Storage Temperature	-55 to $200^{\circ}C$

ELECTRICAL CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit	
$V_{\text{CEO(sus)}}^*$ Collector – Emitter Sustaining Voltage	$I_{\text{C}} = 10\text{mA}$	40			V	
$V_{(\text{BR})\text{CBO}}^*$ Collector – Base Breakdown Voltage	$I_{\text{C}} = 10\mu\text{A}$	75			V	
$V_{(\text{BR})\text{EBO}}^*$ Emitter – Base Breakdown Voltage	$I_{\text{E}} = 10\mu\text{A}$ $I_{\text{C}} = 0$	6			V	
I_{CEX}^* Collector Cut-off Current ($I_{\text{C}} = 0$)	$I_{\text{B}} = 0$ $V_{\text{CE}} = 60\text{V}$			10	nA	
I_{CBO}^* Collector – Base Cut-off Current	$I_{\text{E}} = 0$ $V_{\text{CB}} = 60\text{V}$			10	nA	
	$T_{\text{C}} = 125^{\circ}\text{C}$			10	μA	
I_{EBO}^* Emitter Cut-off Current ($I_{\text{C}} = 0$)	$I_{\text{C}} = 0$ $V_{\text{EB}} = 3\text{V (off)}$			10	nA	
I_{BL}^* Base Current	$V_{\text{CE}} = 60\text{V}$ $V_{\text{EB}} = 3\text{V (off)}$			20	nA	
$V_{\text{CE(sat)}}^*$ Collector – Emitter Saturation Voltage	$I_{\text{C}} = 150\text{mA}$ $I_{\text{B}} = 15\text{mA}$			0.3	V	
	$I_{\text{C}} = 500\text{mA}$ $I_{\text{B}} = 50\text{mA}$			1		
$V_{\text{BE(sat)}}^*$ Base – Emitter Saturation Voltage	$I_{\text{C}} = 150\text{mA}$ $I_{\text{B}} = 15\text{mA}$	0.6		1.2	V	
	$I_{\text{C}} = 500\text{mA}$ $I_{\text{C}} = 50\text{mA}$			2		
h_{FE}^* DC Current Gain	$T_{\text{A}} = -55^{\circ}\text{C}$	$I_{\text{C}} = 0.1\text{mA}$ $V_{\text{CE}} = 10\text{V}$		35	—	
		$I_{\text{C}} = 1\text{mA}$ $V_{\text{CE}} = 10\text{V}$		50		
		$I_{\text{C}} = 10\text{mA}$ $V_{\text{CE}} = 10\text{V}$		75		
		$I_{\text{C}} = 10\text{mA}$ $V_{\text{CE}} = 10\text{V}$		35		
		$I_{\text{C}} = 150\text{mA}$ $V_{\text{CE}} = 10\text{V}$		100		300
		$I_{\text{C}} = 150\text{mA}$ $V_{\text{CE}} = 1\text{V}$		50		
		$I_{\text{C}} = 500\text{mA}$ $V_{\text{CE}} = 10\text{V}$		40		

* Pulse test $t_{\text{p}} = 300\mu\text{s}$, $\delta \leq 2\%$

DYNAMIC CHARACTERISTICS ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
f_{T} Transition Frequency	$I_{\text{C}} = 20\text{mA}$ $V_{\text{CE}} = 20\text{V}$ $f = 100\text{MHz}$	300			MHz
C_{ob} Output Capacitance	$V_{\text{CB}} = 10\text{V}$ $I_{\text{E}} = 0$ $f = 1.0\text{MHz}$			8	pF
C_{ib} Input Capacitance	$V_{\text{BE}} = 0.5\text{V}$ $I_{\text{C}} = 0$ $f = 1.0\text{MHz}$			30	pF
h_{fe} Small Signal Current Gain	$I_{\text{C}} = 1\text{mA}$ $V_{\text{CE}} = 10\text{V}$ $f = 1\text{kHz}$	50		300	
	$I_{\text{C}} = 10\text{mA}$ $V_{\text{CE}} = 10\text{V}$ $f = 1\text{kHz}$	75		375	

SWITCHING CHARACTERISTICS (RESISTIVE LOAD) ($T_{\text{case}} = 25^{\circ}\text{C}$ unless otherwise stated)

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_{d} Delay Time	$V_{\text{CC}} = 30\text{V}$ $V_{\text{BE}} = 0.5\text{V (off)}$			10	ns
t_{r} Rise Time	$I_{\text{C1}} = 150\text{mA}$ $I_{\text{B1}} = 15\text{mA}$			25	ns
t_{s} Storage Time	$V_{\text{CC}} = 30\text{V}$ $I_{\text{C}} = 150\text{mA}$			225	ns
t_{f} Fall Time	$I_{\text{B1}} = I_{\text{B2}} = 15\text{mA}$			60	ns

f_{T} is defined as the frequency at which h_{FE} extrapolates to unity.