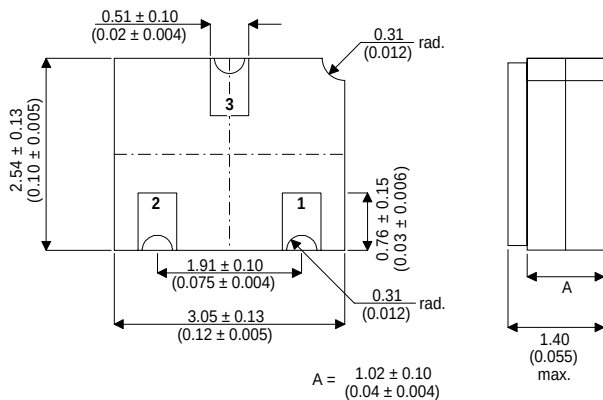


HIGH SPEED, MEDIUM POWER, NPN SWITCHING TRANSISTOR IN A HERMETICALLY SEALED CERAMIC SURFACE MOUNT PACKAGE FOR HIGH RELIABILITY APPLICATIONS

MECHANICAL DATA Dimensions in mm (inches)



SOT23 CERAMIC (LCC1 PACKAGE)

Underside View

PAD 1 – Base PAD 2 – Emitter PAD 3 – Collector

FEATURES

- SILICON PLANAR EPITAXIAL NPN TRANSISTOR
- HERMETIC CERAMIC SURFACE MOUNT PACKAGE (SOT23 COMPATIBLE)
- 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	600mA
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}, T_j	Storage Temperature, Operating Temp Range	-55 to 200 $^{\circ}C$

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

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

* Pulse test $t_p = 300\mu s$, $\delta \leq 2\%$

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

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

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

Parameter	Test Conditions	Min.	Typ.	Max.	Unit
t_d Delay Time	$V_{CC} = 30V$ $V_{BE} = 0.5V$ (off)			10	ns
t_r Rise Time	$I_{C1} = 150mA$ $I_{B1} = 15mA$			25	ns
t_s Storage Time	$V_{CC} = 30V$ $I_C = 150mA$			225	ns
t_f Fall Time	$I_{B1} = I_{B2} = 15mA$			60	ns

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