



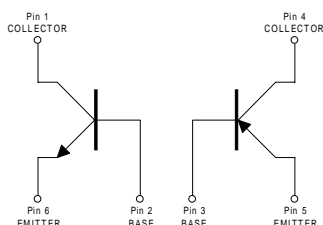
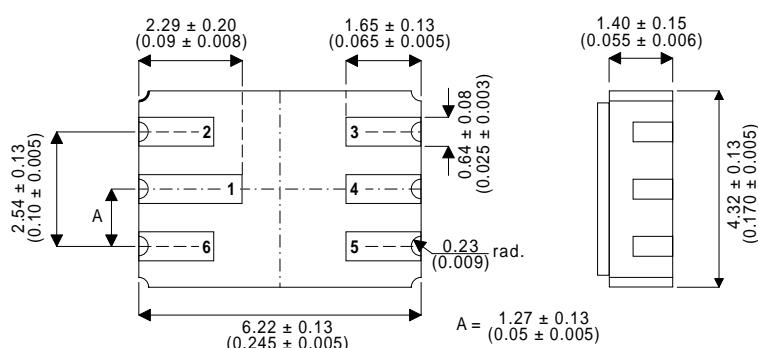
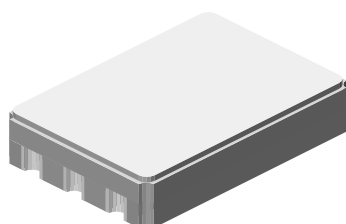
THE DATASHEET OF HCT700



MECHANICAL DATA

Dimensions in mm (inches)

LCC2 – Ceramic Surface Mount Package



COMPLEMENTARY SWITCHING TRANSISTORS IN A HERMETICALLY SEALED CERAMIC SURFACE MOUNT PACKAGE FOR HIGH RELIABILITY APPLICATIONS

FEATURES

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

DESCRIPTION

Hermetically sealed surface mount complementary transistor pair.

The HCT700 transistor die have similar electrical characteristics to the 2N2222A on the NPN side and the 2N2907A on the PNP side.

The HCT700 is ideal for high reliability and space applications requiring small size and low weight devices.

ABSOLUTE MAXIMUM RATINGS

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

		NPN	PNP
V_{CBO}	Collector – Base Voltage	75	60
V_{CEO}	Collector – Emitter Voltage	50	60
V_{EBO}	Emitter – Base Voltage	6.0	5.0
I_C	Continuous Collector Current	800mA	600mA
P_D	Power Dissipation @ $T_{amb} = 25^{\circ}C$	0.4W	
P_D	Power Dissipation @ $T_{substrate} = 25^{\circ}C$	2.0W	
	Derate above $25^{\circ}C$	11.4mW / $^{\circ}C$	
	NPN to PNP Isolation Voltage	500V	
T_J, T_{stg}	Operating and Storage Temperature Range	-65 to +200 $^{\circ}C$	
T_L	Soldering temperature (Vapour phase reflow for 30 sec)	215 $^{\circ}C$	
T_L	Soldering temperature (Heated collet for 5 sec)	260 $^{\circ}C$	



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

Parameter	Test Conditions	NPN		PNP		Unit		
		Min.	Max.	Min.	Max.			
Off Characteristics								
$V_{(BR)CBO}$	Collector – Base Breakdown Voltage	$I_C = 10\mu\text{A}$	$I_E = 0$	75		60	V	
$V_{(BR)CEO}$	Collector – Emitter Breakdown Voltage	$I_C = 10\text{mA}$	$I_B = 0$	50		60	V	
$V_{(BR)EBO}$	Emitter – Base Breakdown Voltage	$I_E = 10\mu\text{A}$	$I_C = 0$	6.0		5.0	V	
I_{CBO}	Collector – Base Cut-off Current	$I_E = 0$ $T_{amb} = 25^{\circ}\text{C}$	$V_{CB} = 60\text{V}$		10		nA	
			$V_{CB} = 50\text{V}$			10	nA	
		$I_E = 0$ $T_{amb} = 150^{\circ}\text{C}$	$V_{CB} = 60\text{V}$		10			μA
			$V_{CB} = 50\text{V}$			10		
I_{EBO}	Emitter – Base Cut-off Current	$I_C = 0$ $T_{amb} = 25^{\circ}\text{C}$	$V_{EB} = 4\text{V}$ $V_{EB} = 3.5\text{V}$		10		nA	
I_{CES}	Collector – Emitter Cut-off Current	$V_{CE} = 50\text{V}$			1.0		μA	
On Characteristics								
h_{FE}	DC Current Gain	$V_{CE} = 10\text{V}$	$I_C = 0.1\text{mA}$	50		75		
		$V_{CE} = 10\text{V}$	$I_C = 1\text{mA}$	75	325	100	450	
		$V_{CE} = 10\text{V}$	$I_C = 10\text{mA}$	100		100		
		$V_{CE} = 10\text{V}$	$I_C = 150\text{mA}^1$	100	300	100	300	—
		$V_{CE} = 10\text{V}$	$I_C = 500\text{mA}^1$	30		50		
		$V_{CE} = 10\text{V}$ $T_{amb} = -55^{\circ}\text{C}$	$I_C = 10\text{mA}$ $I_C = 1\text{mA}$	35			50	
$V_{CE(SAT)}$	Collector – Emitter Saturation Voltage	$I_C = 150\text{mA}$	$I_B = 15\text{mA}^1$		0.30		0.40	
		$I_C = 500\text{mA}$	$I_B = 50\text{mA}^1$		1.00		1.60	
$V_{BE(SAT)}$	Base – Emitter Saturation Voltage	$I_C = 150\text{mA}$	$I_B = 15\text{mA}^1$	0.60	1.20		1.30	
		$I_C = 500\text{mA}$	$I_B = 50\text{mA}^1$		2.00		2.60	
Small Signal Characteristics								
h_{fe}	Small Signal Current Gain	$V_{CE} = 10\text{V}$ $f = 1\text{kHz}$	$I_C = 1\text{mA}$	50		100	—	
$ h_{fe} $	Small Signal Current Gain	$V_{CE} = 20\text{V}$ $f = 100\text{MHz}$	$I_C = 20\text{mA}$	2.5			—	
			$I_C = 50\text{mA}$			2.0		
C_{obo}	Output Capacitance	$V_{CE} = 10\text{V}$ $f = 100\text{kHz}$ to 1MHz			8.0		8.0	
C_{ibo}	Input Capacitance	$V_{EB} = 2\text{V}$ $f = 100\text{kHz}$ to 1MHz			25			
		$V_{EB} = 0.5\text{V}$ $f = 100\text{kHz}$ to 1MHz					30	
Small Signal Characteristics								
t_{on}	Turn On Time	$V_{CC} = 30\text{V}$ $I_{B1} = 15\text{mA}$	$I_C = 150\text{mA}$		35		45	
t_{off}	Turn Off Time	$V_{CC} = 30\text{V}$ $I_{B1} = I_{B2} = 15\text{mA}$	$I_C = 150\text{mA}$		300		300	

¹ Pulse Test: Pulse Width $\leq 300\text{ms}$, $\delta \leq 2\%$

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