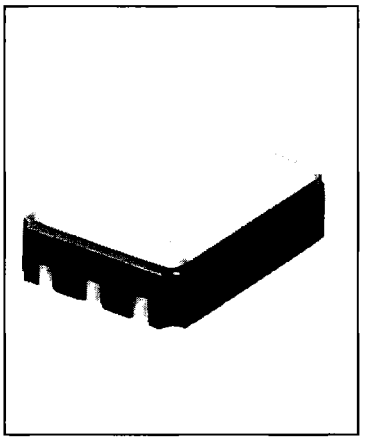
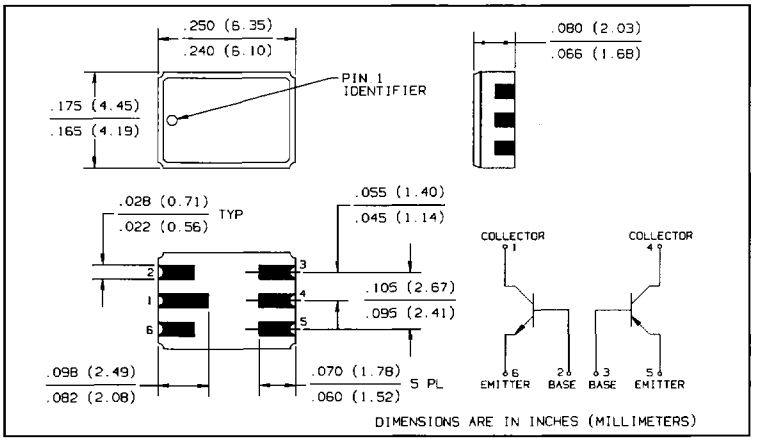
Surface Mount NPN/PNP Complementary Transistors Type HCT700





Features

- Ceramic surface mount package
- Miniature package to minimize circuit board area
- Electrical performance similar to 2N2222A and 2N2907A
- Hermetically sealed
- Screened per MIL-S-19500 TX or TXV (See JANTX2N4854U)

Description

The HCT700 is a hermetically sealed, ceramic surface-mount, complementary transistor pair. The HCT700 consists of an NPN transistor die and PNP transisitor die. The HCT700 electrical characteristics for the NPN side are similar to the MIL-S-19500/255 specification for JAN2N2222A and on the PNP side are similar to the MIL-S-10500/291 specification for the JAN2N2907A. The miniature six pin ceramic package is ideal for designs where board space and device weight are important design considerations.

Order HCT700TX or HCT700TXV for TX or TXV processing per MIl-S-19500.

Absolute Maximum Ratings (T_A = 25°C unless otherwise noted)

NPN to PNP Isolation Voltage	500VDC
Collector-Base Voltage (NPN)	75V
Collector-Base Voltage (PNP)	60V
Collector-Emitter Voltage (NPN)	50V
Collector-Emitter Voltage (PNP)	60V
Emitter-Base Voltage (NPN)	6.0V
Emitter-Base Voltage (PNP)	5.0V
Collector Current-Continuous (NPN)	800mA
Collector Current-Continuous (PNP)	600mA
Operating Junction Temperature (T_J)	-65°C to +200°C
Storage Junction Temperature (T_{stg})	-65°C to +200°C
Power Dissipation @ T_A = 25°C	0.4W
Power Dissipation @ T_S[(1)] = 25°C	2.0W[(2)]
Soldering Temperature (vapor phase reflow for 30 sec.)	215°C
Soldering Temperature (heated Collet for 5 sec.)	260°C

Notes:
(1) T_S = Substrate temperature that the chip carrier is mounted on.
(2) Derate linearly 11.4mW/°C above 25°C.

Type HCT700

Electrical Characteristics (T_A = 25°C unless otherwise noted)

SYMBOL	PARAMETER	NPN		PNP		UNITS	TEST CONDITIONS
		MIN	MAX	MIN	MAX		
Off Characteristics							
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	75		60		V	I_C = 10.0 µA, I_E = 0
$V_{(BR)CEO}$	Collector-Emitter Breakdown Voltage	50		60		V	I_C = 10.0 mA, I_B = 0
$V_{(BR)EBO}$	Emitter-Base Beakdown Voltage	6.0		5.0		V	I_E = 10.0 µA, I_C = 0
I_{CBO}	Collector-Base Cutoff Current		10.0			nA	V_{CB} = 60 V, I_E = 0
					10.0	nA	V_{CB} = 50 V, I_E = 0
			10.0			µA	V_{CB} = 60 V, I_E = 0, T_A = 150°C
					10.0	µA	V_{CB} = 50 V, I_E = 0, T_A = 150°C
I_{EBO}	Emitter-Base Cutoff Current		10.0			nA	V_{EB} = 4.0 V, I_C = 0
					50.0	nA	V_{EB} = 3.5 V, I_C = 0
I_{CES}	Collector-Emitter Cutoff Current		1.00			µA	V_{CE} = 50 V
On Characteristics							
h_{FE}	DC Current Transfer Ratio	50		75		-	V_{CE} = 10.0 V, I_C = 0.1 mA
		75	325	100	450	-	V_{CE} = 10.0 V, I_C = 1.0 mA
		100		100		-	V_{CE} = 10.0 V, I_C = 10.0 mA
		100	300	100	300	-	V_{CE} = 10.0 V, I_C = 150.0 mA(3)
		30		50		-	V_{CE} = 10.0 V, I_C = 500.0 mA(3)
		35				-	V_{CE} = 10.0 V, I_C = 10.0 mA, T_A = -55°C
				50		-	V_{CE} = 10.0 V, I_C = 1.0 mA, T_A = -55°C
$V_{CE(SAT)}$	Collector-Emitter Saturation Voltage		0.30		0.40	V	I_C = 150 mA, I_B = 15 mA(3)
			1.00		1.60	V	I_C = 500 mA, I_B = 50 mA(3)
$V_{BE(SAT)}$	Base-Emitter Saturation Voltage	0.60	1.20		1.30	V	I_C = 150 mA, I_B = 15 mA(3)
			2.00		2.60	V	I_C = 500 mA, I_B = 50 mA(3)
Small-Signal Characteristics							
h_{fe}	Small-Signal Current Transfer Ratio	50		100		-	V_{CE} = 10.0 V, I_C = 1.0 mA, f = 1.0 kHz
$\|h_{fe}\|$	Small-Signal Current Transfer Ratio	2.5				-	V_{CE} = 20 V, I_C = 20 mA, f = 100 MHz
				2.0		-	V_{CE} = 20 V, I_C = 50 mA, f = 100 MHz
C_{obo}	Output Capacitance		8.0		8.0	pF	V_{CE} = 10.0 V, 100 kHz ≤ f ≤ 1.0 MHz
C_{ibo}	Input Capacitance		25			pF	V_{EB} = 2.0 V, 100 kHz ≤ f ≤ 1.0 MHz
					30	pF	V_{EB} = 0.5 V, 100 kHz ≤ f ≤ 1.0 MHz
Switching Characteristics							
t_{on}	Turn-On Time		35		45	ns	V_{CC} = 30 V, I_C = 150 mA, I_{B1} = 15 mA
t_{off}	Turn-Off Time		300		300	ns	V_{CC} = 30 V, I_C = 150 mA, I_{B1} = I_{B2} = 15 mA

(3) Pulse Test: Pulse Width ≤ 300 ms, duty cycle ≤ 2.0%

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