



DI-4044 SOIC MATCHED DIELECTRICALLY ISOLATED DUAL NPN TRANSISTORS

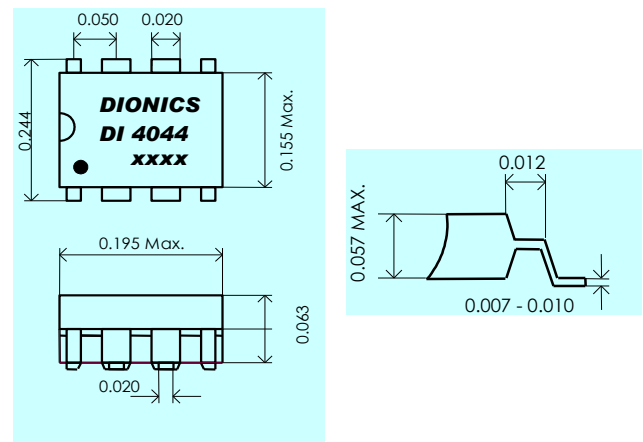
Description:

Dual NPN transistors, Dielectrically Isolated, with closely matched electrical parameters.

Features:

- Dielectrically Isolated
- Small 8-pin SOIC Package
- High Operating Temperature
- V_{BE} and h_{fe} Closely Matched
- Low Noise and High Gain Performance
- High Gain at Low Current
- Low Capacitance
- Also available in TO and 8 lead PDIP

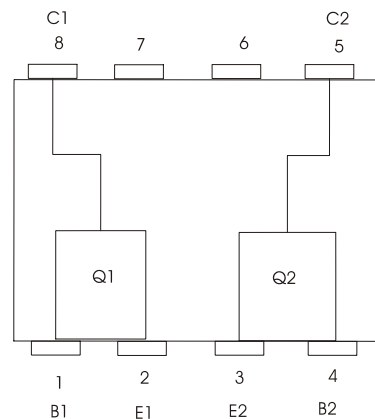
Package Layout:



Pin Designation:

Pin Number	Symbol	Description
1	B1	Base Q1
2	E1	Emitter Q1
3	E2	Emitter Q2
4	B2	Base Q2
5	C2	Collector Q2
6	--	No connection
7	--	No connection
8	C1	Collector Q1

Equivalent Circuit:



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Absolute Maximum Ratings

❖ Any Single Transistor				
Symbol	Parameter	Min.	Max.	Unit
I_C	DC Collector Current	–	10	mA
P_D	Total Power Dissipation	–	400	mW
T_{stg}	Storage Temperature	-55	+125	$^{\circ}C$
T_J	Junction Temperature	–	+200	$^{\circ}C$

Electrical Characteristics: ($25^{\circ}C$ ambient unless otherwise specified)

❖ DC Characteristics of Any Single Transistor					
Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 10\mu A$	45	–	V
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 1\text{ mA}$	40	–	V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_C = 10\mu A$	7	–	V
I_{CEO}	Collector-Emitter Leakage Current	$V_{CEO} = 30V$	–	4.0	nA
I_{EBO}	Emitter-Base Leakage Current	$V_{EB} = 5V$	–	0.1	nA
V_{BE}	Base-Emitter Forward Voltage	$I_C = 100\text{nA} \pm 5\%$; $V_{CB} = 0.0 \pm 10\text{ mV}$; $T_J = 25^{\circ}C \pm 5^{\circ}C$	450	–	mV
$V_{CE(Sat)}$	Collector-Emitter Saturation Voltage	$I_C = 1\text{ mA}$; $I_B = 100\mu A$	–	0.35	V
h_{FE}	DC Current Gain	$I_C = 100\mu A$; $V_{CE} = 5V$	200	–	–
C_{OB}		$V_{CB} = 5.0V$	–	0.8	pF
CTE		$I_C = 0$; $V_{EB} = 0.5V$	–	1	pF
❖ DC Characteristics of Dual Transistor					
Δh_{FE}	Ratio of highest and lowest DC Current Gain	$I_C = 100\mu A$; $V_{CE} = 5V$	0.8	1.0	–
ΔV_{BE}	Difference between highest and lowest Base-Emitter voltage	$I_{C1} = 100\text{nA}$; $I_{C2} = I_{C1} \pm 0.5\%$; $V_{CB} = 0 \pm 10\text{ mV}$; Thermal equilibrium with $T_J = 25^{\circ}C \pm 5^{\circ}C$	–	1.0	mV
$C_{C1/C2}$		$V_{C1/C2} = 0V$	–	0.8	pF
$I_{C1/C2}$		$V_{C1/C2} = 100V$	–	5	pA
❖ AC Characteristics of Any Single Transistor					
f_T	Transition Frequency	$I_C = 10\mu A$; $V_{CE} = 10V$	15	–	MHz
		$I_C = 1\text{ mA}$; $V_{CE} = 10V$	150	–	MHz
N.F	Noise Figure	$I_C = 10\mu A$; $V_{CE} = 5V$; $f = 1\text{ kHz}$; $R_G = 10\text{ k}\Omega$; $BW = 200\text{ Hz}$	–	3	dB