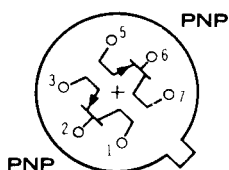


MD5000, A, B (SILICON)



CASE 654-04

Dual PNP silicon annular transistors designed for ultra-high frequency oscillator and amplifier applications and for differential-amplifier applications requiring a matched pair of transistors with a high degree of parameter uniformity under varying environmental conditions.



PINS 4 AND 8 OMITTED

Pin Connections, Bottom View
All Leads Electrically Isolated from Case

MAXIMUM RATINGS (T_A = 25°C unless otherwise noted)

Rating	Symbol	Value		Unit
		One Side	Both Sides	
Collector-Emitter Voltage	V _{CEO}	15		Vdc
Collector-Base Voltage	V _{CB}	20		Vdc
Emitter-Base Voltage	V _{EB}	5.0		Vdc
Collector Current	I _C	50		mAdc
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-65 to +200		°C
Total Device Dissipation @ T _A = 25°C Derate above 25°C	P _D	300	400	mW
		1.7	2.3	

MD5000, A, B (Continued)

ELECTRICAL CHARACTERISTICS (each side) (T_A = 25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
----------------	--------	-----	-----	-----	------

OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage (I _C = 3 mA _{dc} , I _B = 0)	V _{CEO}	15	—	—	V _{dc}
Collector-Base Breakdown Voltage (I _C = 10 μA _{dc} , I _E = 0)	V _{CBO}	20	—	—	V _{dc}
Emitter-Base Breakdown Voltage (I _E = 10 μA _{dc} , I _C = 0)	V _{EBO}	5.0	—	—	V _{dc}
Collector Cutoff Current (V _{CB} = 15 V _{dc} , I _E = 0) (V _{CB} = 15 V _{dc} , I _E = 0, T _A = 150°C)	I _{CBO}	—	—	0.010 1.0	μA _{dc}

ON CHARACTERISTICS

DC Current Gain (I _C = 3 mA _{dc} , V _{CE} = 1 V _{dc})	h _{FE}	20	50	—	—
Collector-Emitter Saturation Voltage (I _C = 10 mA _{dc} , I _B = 1 mA _{dc})	V _{CE(sat)}	—	—	0.4	V _{dc}
Base-Emitter Saturation Voltage (I _C = 10 mA _{dc} , I _B = 1 mA _{dc})	V _{BE(sat)}	—	—	1.0	V _{dc}

DYNAMIC CHARACTERISTICS

Current-Gain-Bandwidth Product (I _C = 4 mA _{dc} , V _{CE} = 10 V _{dc} , f = 100 MHz)	f _T	600	900	—	MHz
Output Capacitance (V _{CB} = 10 V _{dc} , I _E = 0, f = 140 kHz)	C _{ob}	—	—	1.7	pF
Input Capacitance (V _{BE} = 0.5 V _{dc} , I _C = 0, f = 140 kHz)	C _{ib}	—	—	2.0	pF
Noise Figure (I _C = 1 mA _{dc} , V _{CE} = 6 V _{dc} , f = 60 MHz, R _S = 400 ohms)	NF	—	3.0	6.0	dB

FUNCTIONAL TEST

Amplifier Power Gain (I _C = 6 mA _{dc} , V _{CB} = 12 V _{dc} , R _G = R _L = 50 ohms, f = 200 MHz)	G _{pe}	15	20	—	dB
---	-----------------	----	----	---	----

MATCHING CHARACTERISTICS

DC Current Gain Ratio* (I _C = 4 mA _{dc} , V _{CE} = 10 V _{dc})	MD5000 MD5000A MD5000B	h _{FE1} /h _{FE2} *	— 0.9 0.8	0.7 — —	— 1.0 1.0	—
Base Voltage Differential (I _C = 4 mA _{dc} , V _{CE} = 10 V _{dc})	MD5000 MD5000A MD5000B	V _{BE1} - V _{BE2}	— — —	5.0 — —	— 5.0 10	mV _{dc}
Base Voltage Differential Change (I _C = 4 mA _{dc} , V _{CE} = 10 V _{dc} , T _A = -55 to +125°C)	MD5000 MD5000A MD5000B	$\frac{\Delta(V_{BE1} - V_{BE2})}{\Delta T_A}$	— — —	10 — —	— 10 20	μV/°C

*The lowest h_{FE} reading is taken as h_{FE1} for this ratio.