New Jersey Semi-Conductor Products, Inc.

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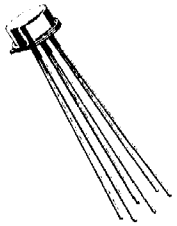
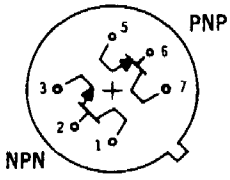
MD6001
MD6002

V_{CB} = 60V
I_C = 300mA
P_D = 500 mW one side
600 mW both sides



Silicon annular complementary-pair dual transistor is designed for high-speed switching circuits, DC to VHF amplifier applications and complementary circuitry.

CASE 32



PIN CONNECTIONS
(BOTTOM VIEW)

MAXIMUM RATINGS (each side) (T_A = 25°C unless otherwise specified)

Test Conditions and Limits are given in magnitudes only. Care must be taken to insure the application of proper polarities for the NPN or PNP transistor, respectively.

Rating	Symbol	Value		Unit
Collector-Base Voltage	V_{CB}	60		Vdc
Collector-Emitter Voltage	V_{CEO}	30		Vdc
Emitter-Base Voltage	V_{EB}	5		Vdc
DC Collector Current (Limited by P_D)	I_C	300		mAdc
Junction Temperature	T_J	+200		°C
Storage Temperature	T_{stg}	-65 to +200		°C
		ONE SIDE	BOTH SIDES	
Total Device Dissipation @ T_A = 25°C	P_D	500	600	mW
Derate above 25°C		2.9	3.4	mW/°C
Total Device Dissipation @ T_C = 25°C	P_D	1.2	2.0	W
Derate above 25°C		6.83	11.43	mW/°C

NPN SATURATED SWITCHING TIME TEST CIRCUITS

For PNP Switching Tests, reverse diodes, voltage polarities, and input pulses.

FIGURE 1 – NPN TURN-ON TIME

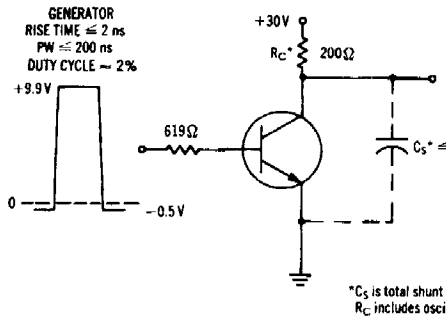
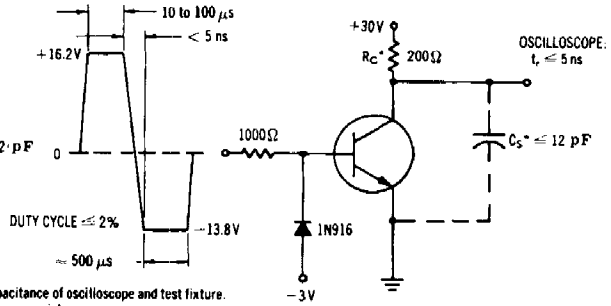


FIGURE 2 – NPN TURN-OFF TIME



*C_S is total shunt capacitance of oscilloscope and test fixture.
R_C includes oscilloscope resistance.

NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However, NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Quality Semi-Conductors

MD6001, MD6002 (continued)

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

Characteristic			Symbol	Min	Max	Unit
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage (I_C = 10 μAdc, I_E = 0)			BV_{CBO}	60	—	Vdc
Collector-Emitter Breakdown Voltage* (I_C = 10 mAdc, I_B = 0)			BV_{CEO}*	30	—	Vdc
Emitter-Base Breakdown Voltage (I_E = 10 μAdc, I_C = 0)			BV_{EBO}	5	—	Vdc
Collector Cutoff Current (V_{CE} = 50 Vdc, V_{EB} = 3 Vdc)			I_{CEX}	—	0.02	μAdc
(V_{CE} = 50 Vdc, V_{EB} = 3 Vdc, T_A = 150°C)				—	30	
Base Cutoff Current (V_{CE} = 50 Vdc, V_{EB} = 3 Vdc)			I_{BL}	—	0.03	μAdc
ON CHARACTERISTICS						
DC Current Gain* (I_C = 0.1 mAdc, V_{CE} = 10 Vdc)		MD6001	h_{FE}*	20	—	—
		MD6002		35	—	
(I_C = 1.0 mAdc, V_{CE} = 10 Vdc)		MD6001		25	—	
		MD6002		50	—	
(I_C = 10 mAdc, V_{CE} = 10 Vdc)		MD6001		35	—	
		MD6002		75	—	
(I_C = 150 mAdc, V_{CE} = 10 Vdc)		MD6001		40	120	
		MD6002		100	300	
(I_C = 150 mAdc, V_{CE} = 1 Vdc)		MD6001		20	—	
		MD6002		50	—	
(I_C = 300 mAdc, V_{CE} = 10 Vdc)		MD6001		20	—	
		MD6002		30	—	
Base-Emitter Saturation Voltage* (I_C = 150 mAdc, I_B = 15 mAdc)			$V_{BE(sat)}$*	—	1.3	Vdc
(I_C = 300 mAdc, I_B = 30 mAdc)				—	2.0	
Collector-Emitter Saturation Voltage* (I_C = 150 mAdc, I_B = 15 mAdc)			$V_{CE(sat)}$*	—	0.4	Vdc
(I_C = 300 mAdc, I_B = 30 mAdc)				—	1.4	
DYNAMIC CHARACTERISTICS						
Gain - Bandwidth Product (I_C = 50 mAdc, V_{CE} = 20 Vdc, f = 100 MHz)			f_T	—	200	MHz
Collector Output Capacitance (V_{CB} = 10 Vdc, I_E = 0, f = 100 kHz)			C_{ob}	—	8	pF
Collector Input Capacitance (V_{BE} = 2 Vdc, I_C = 0, f = 100 kHz)			C_{ib}	—	30	pF
Delay Time	See Figure 1	V_{CC} = 30 V, $V_{BE(off)}$ = 0.5 V	t_d	—	20	ns
Rise Time		I_C = 150 mA, I_{B1} = 15 mA	t_r	—	40	ns
Storage Time	See Figure 2	V_{CC} = 30 V, I_C = 150 mA	t_s	—	280	ns
Fall Time		I_{B1} = I_{B2} = 15 mA	t_f	—	70	ns