

2N5861 (SILICON)

NPN SILICON ANNULAR MEMORY DRIVER

designed for medium-current, high-speed switching applications.
Ideally suited for ferrite core memory driver circuits.

- High Collector-Emitter Breakdown Voltage --
 $BV_{CEO} = 50 \text{ Vdc (Min) @ } I_C = 10 \text{ mAdc}$
- Low Collector-Emitter Saturation Voltage --
 $V_{CE(sat)} = 0.5 \text{ Vdc (Max) @ } I_C = 500 \text{ mAdc}$
- Low Collector-Base Capacitance --
 $C_{cb} = 7.0 \text{ pF (Max) @ } V_{CB} = 10 \text{ Vdc}$
- Fast Switching Times @ $I_C = 500 \text{ mAdc}$ --
 $t_{on} = 25 \text{ ns (Max)}$
 $t_{off} = 60 \text{ ns (Max)}$

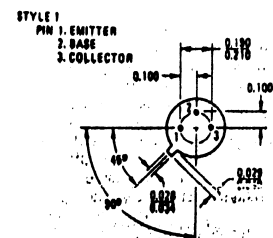
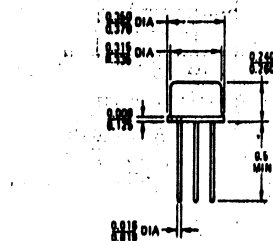
NPN SILICON MEMORY DRIVER TRANSISTOR



*MAXIMUM RATINGS

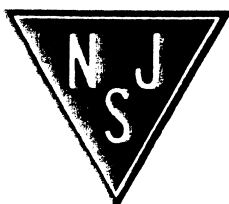
Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	50	Vdc
Collector-Base Voltage	V_{CB}	100	Vdc
Emitter-Base Voltage	V_{EB}	6.0	Vdc
Collector Current - Continuous	I_C	2.0	Adc
Total Device Dissipation @ $T_A = 25^\circ\text{C}$ Derate above 25°C	P_D	1.0 6.0	Watts mW/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	5.0 28.6	Watts mW/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	$^\circ\text{C}$

*Indicates JEDEC Registered Data



To convert inches to millimeters multiply by 25.4
All JEDEC dimensions and notes apply

CASE
TO-36



ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ unless otherwise noted)

Characteristic	Symbol	Min	Max	Unit	
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage ($I_C = 10\text{ mA}$, $I_B = 0$)	BV_{CEO}	50	—	Vdc	
Collector-Base Breakdown Voltage ($I_C = 100\text{ }\mu\text{A}$, $I_E = 0$)	BV_{CBO}	100	—	Vdc	
Emitter-Base Breakdown Voltage ($I_E = 10\text{ }\mu\text{A}$, $I_C = 0$)	BV_{EBO}	6.0	—	Vdc	
Collector Cutoff Current ($V_{CE} = 50\text{ Vdc}$, $V_{BE}(\text{off}) = 2.0\text{ Vdc}$) ($V_{CE} = 50\text{ Vdc}$, $V_{BE}(\text{off}) = 2.0\text{ Vdc}$, $T_A = 75^\circ\text{C}$)	I_{CEX}	— —	0.3 10	μA	
Collector Cutoff Current ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 50\text{ Vdc}$, $I_E = 0$, $T_A = +75^\circ\text{C}$)	I_{CBO}	— —	0.3 10	μA	
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	—	0.1	μA	
ON CHARACTERISTICS					
DC Current Gain ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ Vdc}$) ($I_C = 500\text{ mA}$, $V_{CE} = 1.0\text{ Vdc}$, $T_A = -55^\circ\text{C}$)	h_{FE}	25 10	100 —	—	
Collector-Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$)	$V_{CE(\text{sat})}$	—	0.5	Vdc	
Base-Emitter Saturation Voltage ($I_C = 500\text{ mA}$, $I_B = 50\text{ mA}$)	$V_{BE(\text{sat})}$	0.8	1.1	Vdc	
DYNAMIC CHARACTERISTICS					
Current-Gain-Bandwidth Product ($I_C = 50\text{ mA}$, $V_{CE} = 10\text{ Vdc}$, $f = 100\text{ MHz}$)	f_T	200	—	MHz	
Collector-Base Capacitance ($V_{CB} = 10\text{ Vdc}$, $I_E = 0$, $f = 100\text{ kHz}$)	C_{cb}	—	7.0	pF	
Emitter-Base Capacitance ($V_{BE} = 0.5\text{ Vdc}$, $I_C = 0$, $f = 100\text{ kHz}$)	C_{eb}	—	60	pF	
SWITCHING CHARACTERISTICS					
Turn-On Time	$V_{CC} = 30\text{ Vdc}$, $V_{BE}(\text{off}) = 2.0\text{ Vdc}$, $I_C = 500\text{ mA}$, $I_{B1} = 50\text{ mA}$ (Figure 1)	t_{on}	—	25	ns
Delay Time		t_d	—	8.0	ns
Rise Time		t_r	—	18	ns
Turn-Off Time	$V_{CC} = 30\text{ Vdc}$, $I_C = 500\text{ mA}$, $I_{B1} = I_{B2} = 50\text{ mA}$ (Figure 2)	t_{off}	—	60	ns
Storage Time		t_s	—	35	ns
Fall Time		t_f	—	35	ns