2N869A (SILICON)

2N869A JAN/JANTX Available

MM869B

PNP SILICON ANNULAR TRANSISTORS

PNP silicon annular low-power transistor designed for medium-speed, saturated switching applications.

- Collector-Emitter Breakdown Voltage –
  BV_{CEO} = 30 Vdc (Min) @ I_C = 10 mAdc – MM869B
- Low Collector-Emitter Saturation Voltage –
  $V_{CE(sat)}$ = 0.2 Vdc (Max) @ I_C = 30 mAdc
- Turn-On Time –
  t_{on} = 10 ns (Typ) @ I_C = 30 mAdc – MM869B

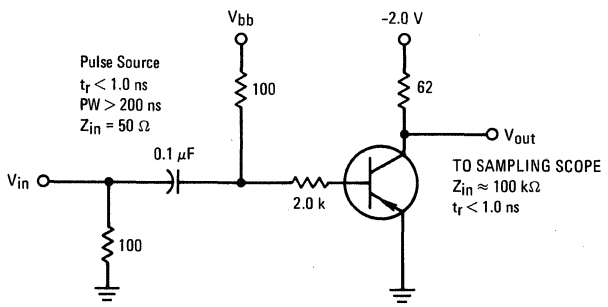
PNP SILICON SWITCHING TRANSISTORS

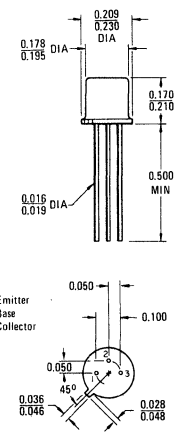
***MAXIMUM RATINGS**

Rating	Symbol	2N869A	MM869B	Unit
Collector-Emitter Voltage	V_{CEO}	18	30	Vdc
Collector-Base Voltage	V_{CB}	25	30	Vdc
Emitter-Base Voltage	V_{EB}	5.0		Vdc
Collector Current	I_C	200		mAdc
Total Device Dissipation @ T_A = 25°C Derate above 25°C	P_D	360 2.1		mW mW/°C
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	1.2 6.86		Watts mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		°C

*2N869A JEDEC Registered Data.

FIGURE 1 – SWITCHING TIME TEST CIRCUIT





CASE 22 (1)
(TO-18)

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Sustaining Voltage(1)		$V_{CEO(sus)}$				Vdc
(I_C = 10 mAdc, I_B = 0)	2N869A		18	–	–	
	MM869B		30	–	–	
Collector-Emitter Breakdown Voltage		BV_{CES}				Vdc
(I_C = 10 μAdc, V_{BE} = 0)	2N869A		25	–	–	
Collector-Base Breakdown Voltage		BV_{CBO}				Vdc
(I_C = 10 μAdc, I_E = 0)	2N869A		25	–	–	
	MM869B		30		–	
Emitter-Base Breakdown Voltage		BV_{EBO}	5.0	–	–	Vdc
(I_E = 10 μAdc, I_C = 0)						
Collector Cutoff Current		I_{CES}	–	–	.010	μAdc
(V_{CE} = 15 Vdc, V_{BE} = 0)						
Collector Cutoff Current		I_{CBO}	–	–	25	μAdc
(V_{CB} = 15 Vdc, I_E = 0, T_A = 150°C)						
Base Current		I_B	–	–	.010	μAdc
(V_{CE} = 15 Vdc, V_{BE} = 0)						
ON CHARACTERISTICS						
DC Current Gain(1)		h_{FE} (1)				–
(I_C = 10 mAdc, V_{CE} = 0.3 Vdc)			30	–	–	
(I_C = 10 mAdc, V_{CE} = 5.0 Vdc)			40	–	120	
(I_C = 30 mAdc, V_{CE} = 0.5 Vdc)			40	–	120	
(I_C = 30 mAdc, V_{CE} = 0.5 Vdc, T_A = -55°C)			17	–	–	
(I_C = 100 mAdc, V_{CE} = 1.0 Vdc)			25	–	–	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$				Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)			–	–	0.15	
(I_C = 30 mAdc, I_B = 3.0 mAdc)			–	–	0.2	
(I_C = 100 mAdc, I_B = 10 mAdc)			–	–	0.5	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$				Vdc
(I_C = 10 mAdc, I_B = 1.0 mAdc)			0.78	–	0.98	
(I_C = 30 mAdc, I_B = 3.0 mAdc)			0.85	–	1.2	
(I_C = 100 mAdc, I_B = 10 mAdc)			–	–	1.7	
SMALL-SIGNAL CHARACTERISTICS						
Current-Gain–Bandwidth Product(2)		f_T	400	–	–	MHz
(I_C = 10 mAdc, V_{CE} = 15 Vdc, f = 100 MHz)						
Output Capacitance		C_{ob}	–	–	6.0	pF
(V_{CB} = 5.0 Vdc, I_E = 0, f = 140 kHz)						
Input Capacitance		C_{ib}	–	–	6.0	pF
(V_{BE} = 0.5 Vdc, I_C = 0, f = 140 kHz)						
SWITCHING CHARACTERISTICS						
Turn-On Time		t_{on}				ns
(I_C = 30 mAdc, I_{B1} = 1.5 mAdc)	Both Types		–	–	50	
(I_C = 30 mAdc, I_{B1} = 3.0 mAdc)	MM829B		–	10	–	ns
Turn-Off Time		t_{off}				ns
(I_C = 30 mAdc, I_{B1} = I_{B2} = 1.5 mAdc)	Both Types		–	–	80	
(I_C = 30 mAdc, I_{B1} = I_{B2} = 3.0 mAdc)	MM829B		–	60	–	ns

*2N869A JEDEC Registered Data.
(1)Pulse Test: Pulse Width = < 300 μs, Duty Cycle < 1.0%.
(2)f_T is defined as the frequency at which $|h_{fe}|$ extrapolates to unity.