New Jersey Semi-Conductor Products, Inc.

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MM8006 (SILICON)
MM8007

NPN SILICON RF SMALL-SIGNAL TRANSISTORS

. . . designed primarily for use in high-gain, low-noise, small-signal amplifiers in military and industrial equipment. Suitable for use in video wideband and general high-frequency amplifier applications of 50 to 1000 MHz.

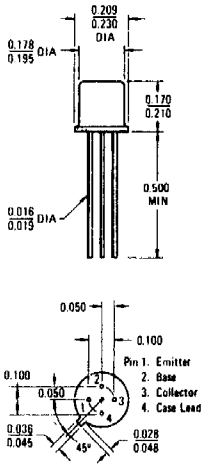
- Low Noise Figure –
  NF = 2.2 dB (Typ) @ f = 200 MHz – MM8006
- High Power Gain –
  G_{pe} = 25 dB (Typ) @ f = 200 MHz – MM8006
- High Current-Gain–Bandwidth Product –
  f_T = 1000 MHz (Min) @ I_C = 5.0 mAdc

NPN SILICON RF SMALL-SIGNAL TRANSISTORS



MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	10	Vdc
Collector-Base Voltage	V_{CB}	15	Vdc
Emitter-Base Voltage	V_{EB}	3.0	Vdc
Collector Current – Continuous	I_C	20	mAdc
Total Device Dissipation @ T_A = 25°C	P_D	200	mW
Derate above 25°C		1.14	mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200	°C



CASE 20 (10)
TO-72 PACKAGE

Quality Semi-Conductors

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

Characteristic		Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS						
Collector-Emitter Breakdown Voltage (I_C = 1.0 mAdc, I_B = 0)		BV_{CEO}	10	–	–	Vdc
Collector-Base Breakdown Voltage (I_C = 0.01 mAdc, I_E = 0)		BV_{CBO}	15	–	–	Vdc
Emitter-Base Breakdown Voltage (I_E = 0.01 mAdc, I_C = 0)		BV_{EBO}	3.0	–	–	Vdc
Collector Cutoff Current (V_{CB} = 6.0 Vdc, I_E = 0)		I_{CBO}	–	1.0	10	nAdc
ON CHARACTERISTICS						
DC Current Gain (I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc)		h_{FE}	25	–	–	–
DYNAMIC CHARACTERISTICS						
Current-Gain—Bandwidth Product (I_C = 5.0 mAdc, V_{CE} = 6.0 Vdc, f = 100 MHz)		f_T	1000	–	3500	MHz
Collector-Base Capacitance (V_{CE} = 6.0 Vdc, I_E = 0, f = 0.1 MHz)		C_{cb}	–	1.1	1.5	pF
Collector-Base Time Constant (I_C = 10 mAdc, V_{CE} = 6.0 Vdc, f = 31.8 MHz)		$r_b'C_c$	–	5.0	–	ps
Noise Figure		NF				dB
(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 60 MHz)	MM8006		–	1.5	–	
	MM8007		–	1.9	–	
(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 200 MHz)	MM8006		–	2.2	–	
	MM8007		–	2.7	–	
†(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 450 MHz)	MM8006		–	–	3.8	
	MM8007		–	–	5.0	
FUNCTIONAL TEST						
†Common-Emitter Amplifier Power Gain		G_{pe}				dB
(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 60 MHz)	Both Types		–	30	–	
(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 200 MHz)	MM8006		–	25	–	
	MM8007		–	20	–	
(I_C = 1.0 mAdc, V_{CE} = 6.0 Vdc, f = 450 MHz)	MM8006		14	–	–	
	MM8007		12	–	–	

†Tuned for minimum noise.

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