New Jersey Semi-Conductor Products, Inc.

20 STERN AVE.
SPRINGFIELD, NEW JERSEY 07081
U.S.A.

TELEPHONE: (973) 376-2922
(212) 227-6005
FAX: (973) 376-8960

Devices

2N1711 **2N1890**

MAXIMUM RATINGS

Ratings	Symbol	2N1711	2N1890	Unit
Collector-Base Voltage	V_{CBO}	75	100	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Collector Current	I_C	500		mAdc
Total Power Dissipation @ $T_A = +25^0C$ (1)	P_T	0.8		W
@ $T_C = +25^0C$ (2)		3.0		W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Impedance	$Z_{\theta JX}$	58	$^0C/W$

1) Derate linearly 4.57 $mW/^0C$ for $T_A > 25^0C$
2) Derate linearly 17.2 $mW/^0C$ for $T_C > 25^0C$

TO-5*

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^0C$ unless otherwise noted)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage					
I_C = 100 μAdc	2N1711, S	$V_{(BR)CBO}$	75		Vdc
	2N1890, S		100		
Collector-Emitter Breakdown Voltage					
R_{BE} = 10 Ω, I_C = 100 mAdc	2N1711, S	$V_{(BR)CER}$	50		Vdc
	2N1890, S		80		
Collector-Emitter Breakdown Voltage					
I_C = 30 mAdc	2N1711, S	$V_{(BR)CEO}$	30		Vdc
	2N1890, S		60		
Emitter-Base Breakdown Voltage					
I_E = 100 μAdc		$V_{(BR)EBO}$	7.0		Vdc
Collector-Base Cutoff Current					
V_{CB} = 60 Vdc	2N1711	I_{CBO}		10	ηAdc
V_{CB} = 80 Vdc	2N1890			10	
Emitter-Base Cutoff Current					
V_{EB} = 5.0 Vdc		I_{EBO}		5.0	ηAdc

Characteristics		Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio					
I_C = 10 μAdc, V_{CE} = 10 Vdc		h_{FE}	20		
I_C = 150 mAdc, V_{CE} = 10 Vdc			100	300	
I_C = 500 mAdc, V_{CE} = 10 Vdc	2N1711, S		50		
Collector-Emitter Saturation Voltage					
I_C = 150 mAdc, I_B = 15 mAdc	2N1711, S	$V_{CE(sat)}$		1.5	Vdc
	2N1890, S			5.0	
I_C = 50 mAdc, I_B = 5.0 mAdc	2N1890, S			1.2	
Base-Emitter Saturation Voltage					
I_C = 150 mAdc, I_B = 15 mAdc		$V_{BE(sat)}$		1.3	Vdc
I_C = 50 mAdc, I_B = 5.0 mVdc	2N1890, S			0.9	
DYNAMIC CHARACTERISTICS					
Small-Signal Short-Circuit Forward-Current Transfer Ratio					
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc		h_{fe}	80	200	
I_C = 5.0 mAdc, V_{CE} = 10 Vdc			90	270	
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio		$\lvert h_{fe} \rvert$			
I_C = 50 mAdc, V_{CE} = 10 Vdc; f = 20 MHz			3.5	12	
Small-Signal Short-Circuit Input Impedance					Ω
I_C = 5.0 mAdc, V_{CB} = 10 Vdc		h_{ib}	4.0	8.0	
Small-Signal Short-Circuit Output Admittance					
I_C = 5.0 mAdc, V_{CB} = 10 Vdc		h_{ob}			μΩ
	2N1711, S			1.0	
	2N1890, S			.03	
Output Capacitance					
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	2N1711, S	C_{obo}	8.0	25	pF
	2N1890, S		5.0	15	
SWITCHING CHARACTERISTICS					
Turn-On Time + Turn-Off Time		$t_{on} + t_{off}$			ηs
(See figure 1 of MIL-PRF-19500/225)				30	

(3) Pulse Test: Pulse Width 250 to 350μs, Duty Cycle ≤ 2.0%.