

Devices

2N1711

2N1890

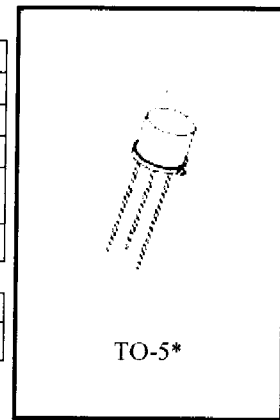
MAXIMUM RATINGS

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	P_T	@ $T_A = +25^\circ C$ (1)	0.8	W
		@ $T_C = +25^\circ C$ (2)	3.0	W
Operating & Storage Junction Temperature Range	T_J, T_{sig}	-65 to +200		$^\circ C$

THERMAL CHARACTERISTICS

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

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



*See appendix A for package outline

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

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



Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio I _C = 10 μA _{dc} , V _{CE} = 10 V _{dc} I _C = 150 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 500 mA _{dc} , V _{CE} = 10 V _{dc} 2N1711, S	h _{FE}	20 100 50	300	
Collector-Emitter Saturation Voltage I _C = 150 mA _{dc} , I _B = 15 mA _{dc} 2N1711, S 2N1890, S I _C = 50 mA _{dc} , I _B = 5.0 mA _{dc} 2N1890, S	V _{CE(sat)}		1.5 5.0 1.2	V _{dc}
Base-Emitter Saturation Voltage I _C = 150 mA _{dc} , I _B = 15 mA _{dc} I _C = 50 mA _{dc} , I _B = 5.0 mA _{dc} 2N1890, S	V _{BE(sat)}		1.3 0.9	V _{dc}
DYNAMIC CHARACTERISTICS				
Small-Signal Short-Circuit Forward-Current Transfer Ratio I _C = 1.0 mA _{dc} , V _{CE} = 5.0 V _{dc} I _C = 5.0 mA _{dc} , V _{CE} = 10 V _{dc}	h _{fe}	80 90	200 270	
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} ; f = 20 MHz	h _{fe}	3.5	12	
Small-Signal Short-Circuit Input Impedance I _C = 5.0 mA _{dc} , V _{CB} = 10 V _{dc}	h _{ib}	4.0	8.0	Ω
Small-Signal Short-Circuit Output Admittance I _C = 5.0 mA _{dc} , V _{CB} = 10 V _{dc} 2N1711, S 2N1890, S	h _{ob}		1.0 .03	μΩ
Output Capacitance V _{CB} = 10 V _{dc} , I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz 2N1711, S 2N1890, S	C _{obo}	8.0 5.0	25 15	pF
SWITCHING CHARACTERISTICS				
Turn-On Time + Turn-Off Time (See figure 1 of MIL-PRF-19500/225)	t _{on} + t _{off}		30	ns

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