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Devices

2N1711

2N1890

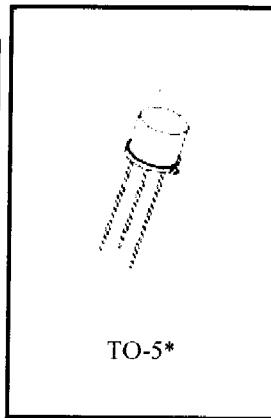
MAXIMUM RATINGS

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

THERMAL CHARACTERISTICS

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

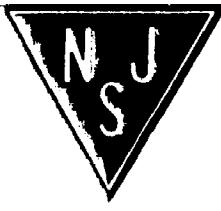
- 1) Derate linearly 4.57 mW/ $^\circ\text{C}$ for $T_A > 25^\circ\text{C}$
 2) Derate linearly 17.2 mW/ $^\circ\text{C}$ for $T_C > 25^\circ\text{C}$



*See appendix A for package outline

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

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



NJ Semi-Conductors reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by NJ Semi-Conductors is believed to be both accurate and reliable at the time of going to press. However NJ Semi-Conductors assumes no responsibility for any errors or omissions discovered in its use. NJ Semi-Conductors encourages customers to verify that datasheets are current before placing orders.

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS⁽³⁾				
Forward-Current Transfer Ratio $I_C = 10 \mu\text{Adc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 150 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$ $I_C = 500 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	h_{FE}	20 100 50	300	
2N1711, S				
Collector-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 50 \text{ mAdc}, I_B = 5.0 \text{ mAdc}$	$V_{CE(\text{sat})}$		1.5 5.0 1.2	Vdc
2N1711, S 2N1890, S				
Base-Emitter Saturation Voltage $I_C = 150 \text{ mAdc}, I_B = 15 \text{ mAdc}$ $I_C = 50 \text{ mAdc}, I_B = 5.0 \text{ mAdc}$	$V_{BE(\text{sat})}$		1.3 0.9	Vdc
2N1890, S				
DYNAMIC CHARACTERISTICS				
Small-Signal Short-Circuit Forward-Current Transfer Ratio $I_C = 1.0 \text{ mAdc}, V_{CE} = 5.0 \text{ Vdc}$ $I_C = 5.0 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}$	h_{fe}	80 90	200 270	
Magnitude of Common Emitter Small-Signal Short-Circuit Forward-Current Transfer Ratio $I_C = 50 \text{ mAdc}, V_{CE} = 10 \text{ Vdc}; f = 20 \text{ MHz}$	$ h_{fe} $		3.5	12
Small-Signal Short-Circuit Input Impedance $I_C = 5.0 \text{ mAdc}, V_{CB} = 10 \text{ Vdc}$	h_{ib}	4.0	8.0	Ω
Small-Signal Short-Circuit Output Admittance $I_C = 5.0 \text{ mAdc}, V_{CB} = 10 \text{ Vdc}$	h_{ob}		1.0 .03	$\mu\Omega$
2N1711, S 2N1890, S				
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}	8.0 5.0	25 15	pF
2N1711, S 2N1890, S				

SWITCHING CHARACTERISTICS

Turn-On Time + Turn-Off Time (See figure 1 of MIL-PRF-19500/225)	$t_{on} + t_{off}$		30	ns
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(3) Pulse Test: Pulse Width 250 to 350 μ s, Duty Cycle $\leq 2.0\%$.