Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!

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Microsemi LAWRENCE

TECHNICAL DATA

NPN LOW POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/182

Devices		*Qualified Level*
2N720A	**2N1893** **2N1893S**	**JAN** **JANTX** **JANTXV**

TO-18 (TO-206AA)*
2N720A

TO-5*
2N1893, 2N1893S

*See appendix A for package outline

MAXIMUM RATINGS

Ratings	Symbol	All Devices		Units
Collector-Emitter Voltage	V_{CEO}	80		Vdc
Collector-Base Voltage	V_{CBO}	120		Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Collector-Emitter Voltage (R_{BE} = 10 Ω)	V_{CER}	100		Vdc
Collector Current	I_C	500		mAdc
		2N720A	**2N1893, S**	
Total Power Dissipation @ T_A = +25°C (1) @ T_C = +25°C (2)	P_T	0.5 1.8	0.8 3.0	W
Operating & Storage Junction Temperature Range	T_J, T_{srg}	-65 to +200		°C

THERMAL CHARACTERISTICS

Characteristics	Symbol	2N720A	2N1893, S	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	97	58	°C/W

1) Derate linearly 2.86 mW/°C for 2N720A, 4.57 mW/°C for 2N1893, S T_A > 25°C
2) Derate linearly 10.3 mW/°C for 2N720A, 17.2 mW/°C for 2N1893, S T_C > 25°C

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage I_C = 30 mAdc	$V_{(BR)CEO}$	80		Vdc
Collector-Emitter Breakdown Voltage I_C = 10 mAdc, R_{BE} = 10 Ω	$V_{(BR)CER}$	100		Vdc
Collector-Base Cutoff Current V_{CB} = 120 Vdc V_{CB} = 90 Vdc	I_{CBO}		10 10	µAdc ηAdc
Emitter-Base Cutoff Current V_{EB} = 7.0 Vdc V_{EB} = 5.0 Vdc	I_{EBO}		10 10	µAdc ηAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)				
Forward-Current Transfer Ratio I_C = 0.1 mAdc, V_{CE} = 10 Vdc I_C = 10 mAdc, V_{CE} = 10 Vdc I_C = 150 mAdc, V_{CE} = 10 Vdc	h_{FE}	 20 35 40	 120	
Collector-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc	$V_{CE(sat)}$		 5.0	Vdc
Base-Emitter Voltage I_C = 150 mAdc, I_B = 15 mAdc	$V_{BE(sat)}$		 1.3	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 20 MHz	$\lvert h_{fe} \rvert$	 3.0	 10	
Small-Signal Short-Circuit Forward Current Transfer Ratio V_{CE} =5.0 Vdc, I_C = 1.0 mAdc V_{CE} =10 Vdc, I_C = 5.0 mAdc, f = 1.0 kHz	h_{fe}	 35 45	 100	
Small-Signal Short-Circuit Input Impedance V_{CB} = 10 Vdc, I_C = 5.0 mAdc	h_{ib}	 4.0	 8.0	Ω
Small-Signal Short-Circuit Output Admittance V_{CB} = 10 Vdc, I_C = 5.0 mAdc	h_{ob}		 0.5	μΩ
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}	 2	 15	P^F
SWITCHING CHARACTERISTICS				
Turn-On Time + Turn-Off Time (See Figure 3 of MIL-PRF-19500/182)	^{t}on + ^{t}off		 30	ηs

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.