Microsemi LAWRENCE

TECHNICAL DATA

MULTIPLE (QUAD) NPN SILICON DUAL IN-LINE AND FLATPACK SWITCHING TRANSISTOR

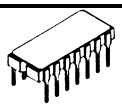
Qualified per MIL-PRF-19500/559

Devices		*Qualified Level*
2N6989 **2N6989U**	**2N6990**	**JAN** **JANTX** **JANTXV** **JANS**

MAXIMUM RATINGS (1)

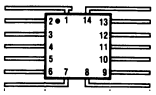
Ratings		Symbol	Value	Units
Collector-Emitter Voltage (3)		V_{CEO}	50	Vdc
Collector-Base Voltage (3)		V_{CBO}	75	Vdc
Emitter-Base Voltage (3)		V_{EBO}	6.0	Vdc
Collector Current (3)		I_C	800	mAdc
Total Power Dissipation	@ T_A = +25^{0}C 2N6989(2) 2N6989U(2) 2N6990(2)	P_D	 1.5 1.0 0.4	W
Operating & Storage Junction Temperature Range		T_{op}, T_{stg}	-65 to +200	^{0}C

1) Maximum voltage between transistors shall be ≥ 500 Vdc
2) Derate linearly 8.57 mW/^{0}C above T_A = +25^{0}C for 2N6989 and 2N6989U
   Derate linearly 2.286 mW/^{0}C above T_A = +25^{0}C for 2N6990
   Ratings apply to total package.
3) Ratings apply to each transistor in the array.



TO- 116*
2N6989

20 PIN LEADLESS*
2N6989U



14 PIN FLAT PACK*
2N6990

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage I_C = 10 mAdc	$V_{(BR)CEO}$	50		Vdc
Collector-Base Cutoff Current V_{CB} = 60 Vdc V_{CB} = 75 Vdc; I_c= 10 µAdc	I_{CBO}		 10 10	 ηAdc µAdc
Emitter-Base Cutoff Current V_{EB} = 4.0Vdc V_{EB} = 6.0Vdc; I_c= 10 µAdc	I_{EBO}		 10 10	 ηAdc µAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (4)				
Forward-Current Transfer Ratio				
I_C = 0.1 mAdc, V_{CE} = 10 Vdc	h_{FE}	50		
I_C = 1.0 mAdc, V_{CE} = 10 Vdc		75	325	
I_C = 10 mAdc, V_{CE} = 10 Vdc		100		
I_C = 150 mAdc, V_{CE} = 10 Vdc		100	300	
I_C = 500 mAdc, V_{CE} = 10 Vdc		30		
Collector-Emitter Saturation Voltage				
I_C = 150 mAdc, I_B = 15 mAdc	$V_{CE(sat)}$		0.3	Vdc
I_C = 500 mAdc, I_B = 50 mAdc			1.0	
Base-Emitter Saturation Voltage				
I_C = 150 mAdc, I_B = 15 mAdc	$V_{BE(sat)}$	0.6	1.2	Vdc
I_C = 500 mAdc, I_B = 50 mAdc			2.0	
DYNAMIC CHARACTERISTICS				
Magnitude of Small-Signal Short-Circuit Forward Current Transfer Ratio	$\lvert h_{fe} \rvert$	2.5	8.0	
I_C = 20 mAdc, V_{CE} = 10 Vdc, f = 100 MHz				
Forward Current Transfer Ratio	h_{fe}	50		
I_C = 1.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz				
Output Capacitance	C_{obo}		8.0	pF
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz				
Input Capacitance	C_{ibo}		25	pF
V_{EB} = 0.5 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz				

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