Microsemi LAWRENCE

TECHNICAL DATA

NPN LOW POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/181

Devices		*Qualified Level*
2N718A	**2N1613** **2N1613L**	**JAN** **JANTX** **JANTXV**

MAXIMUM RATINGS

Ratings		Symbol	Value	Unit
Collector-Emitter Voltage		V_{CEO}	30	Vdc
Collector-Base Voltage		V_{CBO}	75	Vdc
Emitter-Base Voltage		V_{EBO}	7.0	Vdc
Collector Current		I_C	500	mAdc
Total Power Dissipation				
@ T_A = +25^{0}C (1)	2N718A	P_T	0.5	W
	2N1613, L		0.8	
@ T_C = +25^{0}C (2)	2N718A		1.8	
	2N1613, L		3.0	
Operating & Storage Junction Temperature Range		T_J, T_{stg}	-55 to +175	^{0}C

THERMAL CHARACTERISTICS

Characteristics		Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case				
	2N718A	$R_{\theta JC}$	97	^{0}C/W
	2N1613, L		58	

1) Derate linearly 4.57 mW/^{0}C for 2N1613, L and 2.85 mW/^{0}C for 2N718A for T_A > +25^{0}C

2) Derate linearly 17.2 mW/^{0}C for 2N1613, L and 10.3 mW/^{0}C for 2N718A for T_C > +25^{0}C

TO-18 (TO-206AA)*
2N718A

TO-39 (TO-205AD)*
2N1613

TO-5*
2N1613L

*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage I_C = 30 mAdc	$V_{(BR)CEO}$	30		Vdc
Collector-Emitter Breakdown Voltage I_C = 10 mAdc, R_{BE} = 10 Ω	$V_{(BR)CER}$	50		Vdc
Collector-Base Cutoff Current V_{CB}= 60 Vdc	I_{CBO}		10	ηAdc
Emitter-Base Cutoff Current V_{EB} = 5.0 Vdc	I_{EBO}		10	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	h_{FE}	20	120	
I_C = 10 mAdc, V_{CE} = 10 Vdc		35		
I_C = 150 mAdc, V_{CE} = 10 Vdc		40		
I_C = 500 mAdc, V_{CE} = 10 Vdc		20		
Collector-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc	$V_{CE(sat)}$		1.5	Vdc
Base-Emitter Saturation Voltage I_C = 150 mAdc, I_B = 15 mAdc	$V_{BE(sat)}$		1.3	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Small-Signal Forward Current Transfer Ratio I_C = 50 mAdc, V_{CE} = 10 Vdc, f = 20 MHz	$\lvert h_{fe} \rvert$	3.0		
Small-Signal Forward Current Transfer Ratio				
I_C = 1.0 mAdc, V_{CE} = 5.0 Vdc, f = 1.0 kHz	h_{fe}	30	100	
I_C = 5.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz		35	150	
Small-Signal Short Circuit Input Impedance I_C = 5.0 mAdc, V_{CB} = 10 Vdc, f = 1.0 kHz	h_{ib}	4.0	8.0	Ω
Small-Signal Short Circuit Output Admittance I_C = 5.0 mAdc, V_{CB} = 10 Vdc, f = 1.0 kHz	h_{ob}		1.0	ηΩ
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		25	pF
SWITCHING CHARACTERISTICS				
Turn-On Time + Turn-Off Time (See Figure 1 of MIL-PRF-19500/181)	$^{t}on + {}^{t}off$		30	ηs

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