Microsemi LAWRENCE

TECHNICAL DATA

NPN HIGH POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/408

Devices		*Qualified Level*
2N3715	**2N3716**	**JAN JANTX JANTXV**

MAXIMUM RATINGS

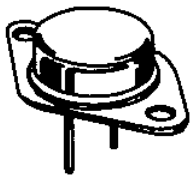
Ratings	Symbol	2N3715	2N3716	Units
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	4.0		Adc
Collector Current	I_C	10		Adc
Total Power Dissipation @ $T_A = 25^0C$ @ $T_C = 100^0C$	P_T	5.0 85.7		W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.17	$^0C/W$

1) Derate linearly 28.57 mW/^{0}C for $T_A > 25^0C$

2) Derate linearly 0.857 W/^{0}C for $T_C > 100^0C$



TO-3* (TO-204AA)

*See Appendix A for Package Outline

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

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Current I_C = 10 mAdc	2N3715 2N3716	$V_{(BR)CEO}$	60 80		Vdc
Collector-Base Cutoff Current V_{CB} = 80 Vdc V_{CB} = 100 Vdc	2N3715 2N3716	I_{CBO}		10 10	µAdc
Emitter-Base Breakdown Voltage V_{EB} = 7.0 Vdc		I_{EBO}		1.0	mAdc
Collector-Emitter Cutoff Current V_{BE} = 1.5 Vdc, V_{CE} = 60 Vdc V_{BE} = 1.5 Vdc, V_{CE} = 80 Vdc	2N3715 2N3716	I_{CEX}		1.0 1.0	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
Collector-Emitter Cutoff Current					
V_{CE} = 60 Vdc	2N3715	I_{CES}		1.0	mAdc
V_{CE} = 80 Vdc	2N3716			1.0	
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio					
I_C = 1.0 Adc, V_{CE} = 2.0 Vdc		h_{FE}	50	150	
I_C = 3.0 Adc, V_{CE} = 2.0 Vdc			30	120	
I_C = 5.0 Adc, V_{CE} = 2.0 Vdc			10		
I_C = 10 Adc, V_{CE} = 4.0 Vdc			5.0		
Collector-Emitter Saturation Voltage					
I_C = 5.0 Adc, I_B = 0.5 Adc		$V_{CE(sat)}$		1.0	Vdc
I_C = 10 Adc, I_B = 2.0 Adc				2.5	
Base-Emitter Saturation Voltage					
I_C = 5.0 Adc, I_B = 0.5 Adc		$V_{BE(sat)}$		1.5	
I_C = 10 Adc, I_B = 2.0 Adc				3.0	Vdc
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio		$\lvert h_{fe} \rvert$	4.0	20	
I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 100 kHz – 1.0 MHz					
Forward Current Transfer Ratio					
I_C = 0.5 Adc, V_{CE} = 10 Vdc, f = 1.0 kHz		h_{fe}	30	300	
Output Capacitance					
V_{CB} = 10 Vdc, I_E = 0, f = 1.0 MHz		C_{obo}		500	pF

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C, 1 Cycle, t ≥ 1.0 s

Test 1

V_{CE} = 15 Vdc, I_C = 10 Adc

Test 2

V_{CE} = 40 Vdc, I_C = 3.75 Adc

Test 3

V_{CE} = 55 Vdc, I_C = 0.9 Adc 2N3715

V_{CE} = 65 Vdc, I_C = 0.9 Adc 2N3716

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

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