Microsemi LAWRENCE

TECHNICAL DATA

PNP DARLINGTON POWER SILICON TRANSISTOR

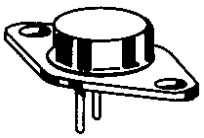
Qualified per MIL-PRF-19500/539

Devices		*Qualified Level*
2N6300	**2N6301**	**JANTX JANTXV**

MAXIMUM RATINGS

Ratings	Symbol	2N6300	2N6301	Units
Collector-Emitter Voltage	V_{CEO}	60	80	Vdc
Collector-Base Voltage	V_{CBO}	60	80	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Base Current	I_B	120		mAdc
Collector Current	I_C	8.0		Adc
Total Power Dissipation @ $T_C = 0^0C$ (1) @ $T_C = 100^0C$	P_T	75 32		W W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +200		^0C

1) Derate linearly 0.428 W/^{0}C above $T_C > 0^0C$



TO-66* (TO-213AA)

*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 Voltage I_C = 100 mAdc	2N6300 2N6301	$V_{(BR)CEO}$	60 80		Vdc
Collector-Emitter Cutoff Current V_{CE} = 30 Vdc V_{CE} = 40 Vdc	2N6300 2N6301	I_{CEO}		0.5 0.5	mAdc
Collector-Emitter Cutoff Current V_{CE} = 60 Vdc, V_{BE} = -1.5 Vdc V_{CE} = 80 Vdc, V_{BE} = -1.5 Vdc	2N6300 2N6301	I_{CEX}		0.5 0.5	mAdc
Emitter-Base Cutoff Current V_{EB} = 5.0 Vdc		I_{EBO}		2.0	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS [2]				
Forward-Current Transfer Ratio				
I_C = 1.0 Adc, V_{CE} = 3.0 Vdc	h_{FE}	500	18,000	
I_C = 4.0 Adc, V_{CE} = 3.0 Vdc		750		
I_C = 8.0 Adc, V_{CE} = 3.0 Vdc		100		
Collector-Emitter Saturation Voltage				
I_C = 4.0 Adc, I_B = 16 mAdc	$V_{CE(sat)}$		2.0	Vdc
I_C = 8.0 Adc, I_B = 80 mAdc			3.0	
Base-Emitter Saturation Voltage				
I_C = 8.0 Adc, I_B = 80 mAdc	$V_{BE(sat)}$		4.0	Vdc
Base-Emitter Voltage				
I_C = 4.0 Adc, V_{CE} = 3.0 Vdc	$V_{BE(on)}$		2.8	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio	$\lvert h_{fe} \rvert$			
I_C = 3.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz		25	350	
Small-Signal Short-Circuit Forward Current Transfer Ratio				
I_C = 3.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 kHz	h_{fe}	300		
Output Capacitance				
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		200	pF
SWITCHING CHARACTERISTICS				
Turn-On Time				
V_{CC} = 30 Vdc; I_C = 4.0 Adc; I_{B1} = 16 mAdc	t_{on}		2.0	µs
Turn-Off Time				
V_{CC} = 30 Vdc; I_C = 4.0 Adc; I_{B1} = I_{B2} = 16 mAdc	t_{off}		8.0	µs

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C, 1 Cycle, t =1.0 s

Test 1

V_{CE} = 8.0 Vdc, I_C = 8.0 Adc

Test 2

V_{CE} = 20 Vdc, I_C = 2.0 Adc

Test 3

V_{CE} = 60 Vdc, I_C = 100 mAdc 2N6300

V_{CE} = 80 Vdc, I_C = 100 mAdc 2N6301

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