Microsemi LAWRENCE

TECHNICAL DATA

NPN LOW POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/368

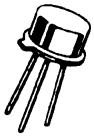
Devices		*Qualified Level*
2N3439	**2N3440**	**JANTX**
2N3439L	**2N3440L**	**JANTXV**

MAXIMUM RATINGS

Ratings	Symbol	2N3439	2N3440	Units
Collector-Emitter Voltage	V_{CEO}	350	250	Vdc
Collector-Base Voltage	V_{CBO}	450	300	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Collector Current	I_C	1.0		Adc
Total Power Dissipation @$T_A = 25^0C$(1) @$T_C = 25^0C$(2)	P_T	0.8 5.0		W W/^{0}C
Operating & Storage Temperature Range	T_{op}, T_{stg}	-55 to +200		^{0}C

1) Derate linearly 4.57 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly 28.5 mW/^{0}C for $T_C > +25^0C$

TO- 5*
2N3439L, 2N3440L



TO-39* (TO205-AD)
2N3439, 2N3440

*See Appendix A for Package Outline

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

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage I_C = 50 mAdc	2N3439 2N3440	$V_{(BR)CEO}$	350 250		Vdc
Collector-Emitter Cutoff Current V_{CE} = 300 Vdc V_{CE} = 200 Vdc	 2N3439 2N3440	I_{CEO}		2.0 2.0	µAdc µAdc
Emitter-Base Cutoff Current V_{EB} = 7.0 Vdc		I_{EBO}		10	µAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS (con't)					
Collector-Emitter Cutoff Current					
V_{CE} = 450 Vdc, V_{BE} = -1.5 Vdc	2N3439	I_{CEX}		5.0	µAdc
V_{CE} = 300 Vdc, V_{BE} = -1.5 Vdc	2N3440			5.0	µAdc
Collector-Base Cutoff Current					
V_{CB} = 360 Vdc	2N3439	I_{CBO}		2.0	µAdc
V_{CB} = 250 Vdc	2N3440			2.0	
V_{CB} = 450 Vdc	2N3439			5.0	
V_{CB} = 300 Vdc	2N3440			5.0	
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio					
I_C = 20 mAdc, V_{CE} = 10 Vdc		h_{FE}	40	160	
I_C = 2.0 mAdc, V_{CE} = 10 Vdc			30		
I_C = 0.2 mAdc, V_{CE} = 10 Vdc			10		
Collector-Emitter Saturation Voltage					
I_C = 50 mAdc, I_B = 4.0 mAdc		$V_{CE(sat)}$		0.5	Vdc
Base-Emitter Saturation Voltage					
I_C = 50 mAdc, I_B = 4.0 mAdc		$V_{BE(sat)}$		1.3	Vdc
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio					
I_C = 10 mAdc, V_{CE} = 10 Vdc, f = 5.0 MHz		$\lvert h_{fe} \rvert$	3.0	15	
Forward Current Transfer Ratio					
I_C = 5.0 mAdc, V_{CE} = 10 Vdc, f = 1.0 kHz		h_{fe}	25		
Output Capacitance					
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{obo}		10	pF
Input Capacitance					
V_{EB} = 5.0 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz		C_{ibo}		75	pF
SWITCHING CHARACTERISTICS					
Turn-On Time					
V_{CC} = 200 Vdc; I_C = 20 mAdc, I_{B1}= 2.0 mAdc		t_{on}		1.0	µs
Turn-Off Time					
V_{CC} = 200 Vdc; I_C = 20 mAdc, I_{B1} = -I_{B2} = 2.0 mAdc		t_{off}		10	µs

SAFE OPERATING AREA

DC Tests

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

Test 1

V_{CE} = 5.0 Vdc, I_C = 1.0 Adc Both Types

Test 2

V_{CE} = 350 Vdc, I_C = 14 mAdc 2N3439

Test 3

V_{CE} = 250 Vdc, I_C = 20 mAdc 2N3440

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

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