Microsemi LAWRENCE

TECHNICAL DATA

PNP SWITCHING SILICON TRANSISTOR

Qualified per MIL-PRF-19500/350

Devices		Qualified Level
2N3867 2N3867S	2N3868 2N3868S	JAN JANTX JANTXV

MAXIMUM RATINGS

Ratings	Symbol	2N3867 2N3867S	2N3868 2N3868S	Unit
Collector-Emitter Voltage	V_{CEO}	40	60	Vdc
Collector-Base Voltage	V_{CBO}	40	60	Vdc
Emitter-Base Voltage	V_{EBO}	4.0		Vdc
Collector Current -- Continuous	I_C	3.0		Adc
Total Power Dissipation @ $T_A = 25^0C$(1) @ $T_C = 25^0C$(2)	P_T	1.0 10		W W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-55 to +200		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	17.5	$^0C/W$

1) Derate linearly 5.71 mW/^{0}C for $T_A > +25^0C$
2) Derate linearly 57.1 mW/^{0}C for $T_C > +25^0C$

TO-5*
2N3867, 2N3868

TO-39*
(TO-205AD)
2N3867S, 2N3868S

*See Appendix A for Package Outline

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

Characteristics		Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS					
Collector-Base Breakdown Voltage I_C = 100 µAdc	2N3867, S 2N3868, S	$V_{(BR)CBO}$	40 60		Vdc
Collector-Emitter Breakdown Voltage I_C = 20 mAdc	2N3867, S 2N3868, S	$V_{(BR)CEO}$	40 60		Vdc
Emitter-Base Breakdown Voltage I_E = 100 µAdc		$V_{(BR)EBO}$	4.0		Vdc
Collector-Emitter Cutoff Current V_{EB} = 2.0 Vdc, V_{CE} = 40 Vdc V_{EB} = 2.0 Vdc, V_{CE} = 60 Vdc	 2N3867, S 2N3868, S	I_{CEX}		1.0 1.0	µAdc
Collector-Base Cutoff Current V_{CB} = 40 Vdc V_{CB} = 60 Vdc	 2N3867, S 2N3868, S	I_{CBO}		100	µAdc
Emitter-Base Cutoff Current V_{EB} = 4 Vdc		I_{EBO}		100	µAdc

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ELECTRICAL CHARACTERISTICS (con't)

Characteristics		Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (3)					
Forward-Current Transfer Ratio					
I_C = 500 mAdc, V_{CE} = 1.0 Vdc	2N3867, S	h_{FE}	50		
	2N3868, S		35		
I_C = 1.5 Adc, V_{CE} = 2.0 Vdc	2N3867, S		40	200	
	2N3868, S		30	150	
I_C = 2.5 Adc, V_{CE} = 3.0 Vdc	2N3867, S		25		
	2N3868, S		20		
I_C = 3.0 Adc, V_{CE} = 5.0 Vdc	All Types		20		
Collector-Emitter Saturation Voltage					
I_C = 500 mAdc, I_B = 50 mAdc		$V_{CE(sat)}$		0.5	Vdc
I_C = 1.5 Adc, I_B = 150 mAdc				0.75	
I_C = 2.5 Adc, I_B = 250 mAdc				1.5	
Base-Emitter Saturation Voltage					
I_C = 500 mAdc, I_B = 50 mAdc		$V_{BE(sat)}$		1.0	Vdc
I_C = 1.5 Adc, I_B = 150 mAdc			0.9	1.4	
I_C = 2.5 Adc, I_B = 250 mAdc				2.0	
DYNAMIC CHARACTERISTICS					
Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio		$\lvert h_{fe} \rvert$	3.0	12	
I_C = 100 mAdc, V_{CE} = 5.0 Vdc, f = 20 MHz					
Output Capacitance		C_{obo}		120	pF
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz					
Input Capacitance		C_{ibo}		800	pF
V_{EB} = 3.0 Vdc, I_C = 0, 100 kHz ≤ f ≤ 1.0 MHz					
SWITCHING CHARACTERISTICS					
Delay Time	V_{CC} = -30 Vdc, V_{EB} = 0,	t_d		35	ηs
Rise Time	I_C = 1.5 Adc, I_{B1} = 150 mAdc	t_r		65	ηs
Storage Time	V_{CC} = -30 Vdc, V_{EB} = 0,	t_s		500	ηs
Fall Time	I_C = 1.5Adc, I_{B1} = I_{B2} = 150 mAdc	t_f		100	ηs
Turn-On Time		t_{on}		100	ηs
V_{CC} = 30, I_C = 1.5 Adc, I_B = 150 mAdc					
Turn-Off Time		t_{off}		600	ηs
V_{CC} = 30, I_C = 1.5 Adc, I_B = 150 mAdc					

SAFE OPERATING AREA

DC Tests

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

Test 1

V_{CE} = 3.33 Vdc, I_C = 3.0 Adc

Test 2

V_{CE} = 40 Vdc, I_C = 160 mAdc	2N3867, S
V_{CE} = 60 Vdc, I_C = 80 mAdc	2N3868, S

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