Microsemi LAWRENCE

TECHNICAL DATA

NPN POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/526

Devices	*Qualified Level*
2N3879	**JANTX** **JANTXV**

MAXIMUM RATINGS

Ratings	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	75	Vdc
Collector-Base Voltage	V_{CBO}	120	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	Vdc
Base Current	I_B	5.0	Adc
Collector Current	I_C	7.0	Adc
Total Power Dissipation @ $T_C = 25^0C$ (1)	P_T	35	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	$R_{\theta JC}$	5.0	$^0C/W$

1) Derate linearly 200 mW/^{0}C for $T_C > 25^0C$

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 = 200 mAdc	$V_{(BR)CEO}$	75		Vdc
Collector-Emitter Cutoff Current V_{CE} = 50 Vdc	I_{CEO}		5.0	Vdc
Collector-Emitter Cutoff Current V_{CE} = 100 Vdc, V_{BE} = 1.5 Vdc	I_{CEX}		4.0	mAdc
Collector-Base Cutoff Current V_{CB} = 120 Vdc	I_{CBO}		25	mAdc
Emitter-Base Cutoff Current V_{EB} = 7.0 Vdc	I_{EBO}		10	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS (2)				
Forward-Current Transfer Ratio I_C = 0.5 Adc, V_{CE} = 5.0 Vdc I_C = 4.0 Adc, V_{CE} = 5.0 Vdc I_C = 4.0 Adc, V_{CE} = 2.0 Vdc	h_{FE}	 40 20 12	 80 100	
Collector-Emitter Saturation Voltage I_C = 4.0 Adc, I_B = 0.4 Adc	$V_{CE(sat)}$		1.2	Vdc
Base-Emitter Saturation Voltage I_C = 4.0 Adc, I_B = 0.4 Adc	$V_{BE(sat)}$		2.0	Vdc
Base-Emitter Voltage I_C = 4.0 Adc, V_{CE} = 2.0 Vdc	$V_{BE(on)}$		1.8	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio I_C = 500 mAdc, V_{CE} = 10 Vdc, f = 10 MHz	$\lvert h_{fe} \rvert$	4.0	20	
Output Capacitance V_{CB} = 10 Vdc, I_E = 0, 0.1 MHz ≤ f ≤ 1.0 MHz	C_{obo}		175	pF
SWITCHING CHARACTERISTICS				
Turn-On Time V_{CC} = 30 Vdc; I_C = 4.0 Adc; I_B = 0.4 Adc	t_{on}		0.44	µs
Turn-Off Time V_{CC} = 30 Vdc; I_C = 4.0 Adc; I_B = -I_B = 0.4 Adc	t_{off}		1.2	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 = 7.0 Adc

Test 2

V_{CE} = 28 Vdc, I_C = 1.25 Adc

Test 3

V_{CE} = 40 Vdc, I_C = 500 mAdc

Test 4

V_{CE} = 75 Vdc, I_C = 100 mAdc

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

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