Microsemi LAWRENCE

TECHNICAL DATA

PNP DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/501

Devices		*Qualified Level*
2N6051	**2N6052**	**JAN JANTX JANTXV**

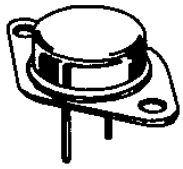
MAXIMUM RATINGS

Ratings	Symbol	2N6051	2N6052	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	Vdc
Collector-Base Voltage	V_{CBO}	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0		Vdc
Base Current	I_B	0.2		Adc
Collector Current	I_C	12		Adc
Total Power Dissipation[1] @ $T_C = +25^0C$ @ $T_C = +100^0C$	P_T	150 75		W W
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-55 to +175		^0C

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	1.0	$^0C/W$

1) Derate linearly at 1.0 $W/^0C$ above $T_C > +25^0C$



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 Voltage I_C = 100 mAdc	2N6051 2N6052	$V_{(BR)CEO}$	80 100		Vdc
Collector-Emitter Cutoff Current V_{CE} = 40 Vdc V_{CE} = 50 Vdc	2N6051 2N6052	I_{CEO}		1.0 1.0	mAdc
Collector-Emitter Cutoff Current V_{CE} = 80 Vdc, V_{BE} = 1.5 Vdc V_{CE} = 100 Vdc, V_{BE} = 1.5 Vdc	2N6051 2N6052	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}	1,000	18,000	
I_C = 6.0 Adc, V_{CE} = 3.0 Vdc		1,000		
I_C = 12 Adc, V_{CE} = 3.0 Vdc		150		
Collector-Emitter Saturation Voltage				
I_C = 12 Adc, I_B = 120 mAdc	$V_{CE(sat)}$		3.0	Vdc
I_C = 6.0 Adc, I_B = 24 mAdc			2.0	
Base-Emitter Saturation Voltage				
I_C = 12 Adc, I_B = 120 mAdc	$V_{BE(sat)}$		4.0	Vdc
Base-Emitter Voltage				
I_C = 6.0 Adc, V_{CE} = 3.0 Vdc	V_{BE}		2.8	Vdc
DYNAMIC CHARACTERISTICS				
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio				
I_C = 5.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 MHz	$\lvert h_{fe} \rvert$	10	250	
Small-Signal Short-Circuit Forward Current Transfer Ratio				
I_C = 5.0 Adc, V_{CE} = 3.0 Vdc, f = 1.0 kHz	h_{fe}		1,000	
Output Capacitance				
V_{CB} = 10 Vdc, I_E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C_{obo}		300	pF
SWITCHING CHARACTERISTICS				
Turn-On Time				
V_{CC} = 30 Vdc; I_C = 5.0 Adc; I_B = 20 mAdc	t_{on}		2.0	µs
Turn-Off Time				
V_{CC} = 30 Vdc; I_C = 5.0 Adc; I_{B1} = I_{B2} = 20 mAdc	t_{off}		10	µs

SAFE OPERATING AREA

DC Tests

T_C = +25^{0}C + 10^{0}C -0^0, 1 Cycle, t ≥ 1.0 s

Test 1

V_{CE} = 12.5 Vdc, I_C = 12 Adc — All Types

Test 2

V_{CE} = 30 Vdc, I_C = 5.0 Adc — All Types

Test 3

V_{CE} = 70 Vdc, I_C = 200 mAdc — 2N6051

V_{CE} = 90 Vdc, I_C = 155 mAdc — 2N6052

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

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