

PNP DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/501

Devices

2N6051

2N6052

Qualified Level

JAN
JANTX
JANTXV

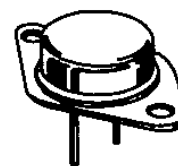
MAXIMUM RATINGS

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⁾	P_T	@ $T_C = +25^{\circ}\text{C}$		W
		@ $T_C = +100^{\circ}\text{C}$		W
Operating & Storage Junction Temperature Range	T_{op}, T_{stg}	-55 to +175		$^{\circ}\text{C}$

THERMAL CHARACTERISTICS

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

1) Derate linearly at 1.0 W/ $^{\circ}\text{C}$ above $T_C > +25^{\circ}\text{C}$



TO-3*
(TO-204AA)

*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_C = 25^{\circ}\text{C}$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100 \text{ mAdc}$	2N6051	$V_{(BR)CEO}$	80	Vdc
	2N6052		100	
Collector-Emitter Cutoff Current $V_{CE} = 40 \text{ Vdc}$	2N6051	I_{CEO}	1.0	mAdc
	2N6052		1.0	
Collector-Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N6051	I_{CEX}	0.5	mAdc
	2N6052		0.5	
Emitter-Base Cutoff Current $V_{EB} = 5.0 \text{ Vdc}$		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 I _C = 6.0 Adc, V _{CE} = 3.0 Vdc I _C = 12 Adc, V _{CE} = 3.0 Vdc	h _{FE}	1,000 1,000 150	18,000	
Collector-Emitter Saturation Voltage I _C = 12 Adc, I _B = 120 mAdc I _C = 6.0 Adc, I _B = 24 mAdc	V _{CE(sat)}		3.0 2.0	Vdc
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	h _{fe}	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°C + 10°C -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 2N6051V_{CE} = 90 Vdc, I_C = 155 mAdc 2N6052

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