

NPN DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/502

Devices

2N6058

2N6059

Qualified Level

JANTX
JANTXV

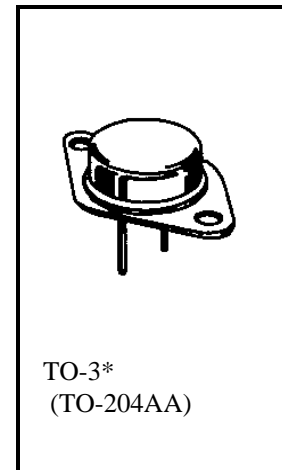
MAXIMUM RATINGS

Ratings	Symbol	2N6058	2N6059	Units
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	@ $T_C = +25^{\circ}C$	150	W
		@ $T_C = +100^{\circ}C$	75	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-55 to +175		$^{\circ}C$

THERMAL CHARACTERISTICS

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

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



*See appendix A for package outline

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

Characteristics	Symbol	Min.	Max.	Unit
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OFF CHARACTERISTICS

Collector-Emitter Breakdown Voltage $I_C = 100$ mAdc	2N6058 2N6059	$V_{(BR)CEO}$	80 100	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 40$ Vdc	2N6058	I_{CEO}	1.0	mAdc
$V_{CE} = 50$ Vdc	2N6059		1.0	
Collector-Emitter Cutoff Current $V_{CE} = 80$ Vdc, $V_{BE} = 1.5$ Vdc	2N6058	I_{CEX}	0.5	mAdc
$V_{CE} = 100$ Vdc, $V_{BE} = 1.5$ Vdc	2N6059		0.5	
Emitter-Base Cutoff Current $V_{EB} = 5.0$ Vdc		I_{EBO}	2.0	mAdc

2N6058, 2N6059 JAN SERIES

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 mAcd I _C = 6.0 Adc, I _B = 24 mAcd	V _{CE(sat)}		3.0 2.0	Vdc
Base-Emitter Saturation Voltage I _C = 12 Adc, I _B = 120 mAcd	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 = 5.0Adc, 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 mAcd	t _{on}		2.0	μs
Turn-Off Time V _{CC} = 30 Vdc; I _C = 5.0 Adc; I _{B1} = I _{B2} = 20 mAcd	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	
Test 2 V _{CE} = 30 Vdc, I _C = 5.0 Adc	
Test 3 V _{CE} = 70 Vdc, I _C = 200 mAcd	2N6058
Test 4 V _{CE} = 90 Vdc, I _C = 155 mAcd	2N6059

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