

2N6058 & 2N6059



NPN Darlington Power Silicon Transistors

Rev. V1

Features

- Available in JAN, JANTX, JANTXV per MIL-PRF-19500/502
- TO-3 (TO-204AA) Package



Electrical Characteristics

Parameter	Test Conditions	Symbol	Units	Min.	Max.
Off Characteristics					
Collector - Emitter Breakdown Voltage	$I_C = 100 \text{ mAdc}$, 2N6058 $I_C = 100 \text{ mAdc}$, 2N6059	$V_{(BR)CEO}$	Vdc	80 100	—
Collector - Emitter Cutoff Current	$V_{CE} = 60 \text{ Vdc}$, 2N6058 $V_{CE} = 80 \text{ Vdc}$, 2N6059	I_{CEO}	mAdc	—	500
Collector - Emitter Cutoff Current	$V_{CE} = 80 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N6058 $V_{CE} = 100 \text{ Vdc}$, $V_{BE} = 1.5 \text{ Vdc}$, 2N6059	I_{CEX}	mAdc	—	1.0
Collector - Base Cutoff Current	$V_{BE} = 80 \text{ Vdc}$, 2N6058 $V_{BE} = 100 \text{ Vdc}$, 2N6059	I_{CBO}	mAdc	—	0.5
Collector - Base Cutoff Current	$V_{EB} = 7 \text{ Vdc}$	I_{EBO}	mAdc	—	2.5
On Characteristics¹					
Forward Current Transfer Ratio	$I_C = 1 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$; pulsed $I_C = 6 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$; pulsed $I_C = 12 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$; pulsed	h_{FE}	-	— 1000 150	1000 18000 —
Collector - Emitter Saturation Voltage	$I_C = 12 \text{ Adc}$, $I_B = 120 \text{ mAdc}$ $I_C = 6 \text{ Adc}$, $I_B = 24 \text{ mAdc}$	$V_{CE(SAT)}$	Vdc	—	3.0 2.0
Base - Emitter Voltage	$I_C = 12 \text{ Adc}$, $I_B = 120 \text{ mAdc}$; pulsed	$V_{BE(SAT)}$	Vdc	—	4.0
Base - Emitter Voltage	$I_C = 12 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$	V_{BE}	Vdc	—	2.8
Dynamic Characteristics					
Magnitude of Common Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 5 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$, $f = 1 \text{ MHz}$	$ h_{FE} $	-	10	250
Small-Signal Short-Circuit Forward Current Transfer Ratio	$I_C = 5 \text{ Adc}$, $V_{CE} = 3 \text{ Vdc}$, $f = 1 \text{ kHz}$	h_{FE}	-	1000	—
Output Capacitance	$V_{CB} = 10 \text{ Vdc}$, $I_E = 0$, $100 \text{ kHz} \leq f \leq 1 \text{ MHz}$	C_{OBO}	pF	—	300
Switching Characteristics					
Turn-On Time	$V_{CC} = 30 \text{ Vdc}$; $I_C = 5 \text{ Adc}$; $I_B = 20 \text{ mAdc}$	T_{ON}	μs	—	2
Turn-Off Time	$V_{CC} = 30 \text{ Vdc}$; $I_C = 5 \text{ Adc}$; $I_{B1} = I_{B2} = 20 \text{ mAdc}$	T_{OFF}	μs	—	10
Safe Operating Area					
DC Tests:	$T_C = +25^\circ\text{C}$, $+10^\circ\text{C}$, 1 Cycle, $t \geq 1\text{s}$; 1 cycle				
Test 1:	$V_{CE} = 12.5 \text{ Vdc}$, $I_C = 12 \text{ Adc}$				
Test 2:	$V_{CE} = 30 \text{ Vdc}$, $I_C = 5 \text{ Adc}$				
Test 3:	$V_{CE} = 70 \text{ Vdc}$, $I_C = 200 \text{ mAdc}$, 2N6058				
	$V_{CE} = 90 \text{ Vdc}$, $I_C = 155 \text{ mAdc}$, 2N6059				

1. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$.

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Absolute Maximum Ratings

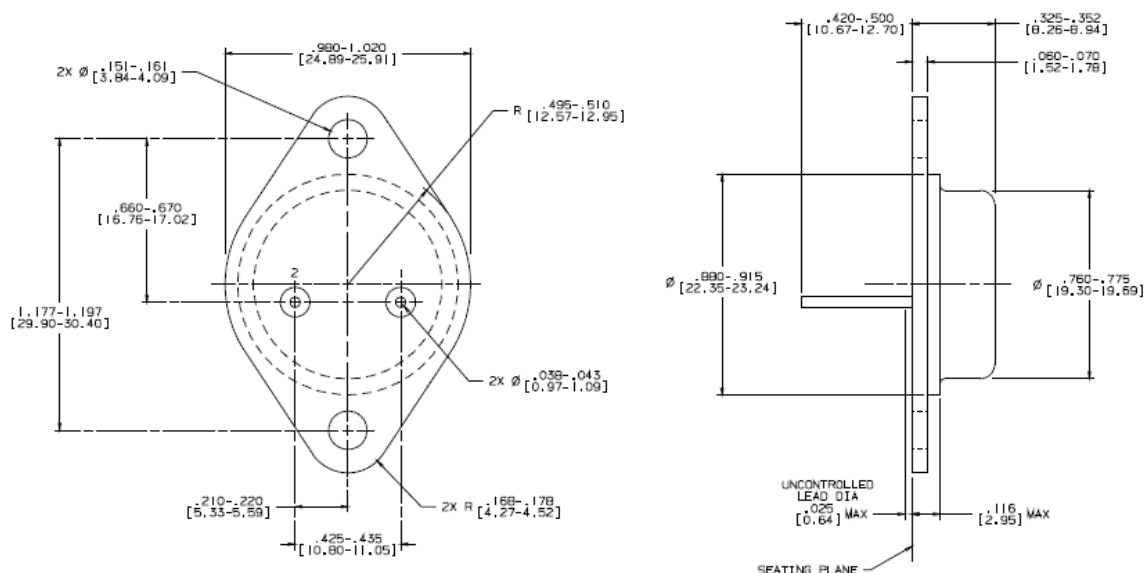
Ratings	Symbol	Value
Collector - Emitter Voltage 2N6058 2N6059	V_{CEO}	80 Vdc 100 Vdc
Collector - Base Voltage 2N6058 2N6059	V_{CBO}	80 Vdc 100 Vdc
Emitter - Base Voltage	V_{EBO}	5 Vdc
Collector Current	I_C	12 Adc
Base Current	I_B	0.2 Adc
Total Power Dissipation @ $T_C = +25^\circ\text{C}$ @ $T_C = +100^\circ\text{C}$	P_T	150 W 75 W
Operating & Storage Temperature Range	T_{OP}, T_{STG}	-55°C to $+175^\circ\text{C}$

2. Derate linearly @ 1 W/°C for $T_C > +25^\circ\text{C}$.

Thermal Characteristics

Characteristics	Symbol	Max. Value
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1°C/W

Outline Drawing



NOTES:

- STANDARD HEADER TYPE SOLID BASE.
- STANDARD LEAD FINISH PER MIL-M-38510 TYPE X OR EQUIVALENT.
- LEAD NOT BENT GREATER THAN 15°.
- DIMENSIONS BASED ON JEDEC STANDARD TO-3 PUBLICATION 95, PA

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