

NPN DARLINGTON POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/504

Devices

2N6283

2N6284

Qualified Level

JAN
JANTX
JANTXV

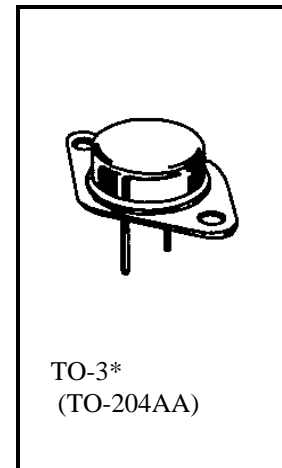
MAXIMUM RATINGS

Ratings	Symbol	2N6583	2N6284	Unit
Collector-Emitter Voltage	V_{CEO}	80	100	Vdc
Collector-Base Voltage	V_{CBO}	80	100	Vdc
Emitter-Base Voltage	V_{EBO}	7.0		Vdc
Base Current	I_B	0.5		Adc
Collector Current	I_C	20		Adc
Total Power Dissipation ⁽¹⁾	P_T	@ $T_C = +25^{\circ}C$	175	W
		@ $T_C = +100^{\circ}C$	87.5	W
Operating & Storage Junction Temperature Range	T_J, T_{stg}	-65 to +200		$^{\circ}C$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	0.857	$^{\circ}C/W$

1) Derate linearly @ 1.17 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 $I_C = 100 \text{ mAdc}$	2N6283 2N6284	$V_{(BR)CEO}$	80 100	Vdc
Collector-Emitter Cutoff Current $V_{CE} = 40 \text{ Vdc}$ $V_{CE} = 50 \text{ Vdc}$	2N6283 2N6284	I_{CEO}	1.0 1.0	mAdc
Collector-Emitter Cutoff Current $V_{CE} = 80 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$ $V_{CE} = 100 \text{ Vdc}, V_{BE} = 1.5 \text{ Vdc}$	2N6283 2N6284	I_{CEX}	5.0 5.0	mAdc
Emitter-Base Cutoff Current $V_{EB} = 7.0 \text{ Vdc}$		I_{EBO}	2.5	mAdc

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽²⁾				
Forward-Current Transfer Ratio $I_C = 1.0 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$ $I_C = 10 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$ $I_C = 20 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$	h_{FE}	1,500 1,250 500	18,000	
Collector-Emitter Saturation Voltage $I_C = 20 \text{ Adc}, I_B = 200 \text{ mAdc}$ $I_C = 10 \text{ Adc}, I_B = 40 \text{ mAdc}$	$V_{CE(sat)}$		3.0 2.0	Vdc
Base-Emitter Saturation Voltage $I_C = 20 \text{ Adc}, I_B = 200 \text{ mAdc}$	$V_{BE(sat)}$		4.0	Vdc
Base-Emitter Voltage $I_C = 10 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}$	V_{BE}		2.8	Vdc

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}, f = 1.0 \text{ MHz}$	$ h_{fe} $	8.0	80	
Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 10 \text{ Adc}, V_{CE} = 3.0 \text{ Vdc}, f = 1.0 \text{ kHz}$	h_{fe}	700		
Output Capacitance $V_{CB} = 10 \text{ Vdc}, I_E = 0, 100 \text{ kHz} \leq f \leq 1.0 \text{ MHz}$	C_{obo}		300	pF

SWITCHING CHARACTERISTICS

Turn-On Time $V_{CC} = 30 \text{ Vdc}; I_C = 10 \text{ Adc}; I_B = 40 \text{ mAdc}$	t_{on}		2.0	μs
Turn-Off Time $V_{CC} = 30 \text{ Vdc}; I_C = 10 \text{ Adc}; I_{B1} = I_{B2} = 40 \text{ mAdc}$	t_{off}		10	μs

SAFE OPERATING AREA

DC Tests				
$T_C = +25^\circ\text{C}, 1 \text{ Cycle}, t = 1.0 \text{ s}$				
Test 1				
$V_{CE} = 8.75 \text{ Vdc}, I_C = 20 \text{ Adc}$				
Test 2				
$V_{CE} = 30 \text{ Vdc}, I_C = 5.8 \text{ Adc}$				
Test 3				
$V_{CE} = 80 \text{ Vdc}, I_C = 100 \text{ mAdc}$				2N6283
$V_{CE} = 100 \text{ Vdc}, I_C = 100 \text{ mAdc}$				2N6284

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