

Magnatec



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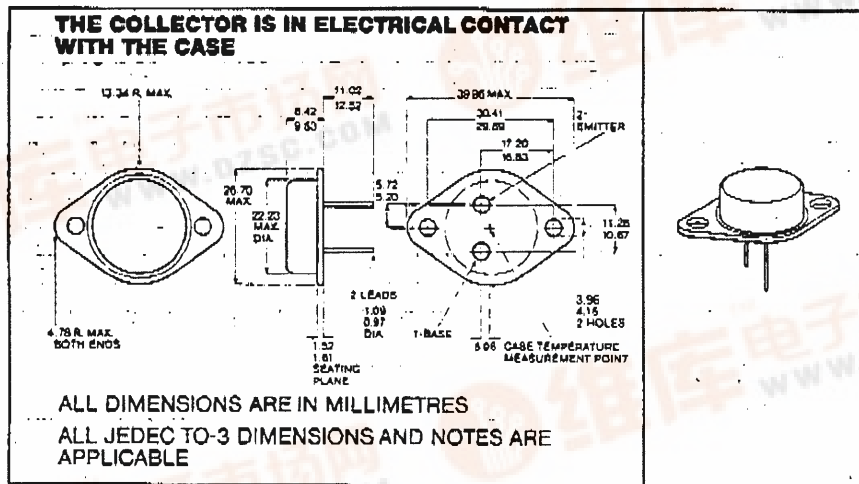


TYPES 2N6329, 2N6330, 2N6331
P-N-P SILICON POWER TRANSISTORS

FOR POWER-AMPLIFIER AND HIGH-SPEED-SWITCHING APPLICATIONS
DESIGNED FOR COMPLEMENTARY USE WITH 2N6326, 2N6327, 2N6328

- 200 W at 25°C Case Temperature
- 30-A Rated Collector Current
- 200-mJ Reverse Energy Rating
- High SOA Capability, 20 V and 10 A

*mechanical data



*absolute maximum ratings at 25°C case temperature (unless otherwise noted)

	2N6329	2N6330	2N6331
Collector-Base Voltage	-60 V	-80 V	-110 V
Collector-Emitter Voltage (See Note 1)	-60 V	-80 V	-100 V
Emitter-Base Voltage	-5 V	-5 V	-5 V
Continuous Collector Current	← -30 A →		
Peak Collector Current (See Note 2)	← -40 A →		
Continuous Base Current	← -10 A →		
Safe Operating Areas at (or below) 25°C Case Temperature	← See Figures 3 and 4 →		
Continuous Device Dissipation at (or below) 25°C Case Temperature (See Note 3)	← 200 W →		
Continuous Device Dissipation at 100°C Case Temperature (See Note 3)	← 114 W →		
Continuous Device Dissipation at (or below) 25°C Free-Air Temperature (See Note 4)	← 5 W →		
Unclamped Inductive Load Energy (See Note 5)	← 200 mJ →		
Operating Collector Junction Temperature Range	← -65°C to 200°C →		
Storage Temperature Range	← -65°C to 200°C →		
Terminal Temperature 1.6mm from Case for 10 Seconds	← 250°C →		

NOTES: 1. These values apply when the base-emitter diode is open-circuited.
2. This value applies for $t_w \leq 1$ ms, duty cycle $\leq 10\%$.
3. Derate linearly to 200°C case temperature at the rate of 1.14 W/°C or refer to Dissipation Derating Curve, Figure 5.
4. Derate linearly to 200°C free-air temperature at the rate of 28.6 mW/°C or refer to Dissipation Derating Curve, Figure 6.
5. This rating is based on the capability of the transistors to operate safely in the circuit of Figure 2. $L = 20$ mH, $R_{BB2} = 100 \Omega$, $V_{BB2} = 0$ V, $R_g = 0.1 \Omega$, $V_{CC} = 20$ V, Energy = $(I^2 L)/2$.

JEDEC registered data. This data sheet contains all applicable registered data in effect at the time of publication.





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P-N-P SILICON POWER TRANSISTORS

*electrical characteristics at 25°C case temperature (unless otherwise noted)

PARAMETER	TEST CONDITIONS	2N6329			2N6330			2N6331			UNIT
		MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX		
$V_{(BR)CEO}$ Collector-Emitter Breakdown Voltage	$I_C = -30\text{ mA}, I_B = 0$, See Note 6	-60		-80		-100				V	
I_{CEO} Collector Cutoff Current	$V_{CE} = -30\text{ V}, I_B = 0$	-1								mA	
	$V_{CE} = -40\text{ V}, I_B = 0$			-1							
	$V_{CE} = -50\text{ V}, I_B = 0$					-1					
I_{CES} Collector Cutoff Current	$V_{CE} = -60\text{ V}, V_{BE} = 0$	-0.5								mA	
	$V_{CE} = -80\text{ V}, V_{BE} = 0$			-0.5							
	$V_{CE} = -100\text{ V}, V_{BE} = 0$					-0.5					
	$V_{CE} = -30\text{ V}, V_{BE} = 0, T_C = 150^\circ\text{C}$	-5									
	$V_{CE} = -40\text{ V}, V_{BE} = 0, T_C = 150^\circ\text{C}$			-5							
I_{EBO} Emitter Cutoff Current	$V_{EB} = -5\text{ V}, I_C = 0$	-0.5		-0.5		-0.5				mA	
h_{FE} Static Forward Current Transfer Ratio	$V_{CE} = -4\text{ V}, I_C = -5\text{ A}$	25		25		25					
	$V_{CE} = -4\text{ V}, I_C = -15\text{ A}$	12		12		12					
	$V_{CE} = -4\text{ V}, I_C = -30\text{ A}$	6	30	6	30	6	30				
V_{BE} Base-Emitter Voltage	$V_{CE} = -4\text{ V}, I_C = -15\text{ A}$	-2		-2		-2				V	
	$V_{CE} = -4\text{ V}, I_C = -30\text{ A}$	-4		-4		-4					
$V_{CE(sat)}$ Collector-Emitter Voltage	$I_B = -2\text{ A}, I_C = -15\text{ A}$	-1.5		-1.5		-1.5				V	
	$I_B = -7.5\text{ A}, I_C = -30\text{ A}$	-3		-3		-3					
h_{fe} Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = -10\text{ V}, I_C = -1\text{ A}, f = 1\text{ kHz}$	30		30		30					
h_{fe} Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = -10\text{ V}, I_C = -1\text{ A}, f = 1\text{ MHz}$	3		3		3					

NOTES: 6. These parameters must be measured using pulse techniques, $t_w = 300\ \mu\text{s}$; duty cycle $\leq 2\%$.

7. These parameters are measured with voltage-sensing contacts separate from the current-carrying contacts and located within 3.2 mm from the device body.

TJEDC registered date

switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS†	TYP	UNIT
t_{on} Turn-On Time	$I_C = -15\text{ A}, I_{B(1)} = -2\text{ A}, I_{B(2)} = 2\text{ A}$	0.6	μs
t_{off} Turn-Off Time	$V_{BE(off)} = 4\text{ V}, R_L = 2\ \Omega$, See Figure 1	0.9	

†Voltage and current values shown are nominal, exact values vary slightly with transistor parameters.