

Magnatec



Certificate No. FM 36235

Magna Park, Coventry Road, Lutterworth
 Leicestershire LE17 4JB, England
 Sales telephone: 01455 554711
 Admin telephone: 01455 552505
 Fax: 01455 558843

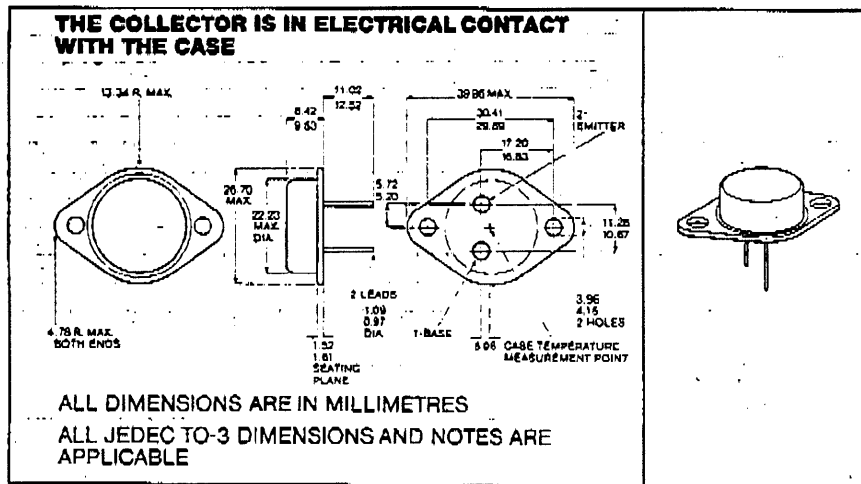


TYPES 2N6329, 2N6330, 2N6331
P-N-P SILICON POWER TRANSISTORS

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	-100 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 transistor to operate safely in the circuit of Figure 2. $L = 20$ mH, $R_{B2} = 100 \Omega$, $V_{B2} = 0$ V, $R_S = 0.1 \Omega$, $V_{CC} = 20$ V, Energy = $I_C^2 L/2$.

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



TYPES 2N6329, 2N6330, 2N6331
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	
$V_{(BR)CEO}$ 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				
$V_{CE} = -50 \text{ V}$, $V_{BE} = 0$, $T_C = 150^\circ\text{C}$					-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 data

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.