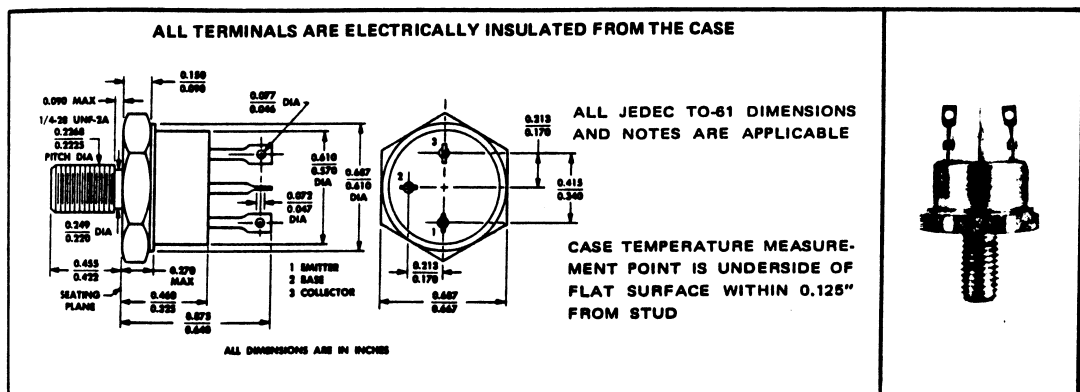


TYPE 2N6128 N-P-N SILICON POWER TRANSISTOR

HIGH-FREQUENCY, HIGH-POWER TRANSISTOR WITH COMPUTER-DESIGNED ISOTHERMAL GEOMETRY

- 40 mJ Reverse Energy Rating with $I_C = 20$ A and 4 V Reverse Bias
- Isolated Stud Package
- 100 W at 50°C Case Temperature
- Min f_T of 50 MHz at 5 V, 2 A
- Designed for Complementary Use with 2N6127

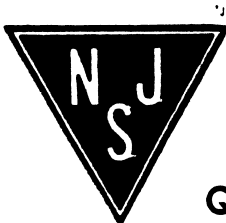
*mechanical data



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

Collector-Base Voltage	100 V
Collector-Emitter Voltage (See Note 1)	80 V
Emitter-Base Voltage	6 V
Continuous Collector Current	10 A
Peak Collector Current (See Note 2)	20 A
Continuous Base Current	3 A
Safe Operating Areas	See Figures 6 and 7
Continuous Device Dissipation at (or below) 50°C Case Temperature (See Note 3)	100 W
Continuous Device Dissipation at 100°C Case Temperature (See Note 3)	67 W
Unclamped Inductive Load Energy ($V_{BE(off)} = 0$, See Note 4)	50 mJ
Unclamped Inductive Load Energy ($V_{BE(off)} = -4$ V, See Note 4)	40 mJ
Operating Collector Junction Temperature Range	-65°C to 200°C
Storage Temperature Range	-65°C to 200°C
Terminal Temperature 1/8 Inch from Case for 60 Seconds	300°C

- NOTES:
1. This value applies when the base-emitter diode is open-circuited.
 2. This value applies for $t_w < 0.3$ ms, duty cycle $\leq 10\%$.
 3. Derate linearly to 200°C case temperature at the rate of 0.67 W/°C.
 4. These ratings are based on the capability of the transistor to operate safely in the circuit of Figure 2.



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

Quality Semi-Conductors

TYPE 2N6128
N-P-N SILICON POWER TRANSISTOR

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

PARAMETER	TEST CONDITIONS	MIN	MAX	UNIT
$V_{(BR)CEO}$ Collector-Emitter Breakdown Voltage	$I_C = 200 \text{ mA}$, $I_B = 0$, See Note 5	80		V
I_{CEO} Collector Cutoff Current	$V_{CE} = 40 \text{ V}$, $I_B = 0$		100	μA
I_{CES} Collector Cutoff Current	$V_{CE} = 60 \text{ V}$, $V_{BE} = 0$		10	μA
	$V_{CE} = 100 \text{ V}$, $V_{BE} = 0$		1	mA
	$V_{CE} = 60 \text{ V}$, $V_{BE} = 0$, $T_C = 150^\circ\text{C}$		500	μA
I_{EBO} Emitter Cutoff Current	$V_{EB} = 5 \text{ V}$, $I_C = 0$		10	μA
	$V_{EB} = 6 \text{ V}$, $I_C = 0$		1	mA
h_{FE} Static Forward Current Transfer Ratio	$V_{CE} = 5 \text{ V}$, $I_C = 100 \text{ mA}$	20		
	$V_{CE} = 5 \text{ V}$, $I_C = 5 \text{ A}$	30	120	
	$V_{CE} = 5 \text{ V}$, $I_C = 10 \text{ A}$	15		
	$V_{CE} = 5 \text{ V}$, $I_C = 5 \text{ A}$, $T_C = -55^\circ\text{C}$	12		
	See Notes 5 and 6			
V_{BE} Base-Emitter Voltage	$I_B = 0.5 \text{ A}$, $I_C = 5 \text{ A}$		1.8	V
	$V_{CE} = 5 \text{ V}$, $I_C = 5 \text{ A}$		1.8	
	$V_{CE} = 5 \text{ V}$, $I_C = 10 \text{ A}$		2.2	
$V_{CE(sat)}$ Collector-Emitter Saturation Voltage	$I_B = 0.5 \text{ A}$, $I_C = 5 \text{ A}$		0.9	V
	$I_B = 1 \text{ A}$, $I_C = 10 \text{ A}$		2.2	
h_{fe} Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = 5 \text{ V}$, $I_C = 0.2 \text{ A}$, $f = 1 \text{ kHz}$	20		
$ h_{fe} $ Small-Signal Common-Emitter Forward Current Transfer Ratio	$V_{CE} = 5 \text{ V}$, $I_C = 2 \text{ A}$, $f = 20 \text{ MHz}$	2.5		
C_{obo} Common-Base Open-Circuit Output Capacitance	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$		275	pF

NOTES: 5. These parameters must be measured using pulse techniques. $t_w = 300 \mu\text{s}$, duty cycle $\leq 2\%$.

6. These parameters are measured with voltage-sensing contacts separate from the current-carrying contacts and located within 0.125 inch from the device body.

thermal characteristics

PARAMETER	MAX	UNIT
$R_{\theta JC}$ Junction to Case Thermal Resistance	1.5	$^\circ\text{C/W}$

switching characteristics at 25°C case temperature

PARAMETER	TEST CONDITIONS†	TYP	UNIT
t_{on} Turn-On Time	$I_C = 10 \text{ A}$, $I_B(1) = 1 \text{ A}$, $I_B(2) = -1 \text{ A}$	0.5	μs
t_{off} Turn-Off Time	$V_{BE(off)} = -3.8 \text{ V}$, $R_L = 3 \Omega$, See Figure 1	1.3	

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

*JEDEC registered data



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