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Philips Semiconductors

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Data sheet	
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# 2N2646

## Silicon unijunction transistor

### QUICK REFERENCE DATA

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$-V_{EB2}$	emitter-base 2 voltage		-	-	30	V
$I_{EM}$	emitter current	peak value	-	-	2	A
$P_{tot}$	total power dissipation		-	-	300	mW
$T_j$	junction temperature		-	-	125	°C
$R_{BB}$	static inter-base resistance	$V_{B2B1} = 3\text{ V}$ $I_E = 0$	-	7	-	kΩ
$V_{EB1sat}$	emitter-base 1 saturation voltage	$V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$	-	3.5	-	V
$I_{E(V)}$	emitter valley point current		4	6	-	mA
$I_{E(P)}$	emitter peak point current		-	1	5	μA

**PINNING - TO-18**  
Base 2 connected to case.

### PIN CONFIGURATION

PIN	DESCRIPTION
1	emitter
2	base 1
3	base 2

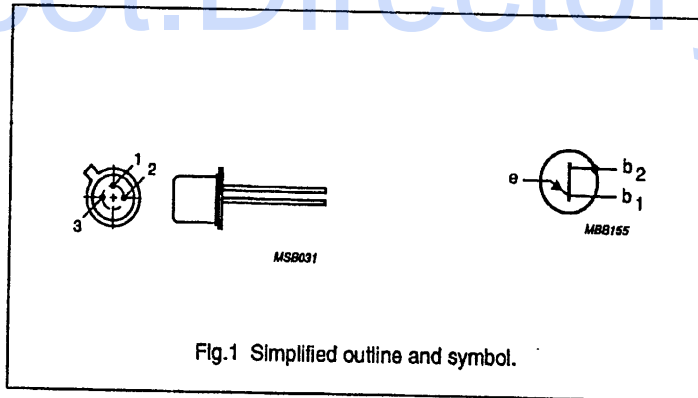


Fig.1 Simplified outline and symbol.

**Silicon unijunction transistor**

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**LIMITING VALUES**

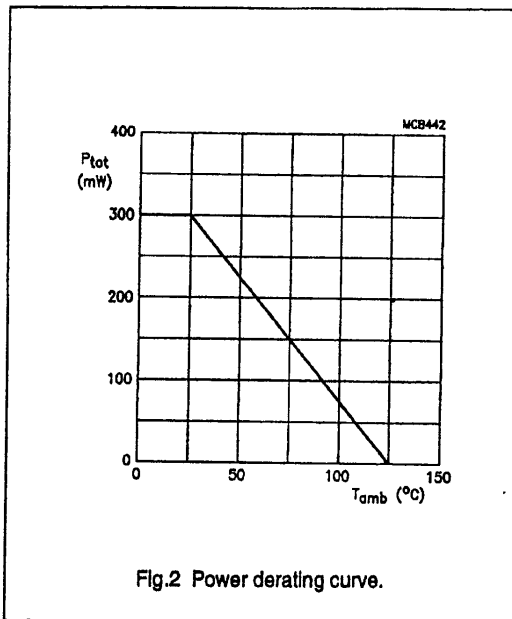
In accordance with the Absolute Maximum System (IEC 134).

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SYMBOL	PARAMETER	CONDITIONS	MIN.	MAX.	UNIT
$-V_{EB2}$	emitter-base 2 voltage		-	30	V
$V_{B2B1}$	inter-base voltage		-	35	V
$I_E$	emitter current	average value	-	50	mA
$I_{EM}$	emitter current (note 1)	peak value	-	2	A
$P_{tot}$	total power dissipation (note 2)	$T_{amb} \leq 25^\circ\text{C}$	-	300	mW
$T_{stg}$	storage temperature range		-65	150	$^\circ\text{C}$
$T_j$	junction temperature		-	125	$^\circ\text{C}$

**Notes**

1. Capacitor discharge  $\leq 10 \mu\text{F}$  at  $\leq 30 \text{ V}$ .
2. Must be limited by external circuit.



**THERMAL RESISTANCE**

SYMBOL	PARAMETER	VALUE	UNIT
$R_{th(j-a)}$	from junction to ambient	300	K/W

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CHARACTERISTICS

T<sub>amb</sub> = 25 °C unless otherwise specified.

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SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
R <sub>BB</sub>	static inter-base resistance	V <sub>B2B1</sub> = 3 V I <sub>E</sub> = 0	4.7	7	9.1	kΩ
TC <sub>RBB</sub>	inter-base resistance temperature coefficient	V <sub>B2B1</sub> = 3 V I <sub>E</sub> = 0 T <sub>amb</sub> = -55 to 125 °C	0.1	-	0.9	%/K
-I <sub>EB20</sub>	emitter cut-off current	-V <sub>EB2</sub> = 30 V I <sub>B1</sub> = 0	-	-	12	V
V <sub>EB1sat</sub>	emitter-base 1 saturation voltage	V <sub>B2B1</sub> = 10 V I <sub>E</sub> = 50 mA	-	3.5	-	V
I <sub>B2mod</sub>	inter-base current modulation	V <sub>B2B1</sub> = 10 V I <sub>E</sub> = 50 mA	-	15	-	mA
η	input/output ratio (note 1)	V <sub>B2B1</sub> = 10 V	0.56	-	0.75	
I <sub>E(V)</sub>	emitter valley point current	V <sub>B2B1</sub> = 20 V R <sub>B2</sub> = 100 Ω	4	6	-	mA
I <sub>E(P)</sub>	emitter peak point current	V <sub>B2B1</sub> = 25 V	-	1	5	μA
V <sub>OB1M</sub>	base 1 impulse/output voltage		3	5	-	V

Note

- $$\eta = \frac{(V_{E(P)} - V_{EB1})}{V_{B2B1}}$$
 when V<sub>E(P)</sub> = emitter peak point voltage, V<sub>EB1</sub> = emitter-base 1 breakdown voltage, (approximately 0.5 V at 10 μA), and V<sub>B2B1</sub> = inter-base voltage.

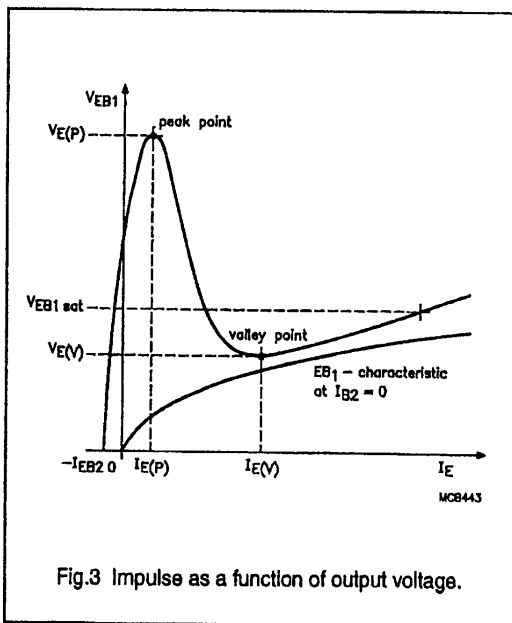


Fig.3 Impulse as a function of output voltage.

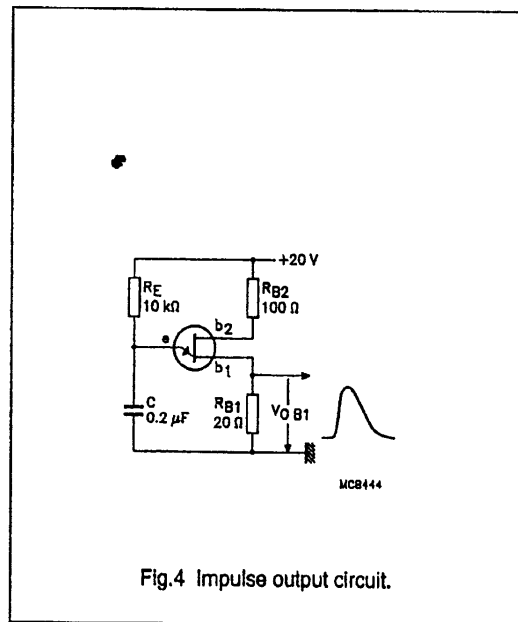


Fig.4 Impulse output circuit.

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PACKAGE OUTLINE

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