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Philips Semiconductors

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 V I_E = 0	–	7	–	kΩ
V_{EB1sat}	emitter-base 1 saturation voltage	V_{B2B1} = 10 V I_E = 50 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	DESCRIPTION
1	emitter
2	base 1
3	base 2

PIN CONFIGURATION

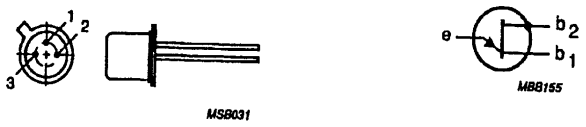

Fig.1 Simplified outline and symbol.

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LIMITING VALUES

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

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)	$T_{amb} \leq 25$ °C	–	300	mW
T_{stg}	storage temperature range		-65	150	°C
T_j	junction temperature		–	125	°C

Notes

1. Capacitor discharge ≤ 10 μF at ≤ 30 V.
2. Must be limited by external circuit.

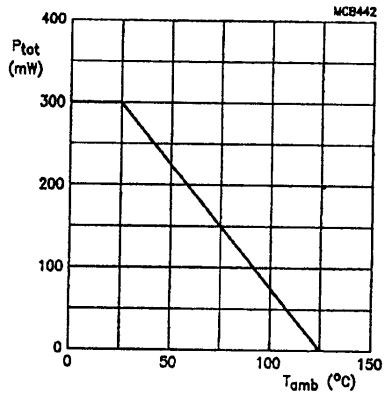

Fig.2 Power derating curve.

THERMAL RESISTANCE

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

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CHARACTERISTICS

T_{amb} = 25 °C unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
R_{BB}	static inter-base resistance	V_{B2B1} = 3 V I_E = 0	4.7	7	9.1	kΩ
TC_{RBB}	inter-base resistance temperature coefficient	V_{B2B1} = 3 V I_E = 0 T_{amb} = −55 to 125 °C	0.1	–	0.9	%/K
$-I_{EB2O}$	emitter cut-off current	$-V_{EB2}$ = 30 V I_{B1} = 0	–	–	12	V
V_{EB1sat}	emitter-base 1 saturation voltage	V_{B2B1} = 10 V I_E = 50 mA	–	3.5	–	V
I_{B2mod}	inter-base current modulation	V_{B2B1} = 10 V I_E = 50 mA	–	15	–	mA
η	input/output ratio (note 1)	V_{B2B1} = 10 V	0.56	–	0.75	
$I_{E(V)}$	emitter valley point current	V_{B2B1} = 20 V R_{B2} = 100 Ω	4	6	–	mA
$I_{E(P)}$	emitter peak point current	V_{B2B1} = 25 V	–	1	5	μA
V_{OB1M}	base 1 impulse/output voltage		3	5	–	V

Note

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

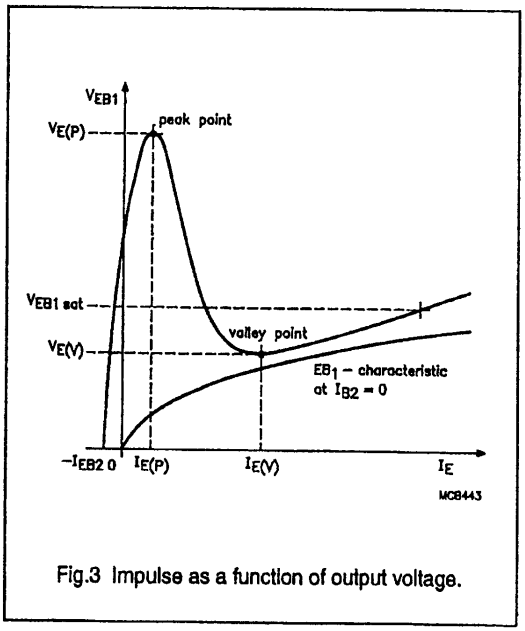

Fig.3 Impulse as a function of output voltage.

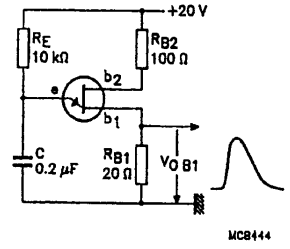

Fig.4 Impulse output circuit.

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PACKAGE OUTLINE

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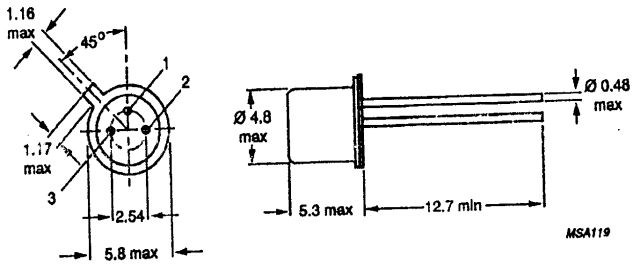

Dimensions in mm.

Fig.5 TO-18.