

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	DESCRIPTION
1	emitter
2	base 1
3	base 2

### PIN CONFIGURATION

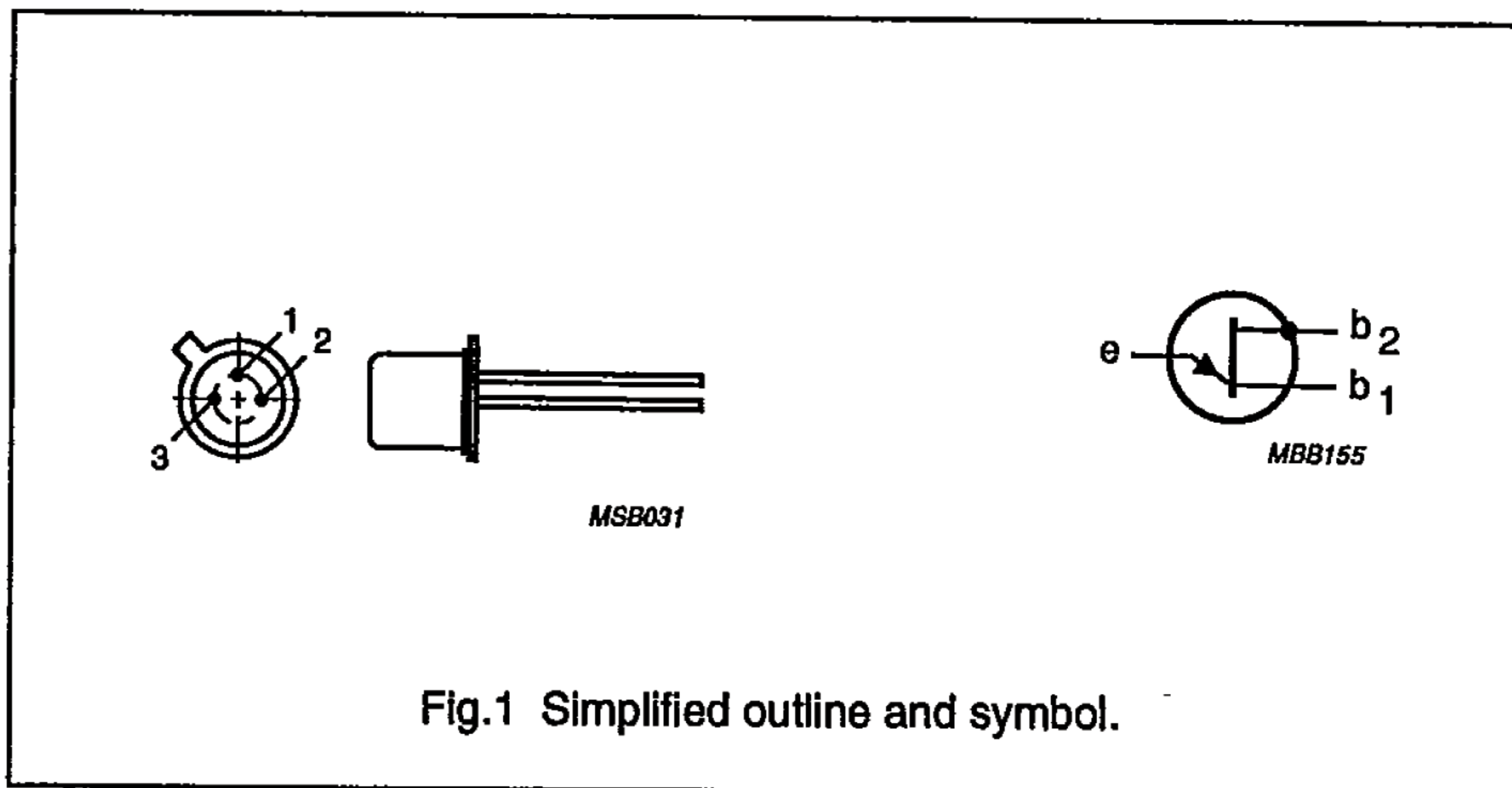


Fig.1 Simplified outline and symbol.

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2N2646

## 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)	$T_{amb} \leq 25\text{ }^\circ\text{C}$	-	300	mW
$T_{stg}$	storage temperature range		-65	150	$^\circ\text{C}$
$T_j$	junction temperature		-	125	$^\circ\text{C}$

## Notes

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

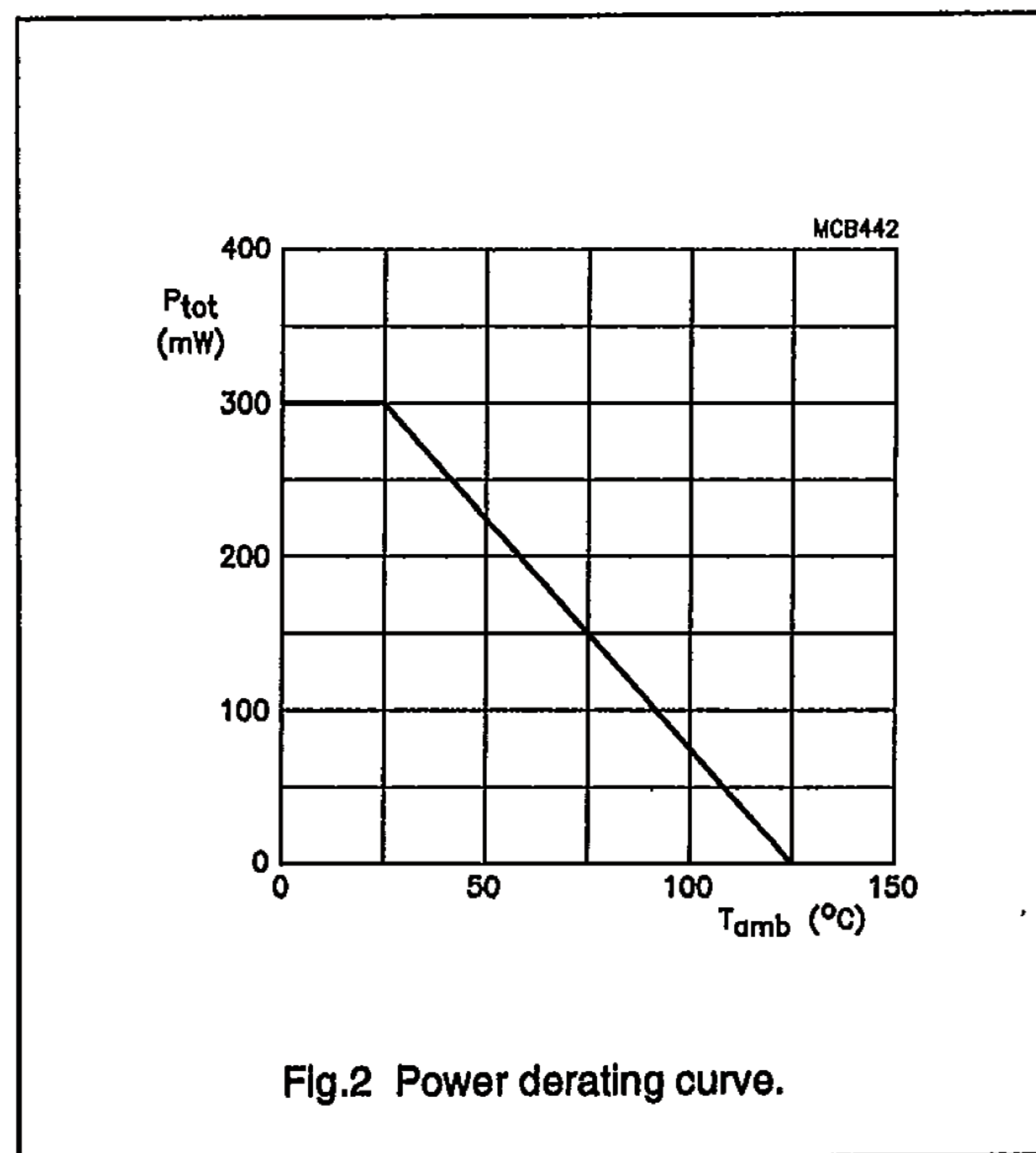


Fig.2 Power derating curve.

## THERMAL RESISTANCE

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

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# 2N2646

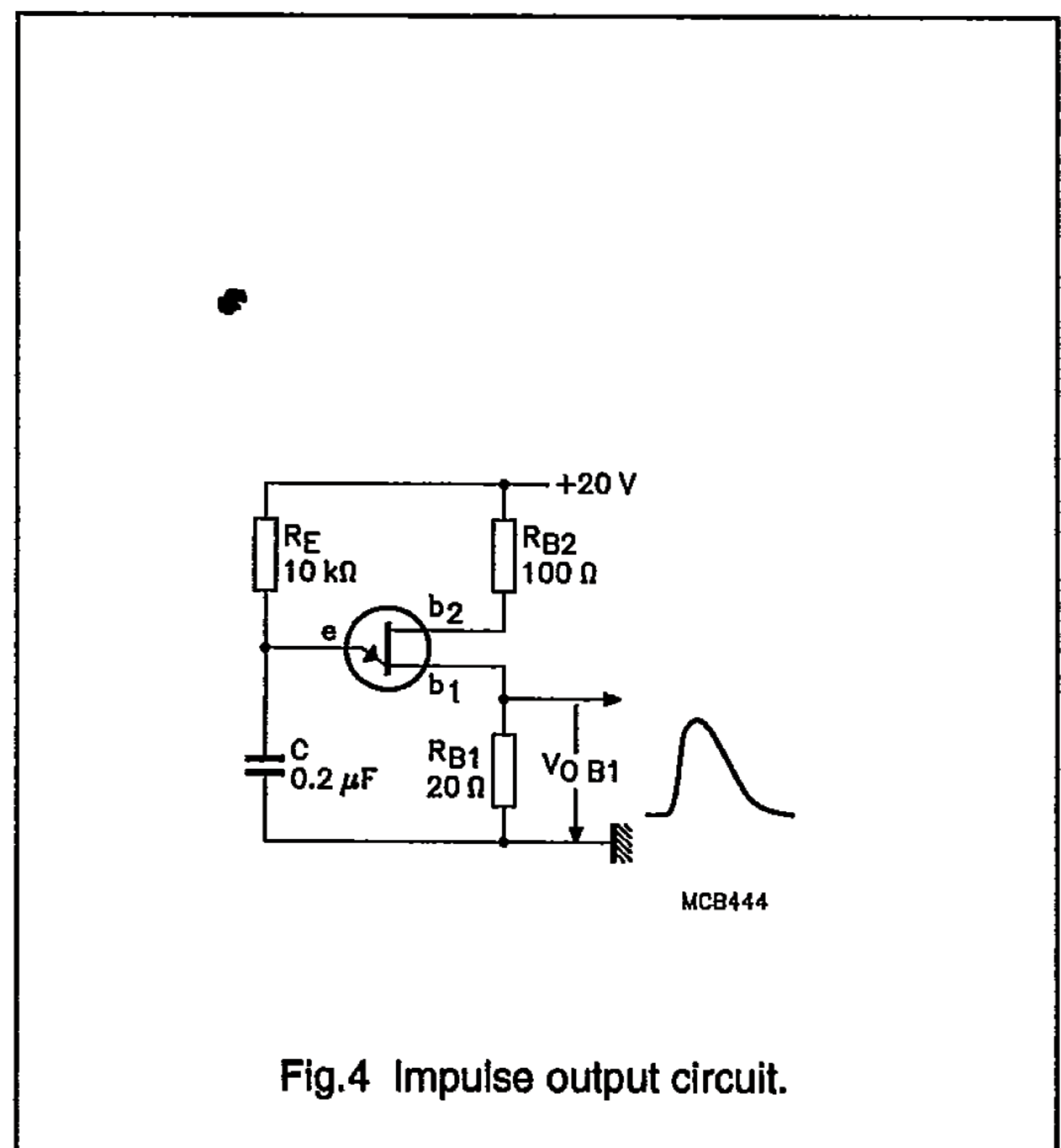
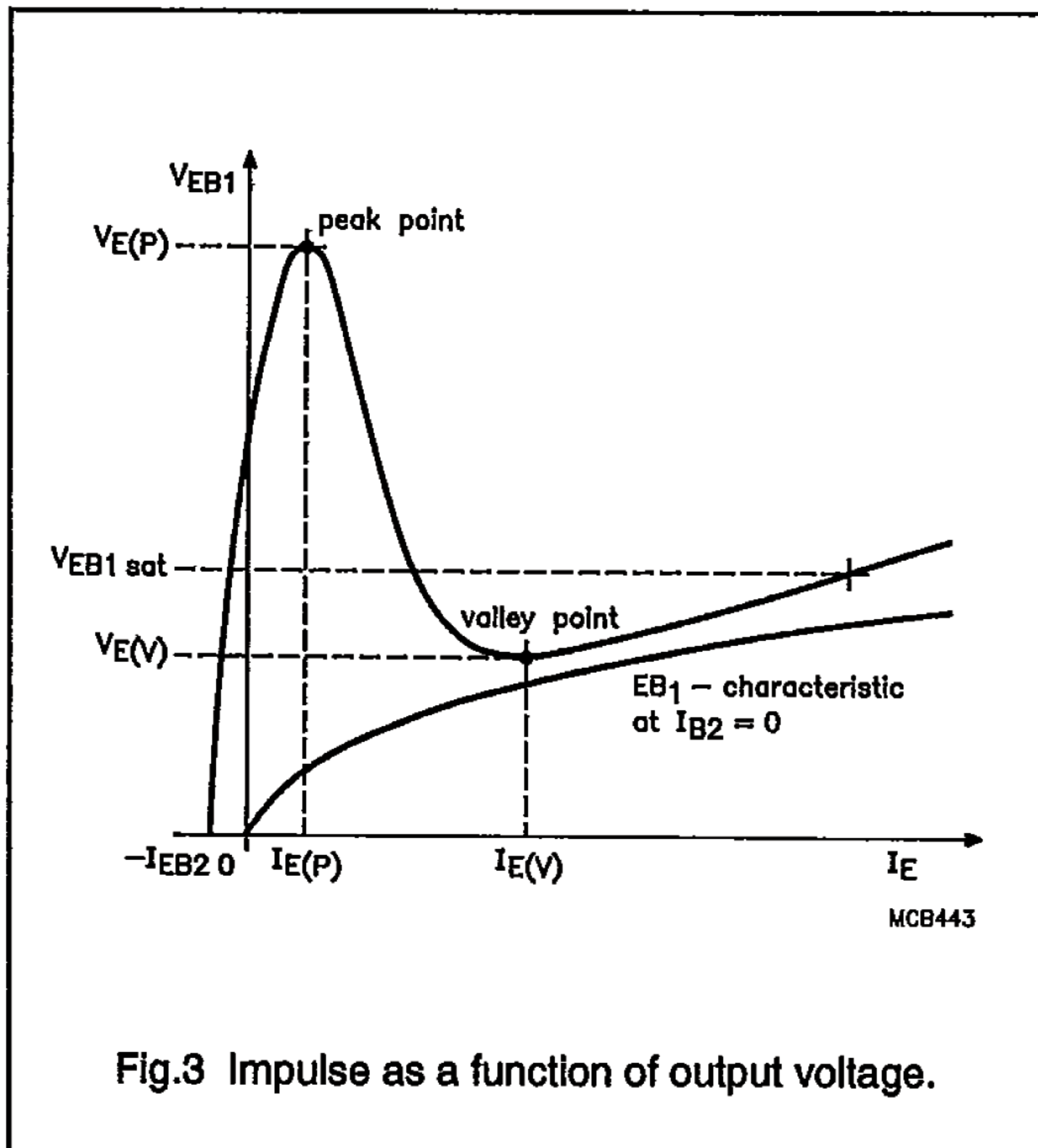
## CHARACTERISTICS

$T_{amb} = 25\text{ }^{\circ}\text{C}$  unless otherwise specified.

SYMBOL	PARAMETER	CONDITIONS	MIN.	TYP.	MAX.	UNIT
$R_{BB}$	static inter-base resistance	$V_{B2B1} = 3\text{ V}$ $I_E = 0$	4.7	7	9.1	$k\Omega$
$TC_{RBB}$	inter-base resistance temperature coefficient	$V_{B2B1} = 3\text{ V}$ $I_E = 0$ $T_{amb} = -55\text{ to }125\text{ }^{\circ}\text{C}$	0.1	—	0.9	%/K
$-I_{EB20}$	emitter cut-off current	$-V_{EB2} = 30\text{ V}$ $I_{B1} = 0$	—	—	12	V
$V_{EB1sat}$	emitter-base 1 saturation voltage	$V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$	—	3.5	—	V
$I_{B2mod}$	inter-base current modulation	$V_{B2B1} = 10\text{ V}$ $I_E = 50\text{ mA}$	—	15	—	mA
$\eta$	input/output ratio (note 1)	$V_{B2B1} = 10\text{ V}$	0.56	—	0.75	
$I_{E(V)}$	emitter valley point current	$V_{B2B1} = 20\text{ V}$ $R_{B2} = 100\ \Omega$	4	6	—	mA
$I_{E(P)}$	emitter peak point current	$V_{B2B1} = 25\text{ V}$	—	1	5	$\mu\text{A}$
$V_{OB1M}$	base 1 impulse/output voltage		3	5	—	V

### Note

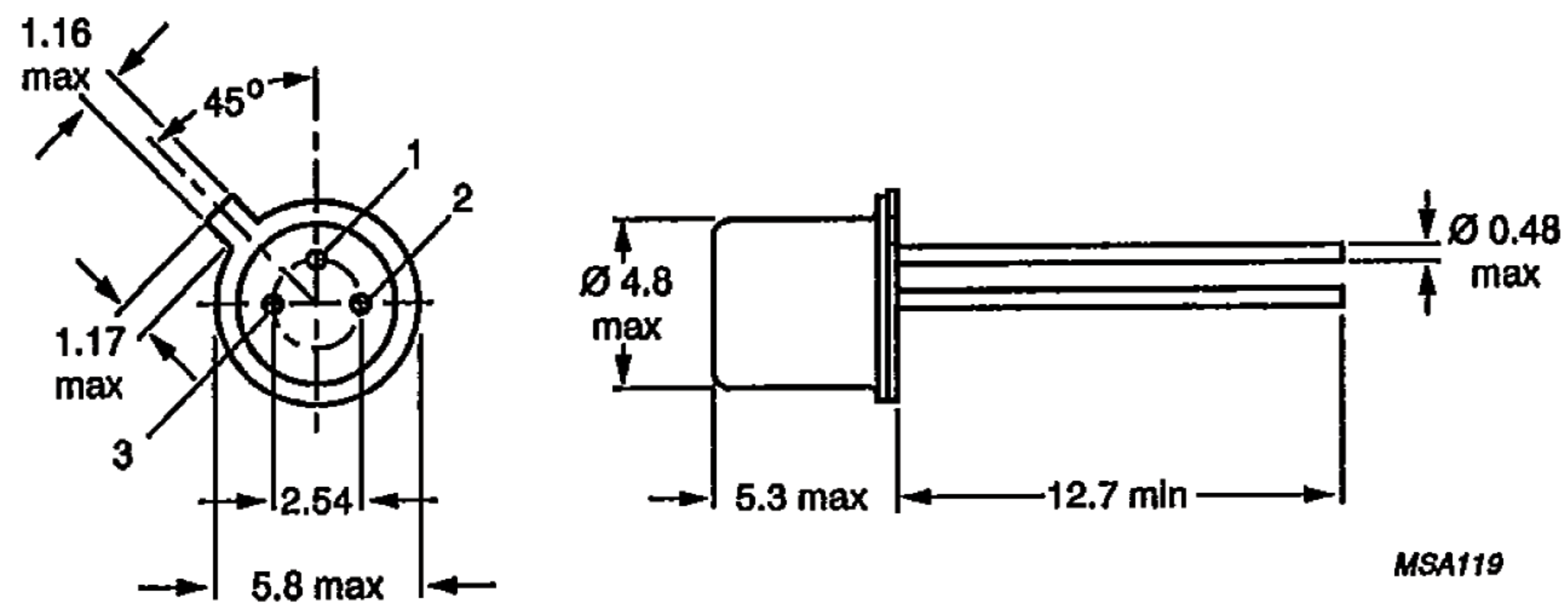
- $$\eta = \frac{(V_{E(P)} - V_{EB1})}{V_{B2B1}}$$
 when  $V_{E(P)}$  = emitter peak point voltage,  $V_{EB1}$  = emitter-base 1 breakdown voltage, (approximately 0.5 V at 10  $\mu\text{A}$ ), and  $V_{B2B1}$  = inter-base voltage.



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## PACKAGE OUTLINE



Dimensions in mm.

Fig.5 TO-18.