

NPN general purpose transistors BC846; BC847; BC848

Features

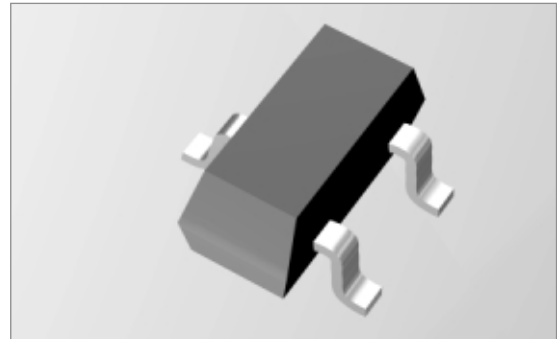
- Low current (max. 100 mA)
- Low voltage (max. 65 V)

Applications

- General purpose switching and amplification

Description

- NPN transistor in a SOT-23 plastic package
- PNP complements: BC856, BC857 and BC858.

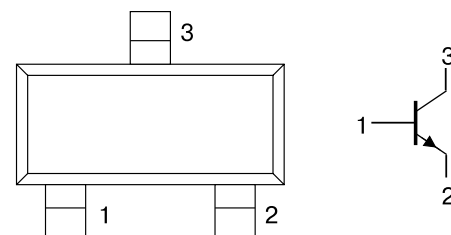


Pinning

Pin	Description
1	base
2	emitter
3	collector

Marking

Type Number	Marking Code	Type Number	Marking Code
BC846	1D*	BC847A	1E*
BC846A	1A*	BC847B	1F*
BC846B	1B*	BC847C	1G*
BC847	1H*	BC848B	1K*



Top view

MAM255

Fig.1 Simplified outline (SOT23) and symbol.

Limiting Values

In accordance with the Absolute Maximum System (IEC 60134).

Symbol	Parameter	Conditions	Min.	Max.	Unit
V_{CBO}	collector-base voltage	open emitter			
	BC846		–	80	V
	BC847		–	50	V
V_{CEO}	collector-emitter voltage	open base			
	BC846		–	65	V
	BC847		–	45	V
V_{EBO}	emitter-base voltage	open collector			
	BC846; BC847		–	6	V
	BC848		–	5	V
I_C	collector current (DC)		–	100	mA
I_{CM}	peak collector current		–	200	mA
I_{BM}	peak base current		–	200	mA
P_{tot}	total power dissipation	$T_{amb} \leq 25\text{ °C}$; note 1	–	250	mW
T_{stg}	storage temperature		–65	+150	°C
T_j	junction temperature		–	150	°C
T_{amb}	operating ambient temperature		–65	+150	°C

Note

1. Transistor mounted on an FR4 printed-circuit board, standard footprint.

Thermal Characteristics

Symbol	Parameter	Conditions	Value	Unit
$R_{th(j-a)}$	thermal resistance from junction to ambient	in free air; note 1	500	K/W

Note

1. Transistor mounted on an FR4 printed-circuit board, standard footprint.

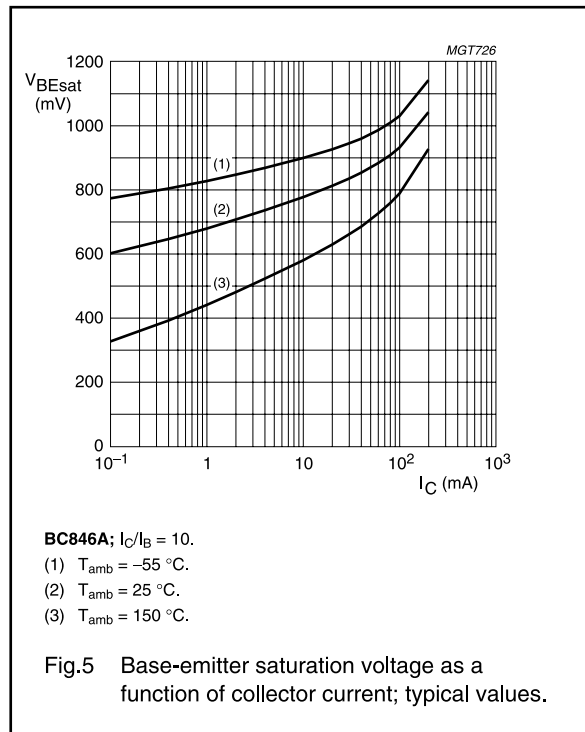
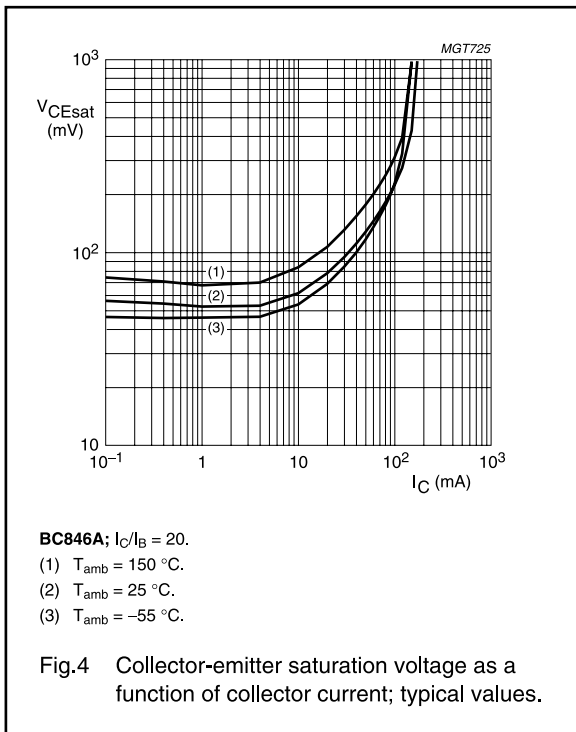
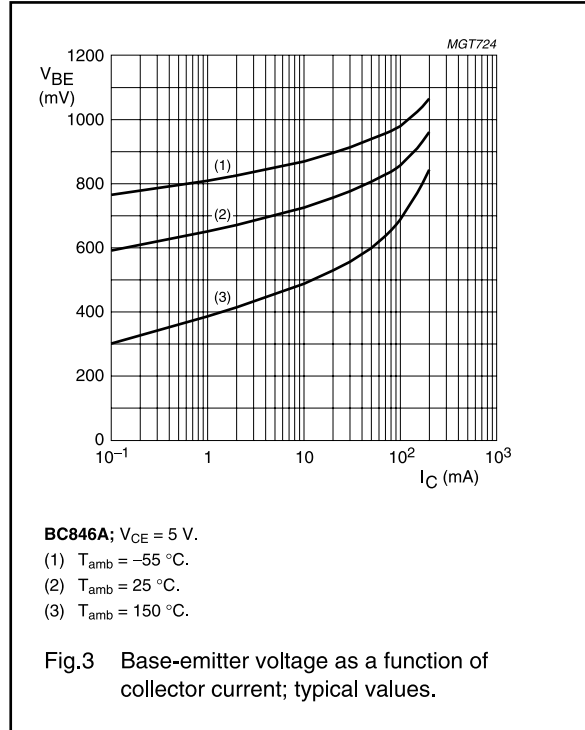
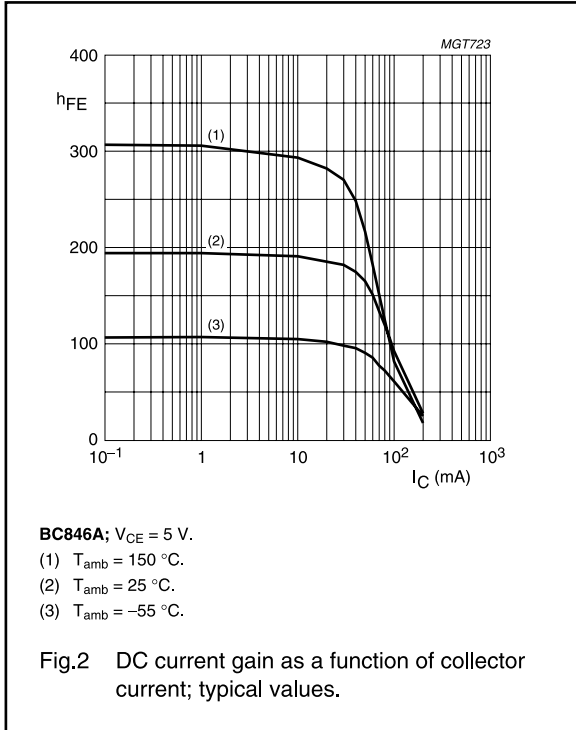
Characteristics

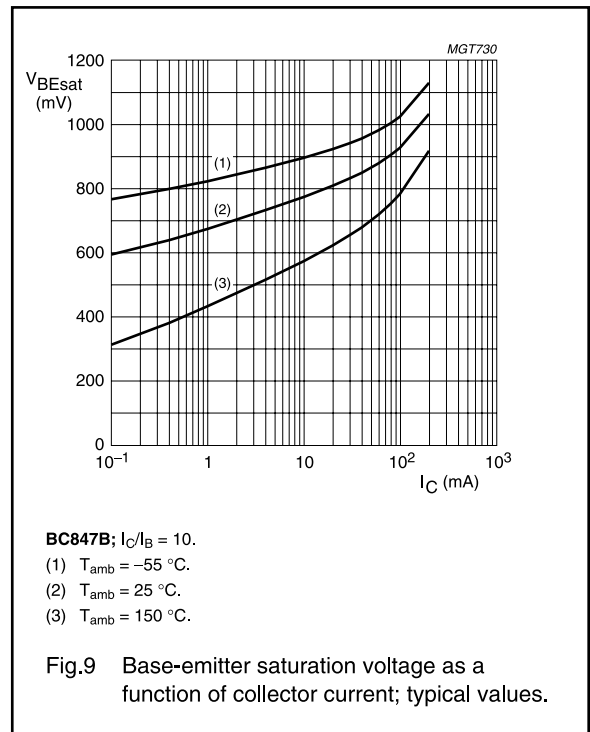
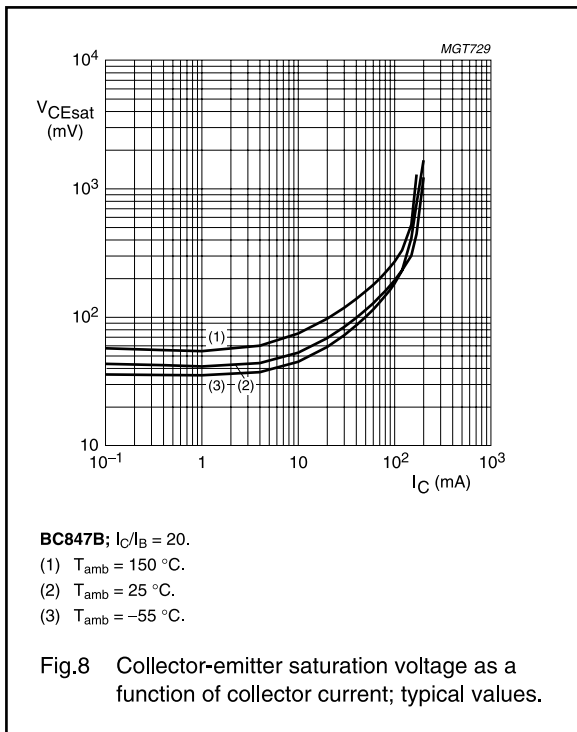
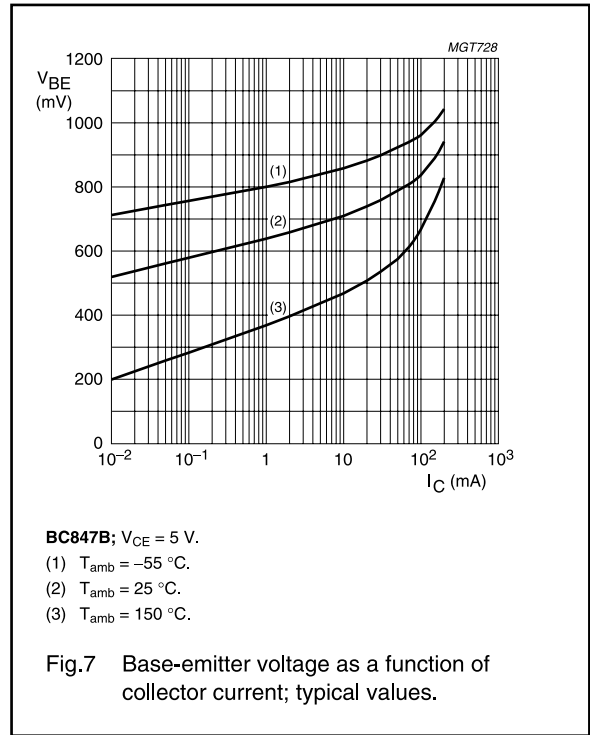
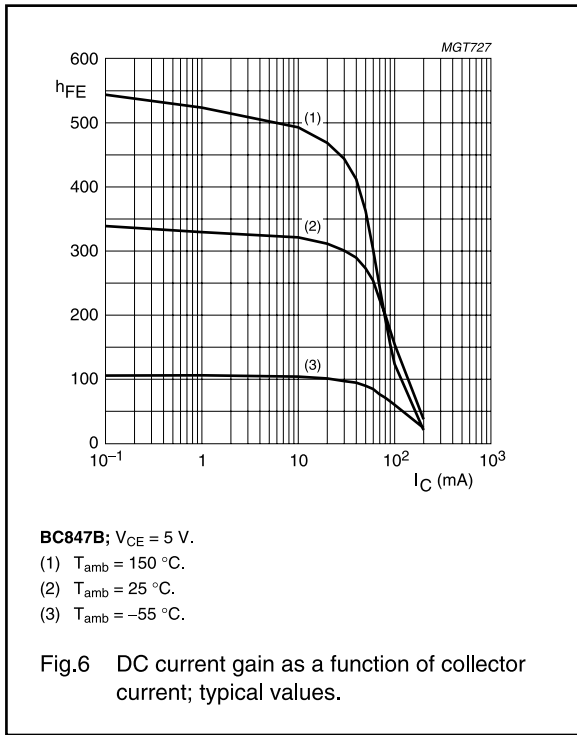
$T_{amb}=25\text{ °C}$: unless otherwise specified.

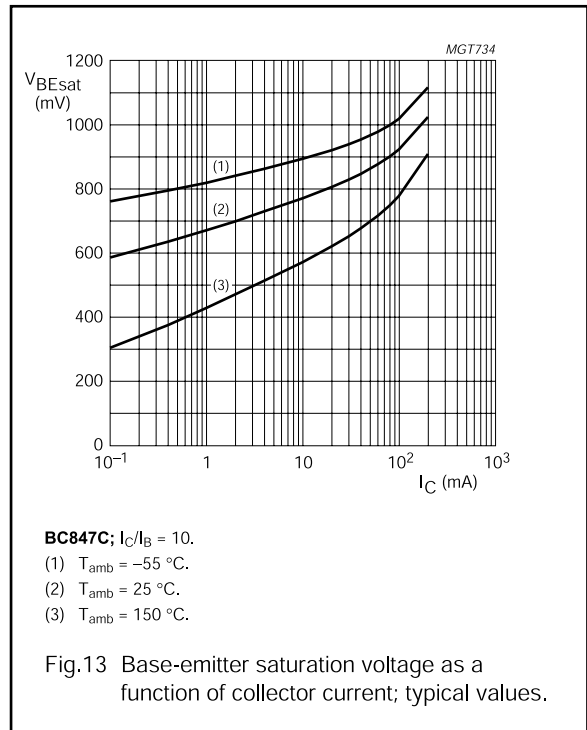
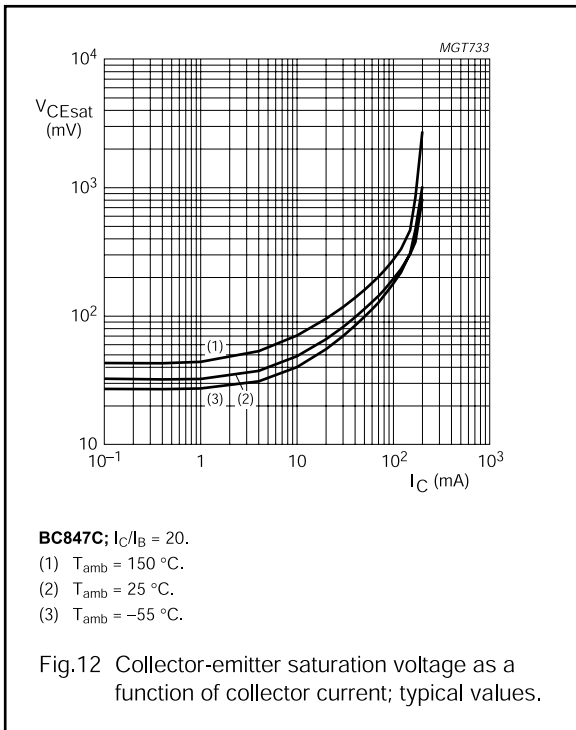
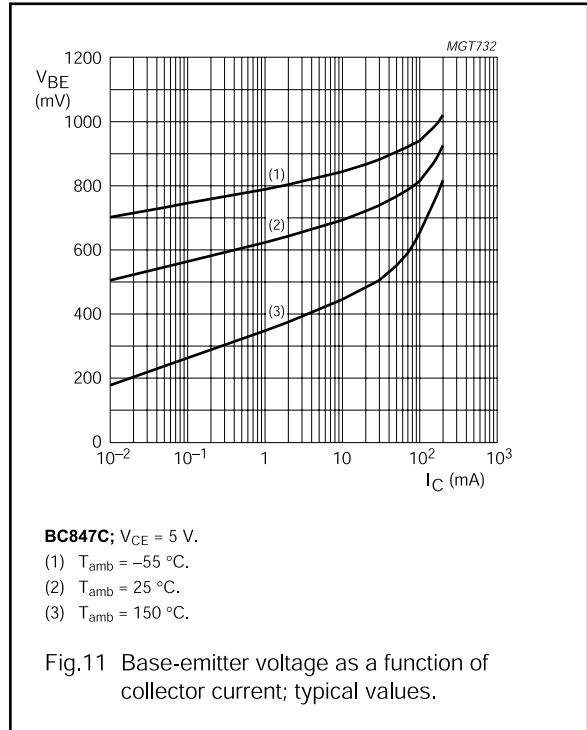
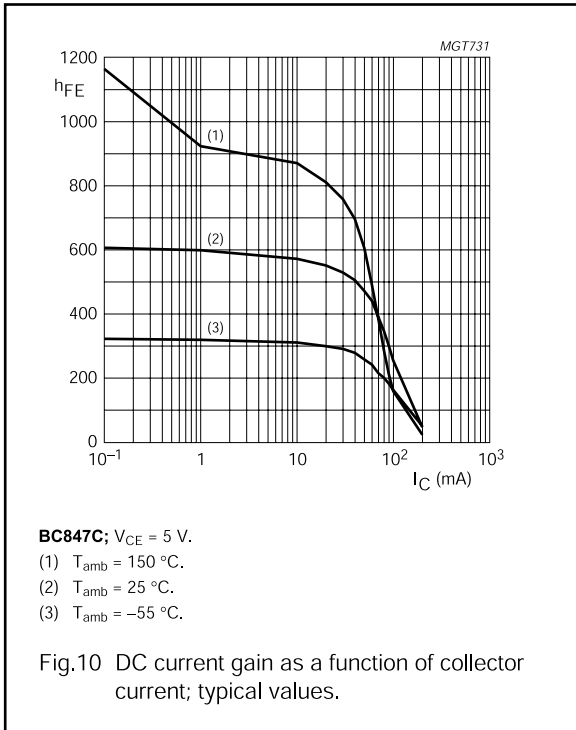
Symbol	Parameter	Conditions	Min.	Typ.	Max.	Unit
I_{CBO}	collector-base cut-off current	$I_E = 0; V_{CB} = 30V$	–	–	15	nA
		$I_E = 0; V_{CB} = 30 V; T_j = 150\text{ °C}$	–	–	5	μA
I_{EBO}	emitter-base cut-off current	$I_C = 0; V_{EB} = 5V$	–	–	100	nA
h_{FE}	DC current gain BC846A; BC847A BC846B; BC847B; BC848B BC847C	$I_C = 10\ \mu A; V_{CE} = 5V;$	–	90	–	
			–	150	–	
			–	270	–	
	DC current gain BC846 BC847 BC846A; BC847A BC846B; BC847B; BC848B BC847C	$I_C = 2\text{ mA}; V_{CE} = 5V;$	110	–	450	
			110	–	800	
V_{CEsat}	collector-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	90	250	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA};$ note 1	–	200	600	mV
V_{BEsat}	base-emitter saturation voltage	$I_C = 10\text{ mA}; I_B = 0.5\text{ mA}$	–	700	–	mV
		$I_C = 100\text{ mA}; I_B = 5\text{ mA};$ note 1	–	900	–	mV
V_{BE}	base-emitter voltage	$I_C = 2\text{ mA}; V_{CE} = 5\text{ V};$	580	660	700	mV
		$I_C = 10\text{ mA}; V_{CE} = 5V$	–	–	770	mV
C_C	collector capacitance	$I_E = I_e = 0; V_{CB} = 10\text{ V}; f = 1\text{ MHz}$	–	2.5	–	pF
f_T	transition frequency	$I_C = 10\text{ mA}; V_{CE} = 5\text{ V}; f = 100\text{ MHz}$	100	–	–	MHz
F	noise figure	$I_C = 200\ \mu A; V_{CE} = 5V;$ $R_S = 2k\Omega; f = 1\text{ kHz}; B = 200\text{ Hz}$	–	2	10	dB

Note

1. Pulse test: $t_p \leq 300\ \mu s; \delta \leq 0.02$.







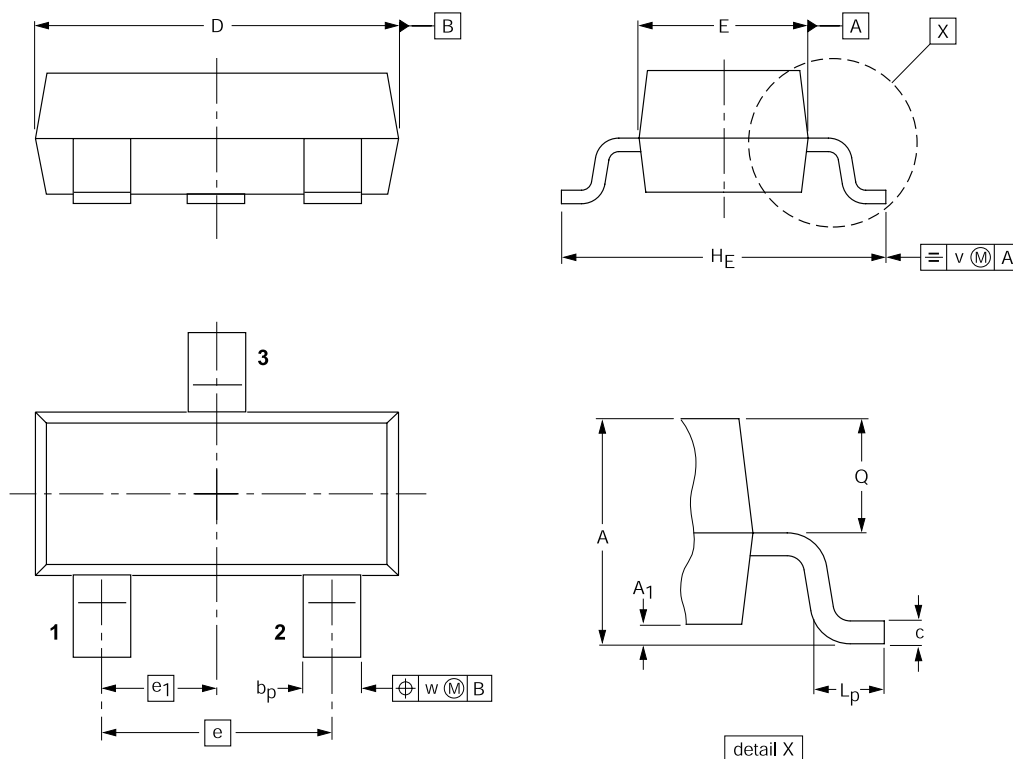
Ordering Information

Type Number	Package		
	Name	Description	Version
BC846	-	plastic surface mounted package; 3 leads	SOT23
BC846A			
BC846B			
BC847			
BC847A			
BC847B			
BC847C			
BC848B			

Package Outline

Plastic surface mounted package; 3 leads

SOT23



Dimensions (mm are the original dimensions)

Unit	A	A ₁ max.	b _p	c	D	E	e	e ₁	H _E	L _p	Q	V	w
mm	1.1 0.9	0.1	0.48 0.38	0.15 0.09	3.0 2.8	1.4 1.2	1.9	0.95	2.5 2.1	0.45 0.15	0.55 0.45	0.2	0.1

Outline Version	References				European Projection	Issue Date
	IEC	JEDEC	EIAJ			
SOT23		TO-236AB				97-02-28 99-09-13