

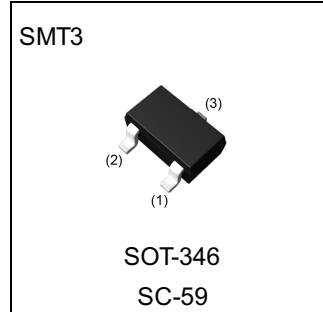
# 2SA1036K

Medium Power Transistor (-32V,-500mA)

Datasheet

Parameter	Value
$V_{CEO}$	-32V
$I_C$	-500mA

## ●Outline



## ●Features

1) Large  $I_C$ .

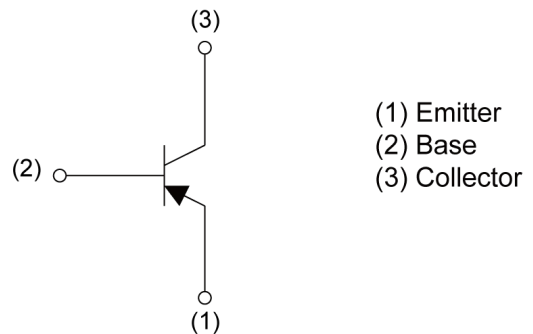
$I_{CMAX} = -500mA$

2) Low  $V_{CE(sat)}$ .

Ideal for low-voltage operating.

3) Complements the 2SC2411K.

## ●Inner circuit



## ●Application

GENERAL PURPOSE SMALL SIGNAL AMPLIFIER

## ●Packaging specifications

Part No.	Package	Package size	Taping code	Reel size (mm)	Tape width (mm)	Basic ordering unit.(pcs)	Marking
2SA1036K	SMT3	2928	T146	180	8	3000	H

**● Absolute maximum ratings ( $T_a = 25^\circ\text{C}$ )**

Parameter	Symbol	Values	Unit
Collector-base voltage	$V_{CBO}$	-40	V
Collector-emitter voltage	$V_{CEO}$	-32	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-500	mA
Power dissipation	$P_D^{*1}$	200	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Range of storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

**● Electrical characteristics ( $T_a = 25^\circ\text{C}$ )**

Parameter	Symbol	Conditions	Values			Unit
			Min.	Typ.	Max.	
Collector-base breakdown voltage	$BV_{CBO}$	$I_C = -100\mu\text{A}$	-40	-	-	V
Collector-emitter breakdown voltage	$BV_{CEO}$	$I_C = -1\text{mA}$	-32	-	-	V
Emitter-base breakdown voltage	$BV_{EBO}$	$I_E = -100\mu\text{A}$	-5	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB} = -20\text{V}$	-	-	-1.0	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -4\text{V}$	-	-	-1.0	$\mu\text{A}$
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -300\text{mA}, I_B = -30\text{mA}$	-	-	-600	mV
DC current gain	$h_{FE}$	$V_{CE} = -3\text{V}, I_C = -100\text{mA}$	82	-	390	-
Transition frequency	$f_T$	$V_{CE} = -5\text{V}, I_E = 20\text{mA}, f = 100\text{MHz}$	-	200	-	MHz
Output capacitance	$C_{ob}$	$V_{CB} = -10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$	-	7.0	-	pF

$h_{FE}$  values are classified as follows :

rank	P	Q	R	-	-
$h_{FE}$	82-180	120-270	180-390	-	-

\*1 Each terminal mounted on a reference land.

● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.1 Grounded emitter propagation

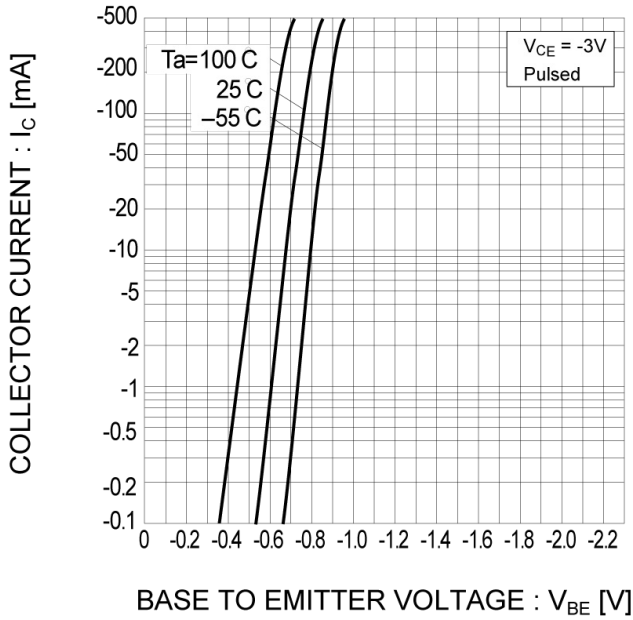


Fig.2 Grounded emitter output characteristics (I)

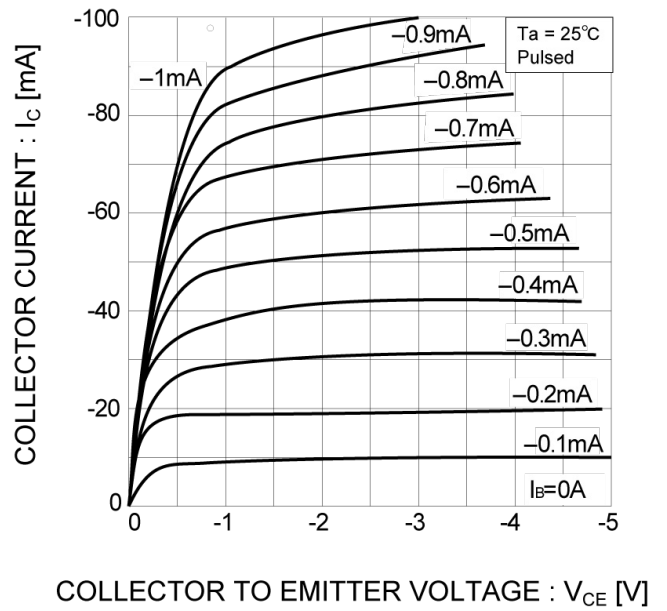


Fig.3 Grounded emitter output characteristics (II)

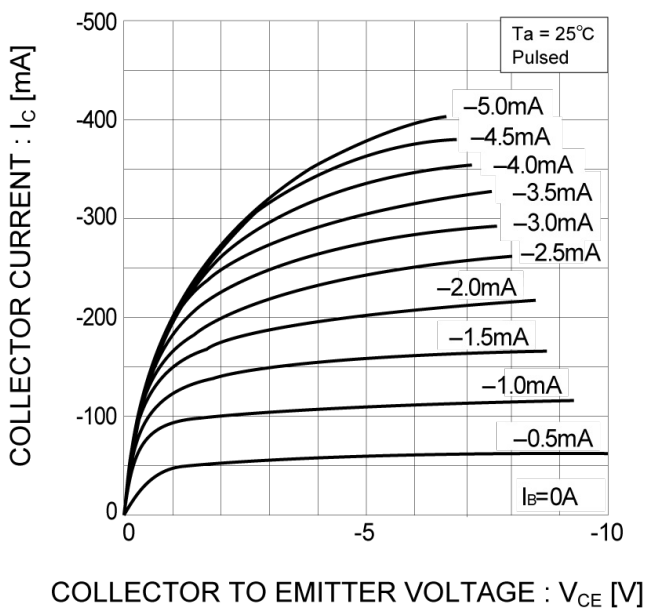
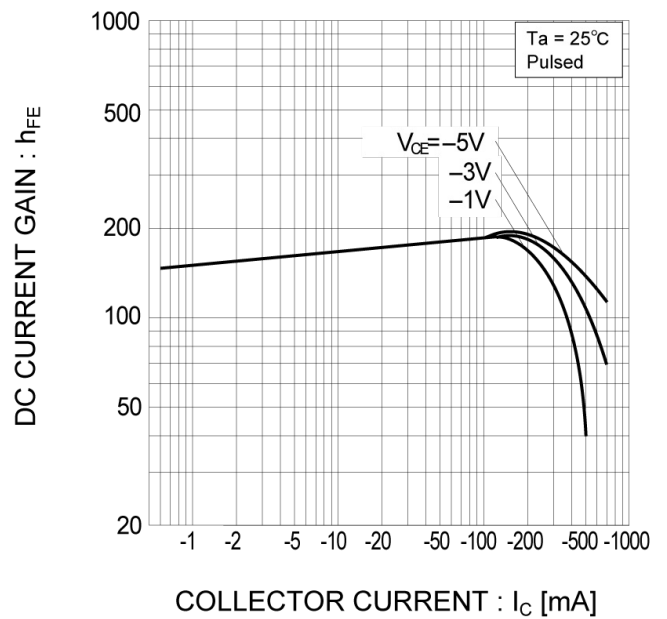


Fig.4 DC current gain vs. collector current (I)



● Electrical characteristic curves ( $T_a = 25^\circ\text{C}$ )

Fig.5 DC current gain vs. collector current (II)

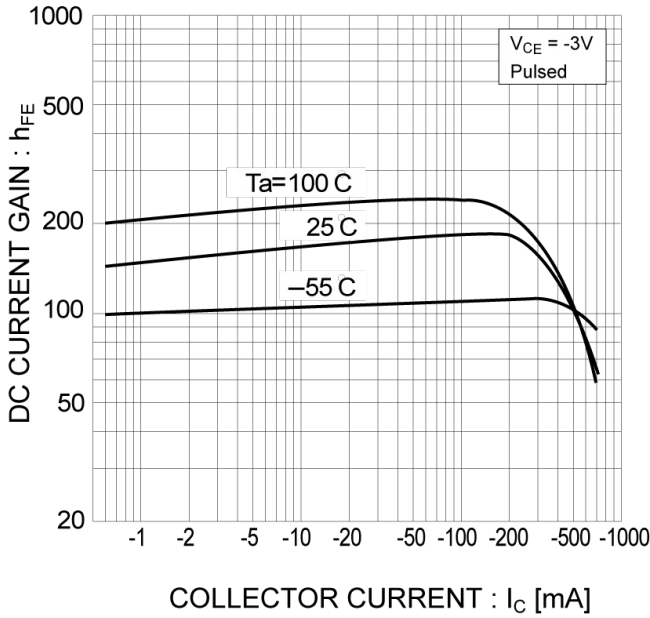


Fig.6 Collector-emitter saturation voltage vs. collector current (I)

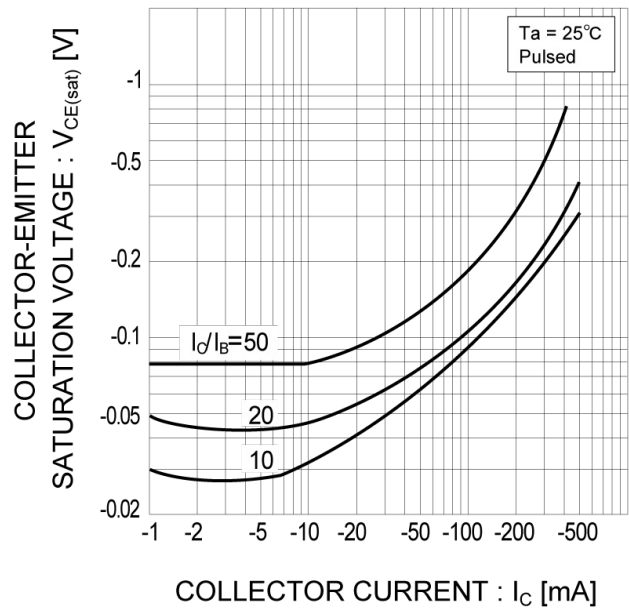


Fig.7 Collector-emitter saturation voltage vs. collector current (II)

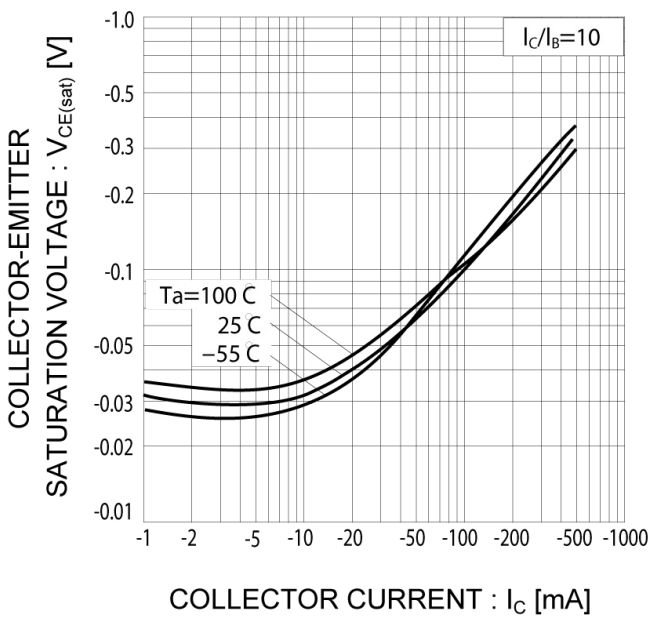
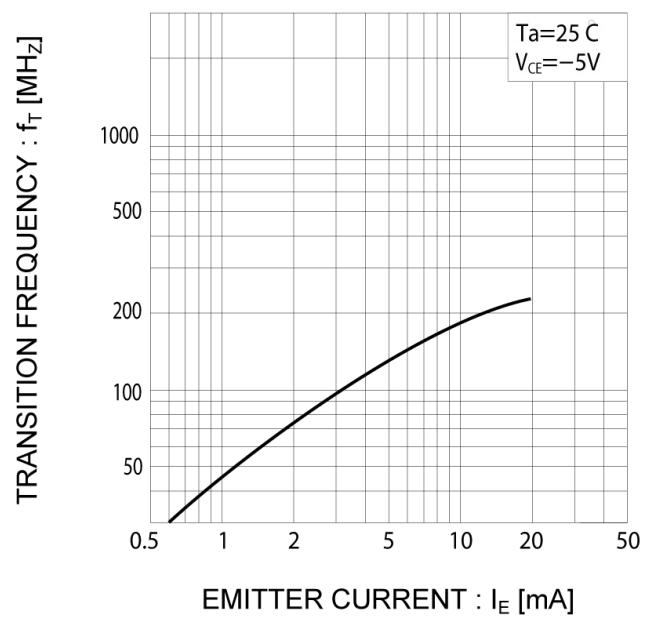


Fig.8 Gain bandwidth product vs. emitter current



●Electrical characteristic curves( $T_a = 25^\circ\text{C}$ )

Fig.9 Collector output capacitance vs. collector-base voltage  
 Emitter input capacitance vs. emitter-base voltage

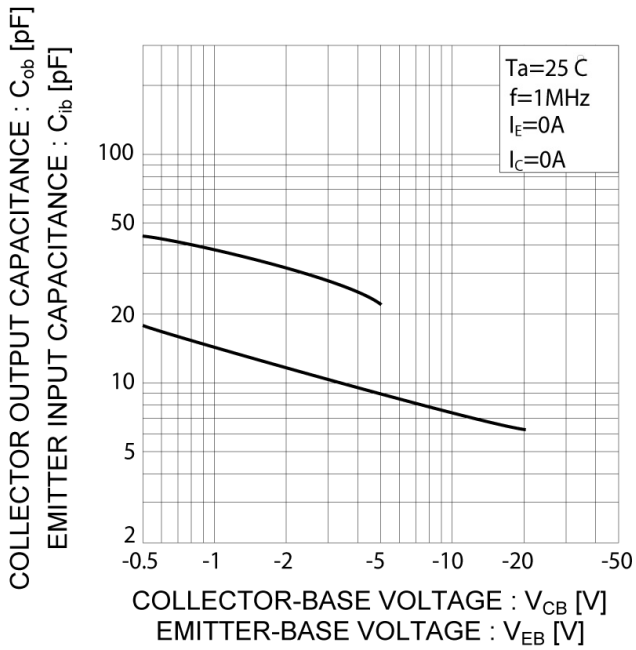
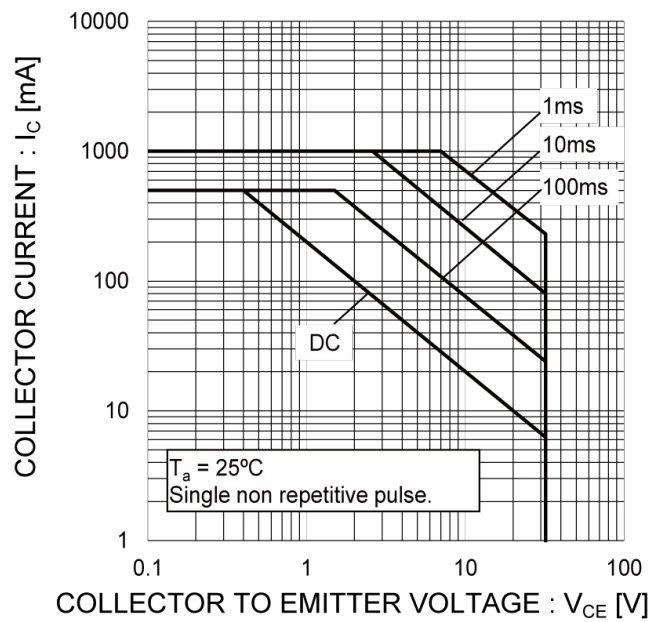
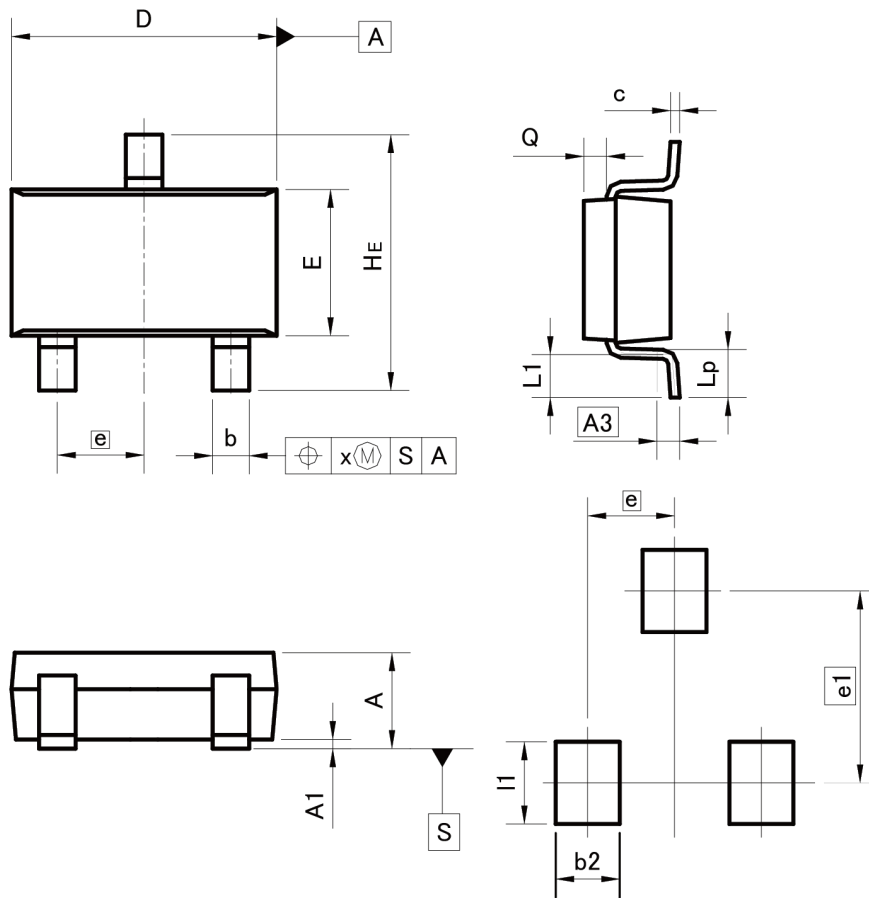


Fig.10 Safe Operating Area



●Dimensions

SMT3



Pattern of terminal position areas  
[Not a recommended pattern of soldering pads]

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	1.00	1.30	0.039	0.051
A1	0.00	0.10	0.000	0.004
A3	0.25		0.010	
b	0.35	0.50	0.014	0.020
c	0.09	0.25	0.004	0.010
D	2.80	3.00	0.110	0.118
E	1.50	1.80	0.059	0.071
e	0.95		0.037	
HE	2.60	3.00	0.102	0.118
L1	0.30	0.60	0.012	0.024
Lp	0.40	0.70	0.016	0.028
Q	0.20	0.30	0.008	0.012
x	-	0.10	-	0.004
y	-	0.10	-	0.004

DIM	MILIMETERS		INCHES	
	MIN	MAX	MIN	MAX
b2	-	0.60	-	0.024
e1	2.10		0.083	
l1	-	0.90	-	0.035

Dimension in mm/inches