

# High-voltage Amplifier Transistor (120V, 50mA)

## 2SC4102 / 2SC3906K / 2SC2389S

●Features

- 1) High breakdown voltage. ( $BV_{CEO} = 120V$ )
- 2) Complements the 2SA1579 / 2SA1514K / 2SA1038S.

●Absolute maximum ratings ( $T_a=25^\circ C$ )

Parameter	Symbol	Limits	Unit	
Collector-base voltage	$V_{CB0}$	120	V	
Collector-emitter voltage	$V_{CE0}$	120	V	
Emitter-base voltage	$V_{EB0}$	5	V	
Collector current	$I_C$	50	mA	
Collector power dissipation	2SC4102 / 2SC3906K 2SC2389S	$P_C$	0.2	W
			0.3	
Junction temperature	$T_j$	150	$^\circ C$	
Storage temperature	$T_{stg}$	-55 to +150	$^\circ C$	

●Packaging specifications and  $h_{FE}$

Type	2SC4102	2SC3906K	2SC2389S
Package	UMT3	SMT3	SPT
$h_{FE}$	RS	RS	RS
Marking	T*	T*	-
Code	T106	T146	TP
Basic ordering unit (pieces)	3000	3000	5000

\*Denotes  $h_{FE}$

●External dimensions (Unit : mm)

2SC4102

ROHM : UMT3 (1) Emitter  
EIAJ : SC-70 (2) Base  
JEDEC : SOT-323 (3) Collector

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2SC3906K

ROHM : SMT3 (1) Emitter  
EIAJ : SC-59 (2) Base  
JEDEC : SOT-346 (3) Collector

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2SC2389S

ROHM : SPT (1) Emitter  
EIAJ : SC-72 (2) Collector  
(3) Base

●Electrical characteristics ( $T_a=25^\circ C$ )

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Collector-base breakdown voltage	$BV_{CB0}$	120	-	-	V	$I_C=50\mu A$
Collector-emitter breakdown voltage	$BV_{CE0}$	120	-	-	V	$I_C=1mA$
Emitter-base breakdown voltage	$BV_{EB0}$	5	-	-	V	$I_E=50\mu A$
Collector cutoff current	$I_{CBO}$	-	-	0.5	$\mu A$	$V_{CB}=100V$
Emitter cutoff current	$I_{EBO}$	-	-	0.5	$\mu A$	$V_{EB}=4V$
Collector-emitter saturation voltage	$V_{CE(sat)}$	-	-	0.5	V	$I_C/I_B=10mA/1mA$
DC current transfer ratio	$h_{FE}$	180	-	560	-	$V_{CE}=6V, I_C=2mA$
Transition frequency	$f_T$	-	140	-	MHz	$V_{CE}=12V, I_E=2mA, f=100MHz$
Output capacitance	$C_{ob}$	-	2.5	-	pF	$V_{CB}=12V, I_E=0A, f=1MHz$

Transistors

●Electrical characteristics curves

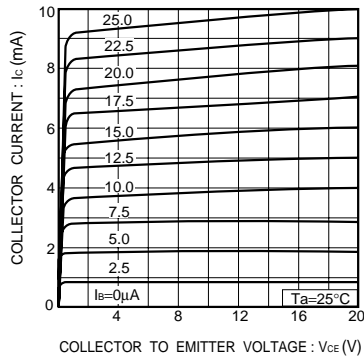


Fig.1 Ground emitter output characteristics

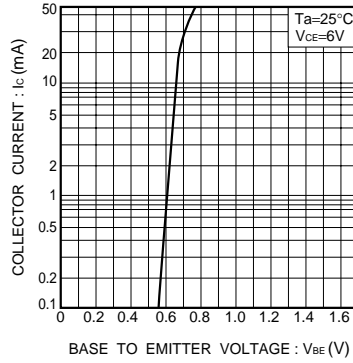


Fig.2 Ground emitter propagation characteristics

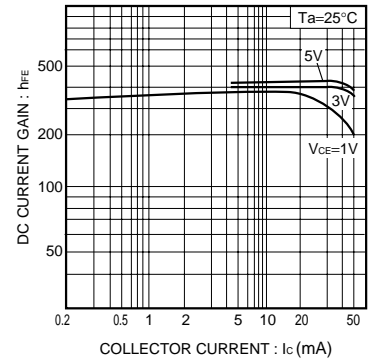


Fig.3 DC current gain vs. collector current

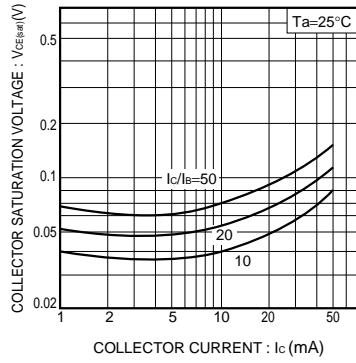


Fig.4 Collector-emitter saturation voltage vs. collector current ( I )

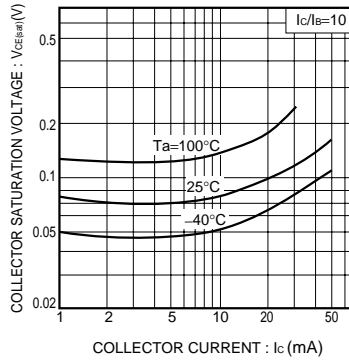


Fig.5 Collector-emitter saturation voltage vs. collector current ( II )

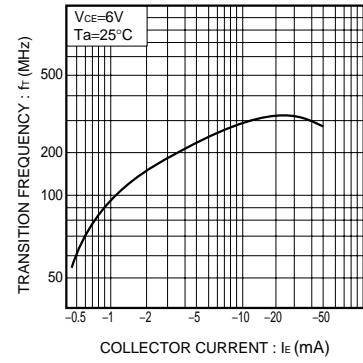


Fig.6 Gain bandwidth product vs. emitter current

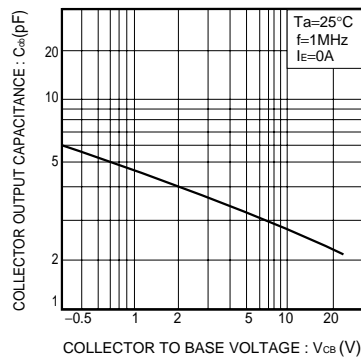


Fig.7 Collector output capacitance vs. collector-base voltage

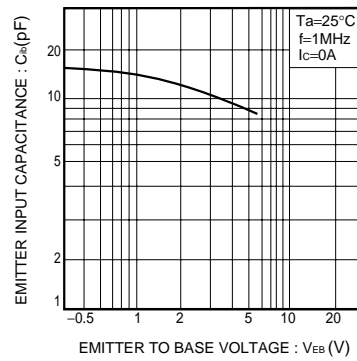


Fig.8 Emitter input capacitance vs. emitter-base voltage

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