

# 2SA2188

FOR GENERAL PURPOSE HIGH CURRENT DRIVE APPLICATION  
SILICON PNP EPITAXIAL TYPE

## DESCRIPTION

ISAHAYA 2SA2188 is a silicon PNP epitaxial type transistor designed with high collector current, low  $V_{CE(sat)}$ .

## FEATURE

- High collector current

$$I_{C(MAX)} = -650\text{mA}$$

- Low collector to emitter saturation voltage

$$V_{CE(sat)} < -0.7V_{max}$$

## APPLICATION

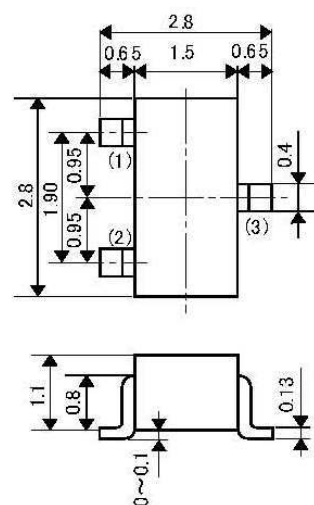
For switching application, small type motor drive application.

## MAXIMUM RATINGS ( $T_a=25^\circ\text{C}$ )

記号	項目	定格値	単位
$V_{CEO}$	Collector to Emitter voltage	-20	V
$V_{CBO}$	Collector to Base voltage	-25	V
$V_{EBO}$	Emitter to Base voltage	-4	V
$I_{CM}$	Peak collector current	-1000	mA
$I_C$	Collector current	-650	mA
$P_C$	Collector dissipation	200	mW
$T_j$	Junction temperature	150	$^\circ\text{C}$
$T_{stg}$	Storage temperature	-55~150	$^\circ\text{C}$

## OUTLINE DRAWING

Unit : mm

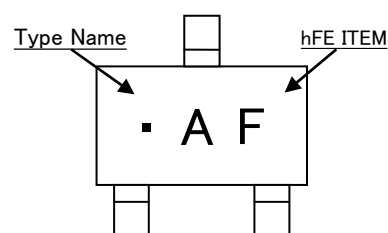


**Notice:** The dimension without tolerance represent central value.

### TERMINAL CONNECTOR

- ①: BASE                    EIAJ: SC-59
- ②: EMITTER              JEDEC: TO-236
- ③: COLLECTOR            Resemblance

## MARKING



## ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ )

Symbol	Parameter	Test condition	Limits			Unit
			Min	Typ	Max	
$V_{(BR)CEO}$	C to E break down voltage	$I_C = -100\mu\text{A}$ , $I_B = 0$	-20			V
$V_{(BR)CBO}$	C to B break down voltage	$I_C = -10\mu\text{A}$ , $I_E = 0$	-25			V
$V_{(BR)EBO}$	E to B break down voltage	$I_E = -10\mu\text{A}$ , $I_C = 0$	-4			V
$I_{CBO}$	Collector cut off current	$V_{CB} = -25\text{V}$ , $I_E = 0$			-1	$\mu\text{A}$
$I_{EBO}$	Emitter cut off current	$V_{EB} = -2\text{V}$ , $I_C = 0$			-1	$\mu\text{A}$
$h_{FE}^*$	DC forward current gain	$I_C = -100\text{mA}$ , $V_{CE} = -4\text{V}$	150		800	---
$V_{CE(sat)}$	C to E saturation voltage	$I_C = -500\text{mA}$ , $I_B = -25\text{mA}$		-0.3	-0.7	V
$f_T$	Gain band width product	$I_E = 10\text{mA}$ , $V_{CE} = -6\text{V}$ , $f = 100\text{MHz}$		210		MHz

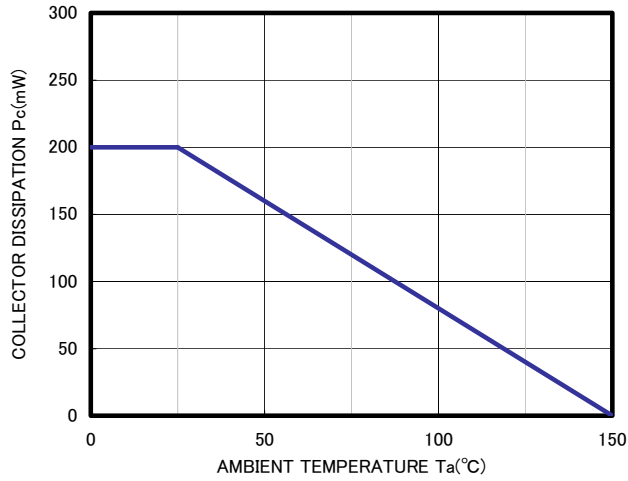
\*: It shows hFE classification in below table.

Marking	•AE	•AF	•AG
hFE	150~300	250~500	400~800

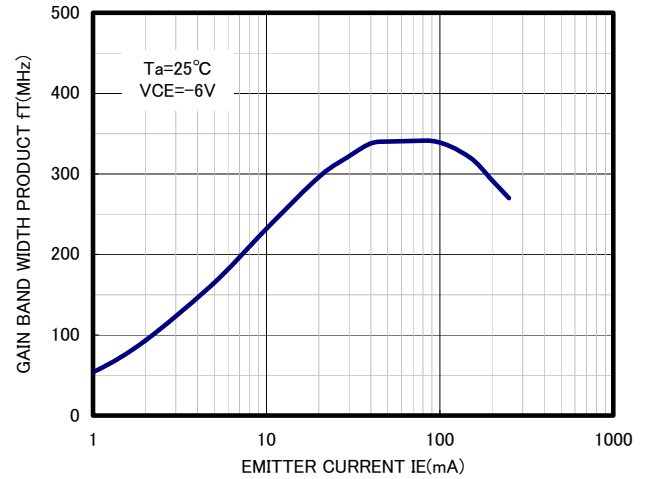
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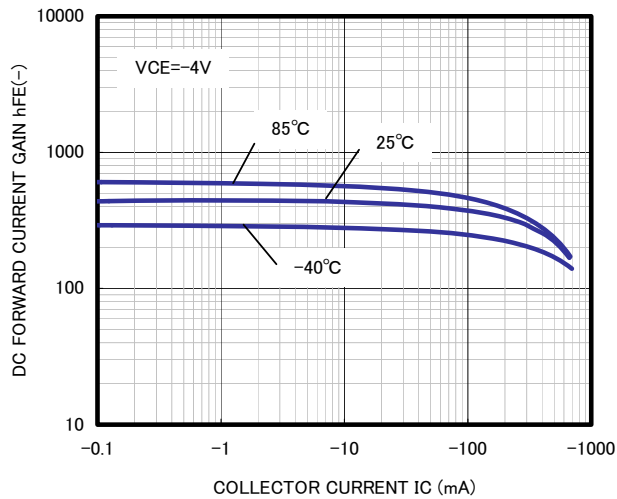
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



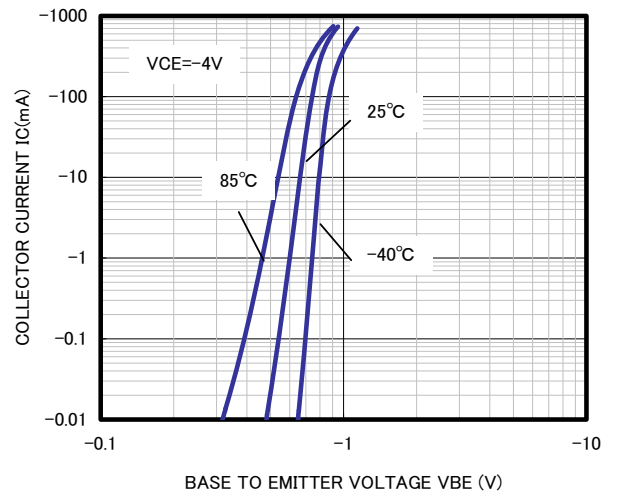
GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT



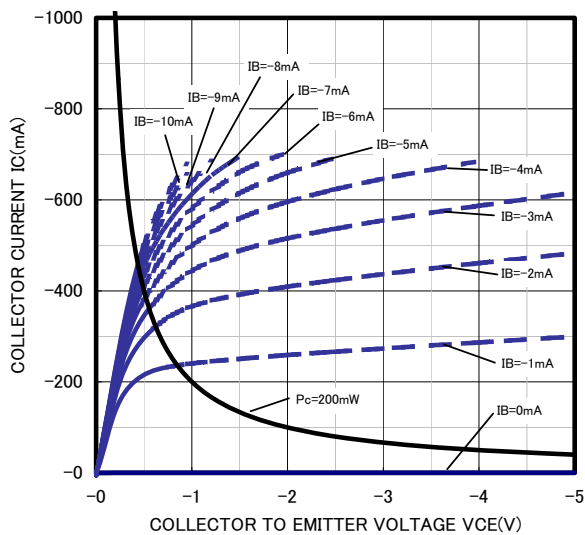
DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



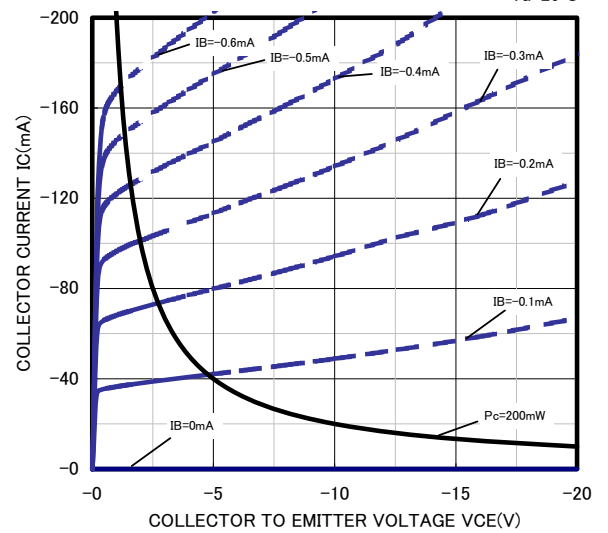
COMMON EMITTER TRANSFER



COMMON EMITTER OUTPUT(1)  $T_a=25^\circ\text{C}$



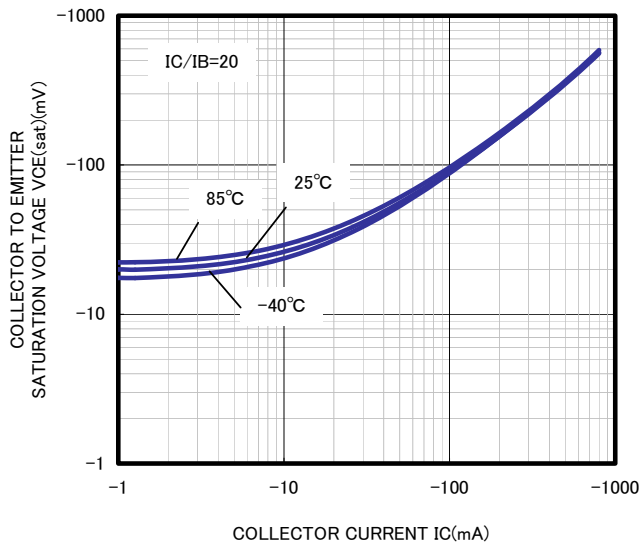
COMMON EMITTER OUTPUT(2)  $T_a=25^\circ\text{C}$



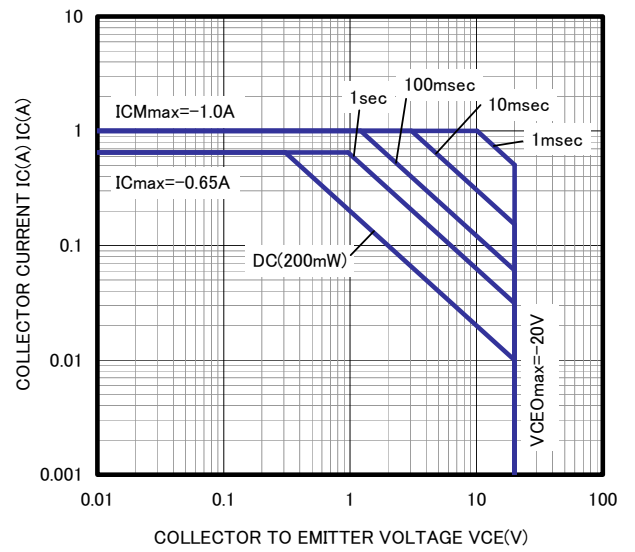
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COLLECTOR TO EMITTER SATURATION VOLTAGE VS.  
COLLECTOR CURRENT



AREA OF SAFE OPERATION  $T_a=25^\circ\text{C}$   
SINGLE PULSE





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