

# 2SA1381/KSA1381

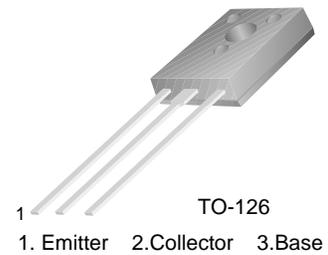
## PNP Epitaxial Silicon Transistor

### Applications

- Audio, Voltage Amplifier and Current Source
- CRT Display, Video Output
- General Purpose Amplifier

### Features

- High Voltage :  $V_{CEO} = -300V$
- Low Reverse Transfer Capacitance :  $C_{re} = 2.3pF$  at  $V_{CB} = -30V$
- Excellent Gain Linearity for low THD
- High Frequency: 150MHz
- Full thermal and electrical Spice models are available
- Complement to 2SC3503/KSC3503



### Absolute Maximum Ratings\* $T_a = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Ratings	Units
$BV_{CBO}$	Collector-Base Voltage	-300	V
$BV_{CEO}$	Collector-Emitter Voltage	-300	V
$BV_{EBO}$	Emitter-Base Voltage	-5	V
$I_C$	Collector Current(DC)	-100	mA
$I_{CP}$	Collector Current(Pulse)	-200	mA
$P_C$	Total Device Dissipation, $T_C = 25^\circ C$ $T_C = 125^\circ C$	7 1.2	W W
$T_J, T_{STG}$	Junction and Storage Temperature	- 55 ~ +150	$^\circ C$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

### Thermal Characteristics\* $T_a = 25^\circ C$ unless otherwise noted

Symbol	Parameter	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	17.8	$^\circ C/W$

\* Device mounted on minimum pad size

### $h_{FE}$ Classification

Classification	C	D	E	F
$h_{FE}$	40 ~ 80	60 ~ 120	100 ~ 200	160 ~ 320

**Electrical Characteristics\***  $T_a=25^{\circ}\text{C}$  unless otherwise noted

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = -10\mu\text{A}, I_E = 0$	-300			V
$BV_{CEO}$	Collector- Emitter Breakdown Voltage	$I_C = -1\text{mA}, I_B = 0$	-300			V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = -10\mu\text{A}, I_C = 0$	-5			V
$I_{CBO}$	Collector Cut-off Current	$V_{CB} = -200\text{V}, I_E = 0$			-0.1	$\mu\text{A}$
$I_{EBO}$	Emitter Cut-off Current	$V_{EB} = -4\text{V}, I_C = 0$			-0.1	$\mu\text{A}$
$h_{FE}$	DC Current Gain	$V_{CE} = -10\text{V}, I_C = -10\text{mA}$	40		320	
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage	$I_C = -20\text{mA}, I_B = -2\text{mA}$			-0.6	V
$V_{BE(sat)}$	Base-Emitter Saturation Voltage	$I_C = -20\text{mA}, I_B = -2\text{mA}$			-1	V
$f_T$	Current Gain Bandwidth Product	$V_{CE} = -30\text{V}, I_C = -10\text{mA}$		150		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = -30\text{V}, f = 1\text{MHz}$		3.1		pF
$C_{re}$	Reverse Transfer Capacitance	$V_{CB} = -30\text{V}, f = 1\text{MHz}$		2.3		pF

\* Pulse Test: Pulse Width $\leq 300\mu\text{s}$ , Duty Cycles $\leq 2\%$ **Ordering Information**

Part Number*	Marking	Package	Packing Method	Remarks
2SA1381CSTU	2SA1381C	TO-126	TUBE	hFE1 C grade
2SA1381DSTU	2SA1381D	TO-126	TUBE	hFE1 D grade
2SA1381ESTU	2SA1381E	TO-126	TUBE	hFE1 E grade
2SA1381FSTU	2SA1381F	TO-126	TUBE	hFE1 F grade
KSA1381CSTU	A1381C	TO-126	TUBE	hFE1 C grade
KSA1381DSTU	A1381D	TO-126	TUBE	hFE1 D grade
KSA1381ESTU	A1381E	TO-126	TUBE	hFE1 E grade
KSA1381FSTU	A1381F	TO-126	TUBE	hFE1 F grade

\* 1. Affix "-S-" means the standard TO126 Package.(see package dimensions). If the affix is "-STS-" instead of "-S-", that mean the short-lead TO126 package.  
 2. Suffix "-TU" means the tube packing, The Suffix "TU" could be replaced to other suffix character as packing method.

## Typical Characteristics

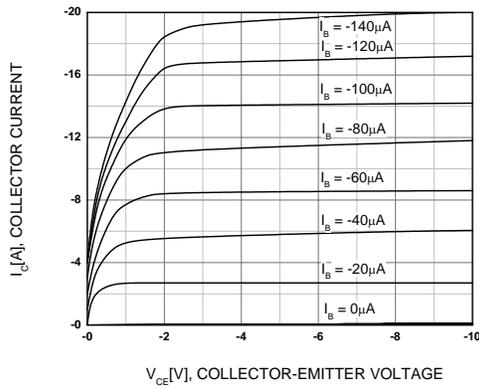


Figure 1. Static Characteristic

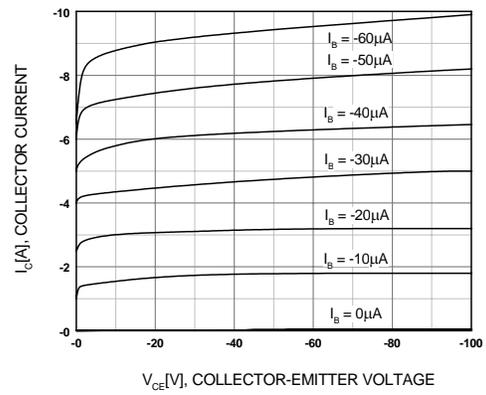


Figure 2. Static Characteristic

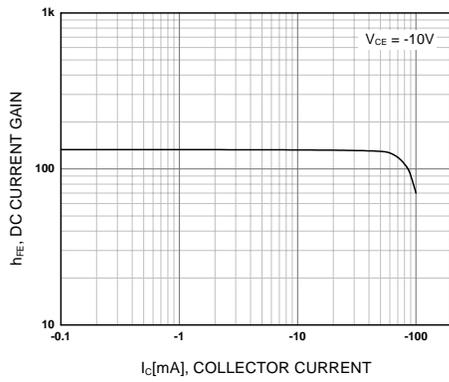


Figure 3. DC current Gain

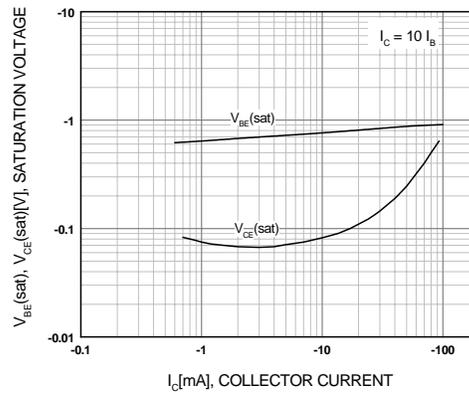


Figure 4. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

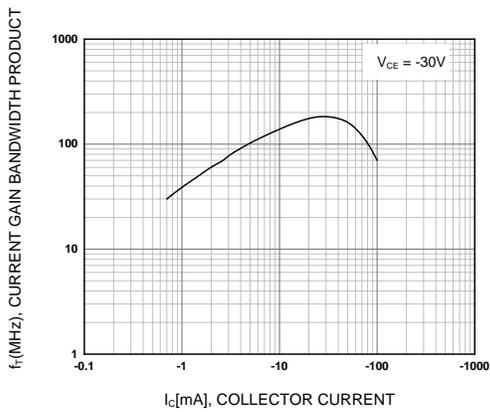


Figure 5. Current Gain Bandwidth Product

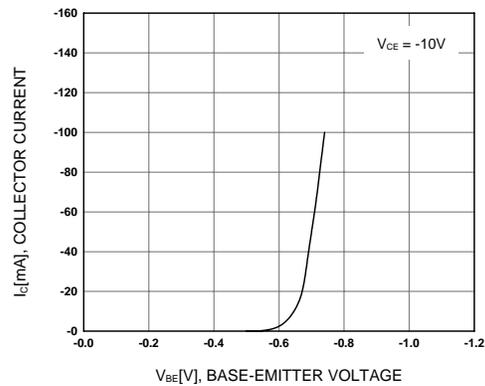


Figure 6. Base-Emitter On Voltage

Typical Characteristics (Continued)

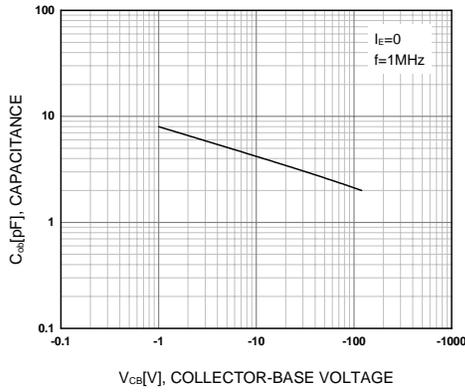


Figure 7. Collector Output Capacitance

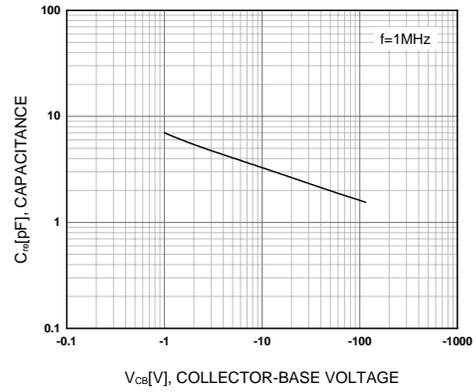


Figure 8. Reverse Transfer Capacitance

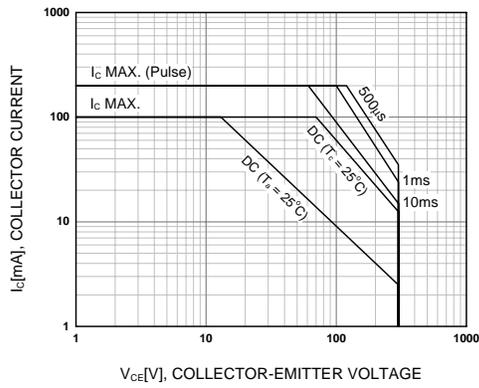


Figure 9. Safe Operating Area

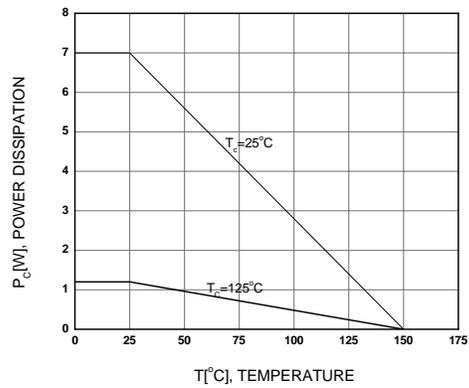
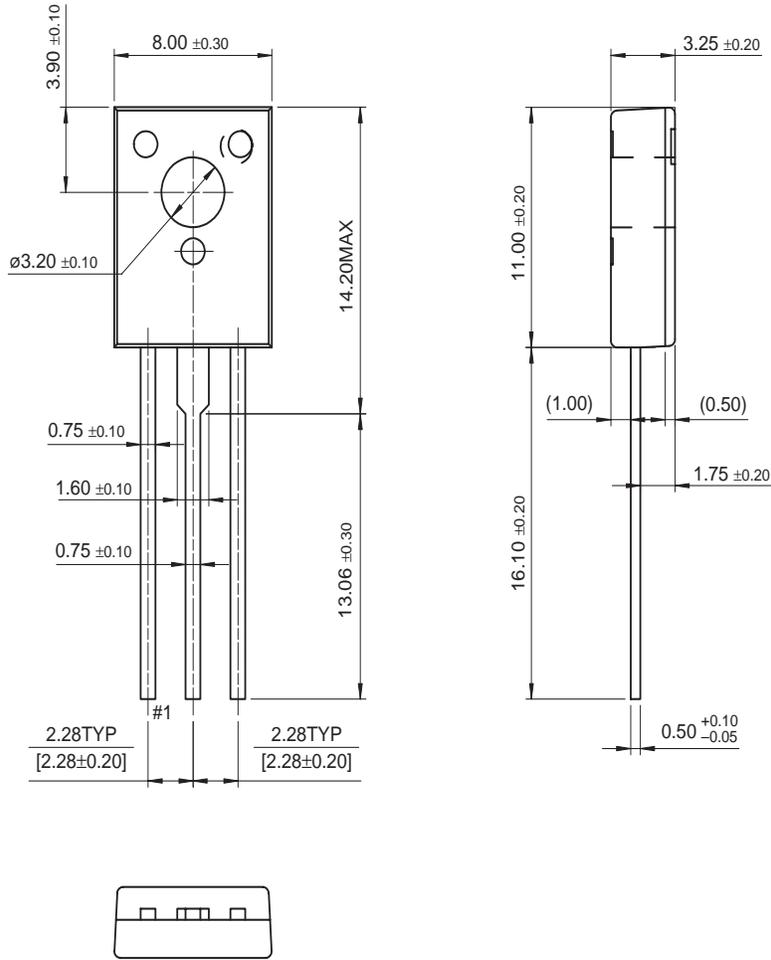


Figure 10. Power Derating

# Package Dimensions

## TO-126



Dimensions in Millimeters



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FACT®	Motion-SPM™	SPM®	μSerDes™
FAST®	OPTOLOGIC®	STEALTH™	UHC®
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FPS™		SuperSOT™-3	VCX™
FRFET®	PDP-SPM™	SuperSOT™-6	
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