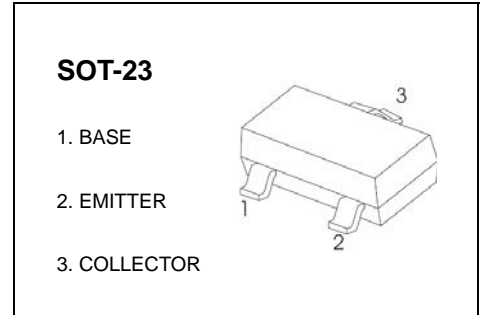


## SOT-23 Plastic-Encapsulate Transistors

### 2SD1306 TRANSISTOR (NPN)

#### ApplicationLow

- frequency amplifier, Muting



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

Symbol	Parameter	Value	Unit
$V_{CBO}$	Collector -Base Voltage	30	V
$V_{CEO}$	Collector-Emitter Voltage	15	V
$V_{EBO}$	Emitter-Base Voltage	5	V
$I_C$	Continuous Collector Current	0.7	A
$P_C$	Collector Dissipation	0.15	W
$R_{\theta JA}$	Thermal Resistance from Junction to Ambient	833	$^{\circ}\text{C}/\text{W}$
$T_J, T_{stg}$	Junction Temperature	-55~+150	$^{\circ}\text{C}$

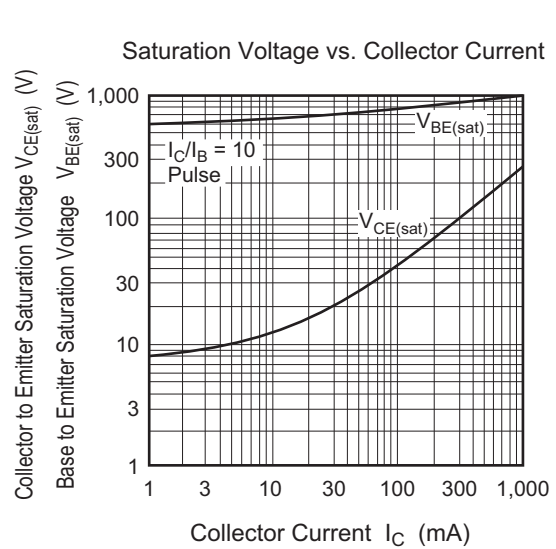
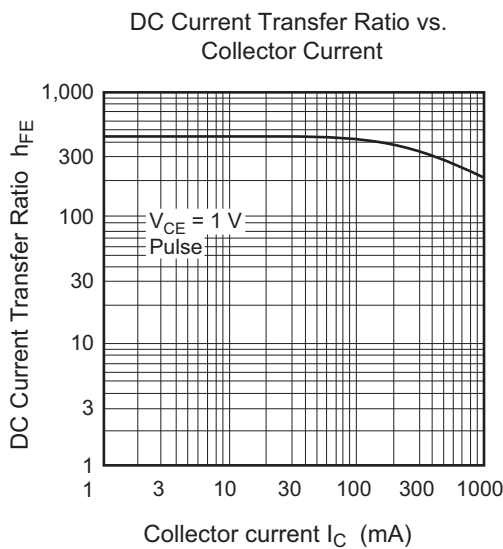
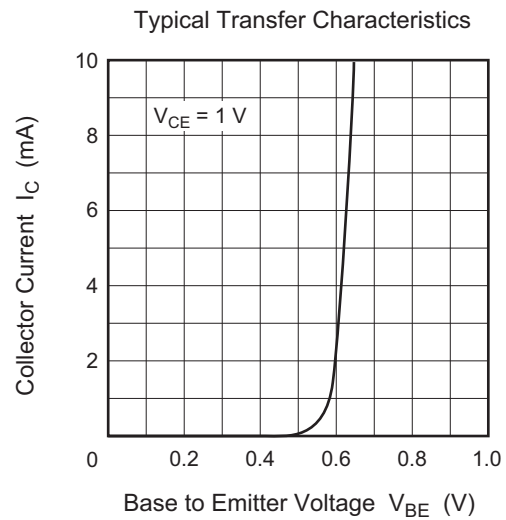
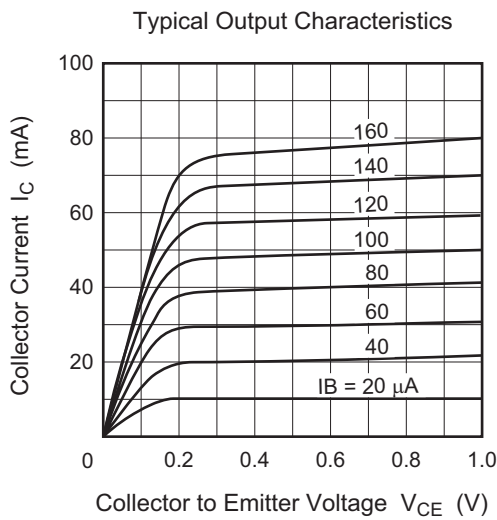
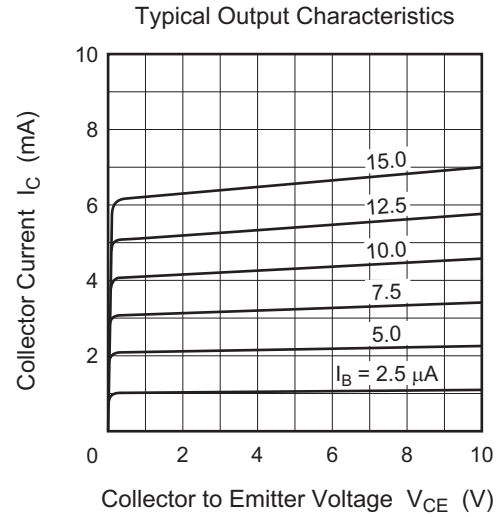
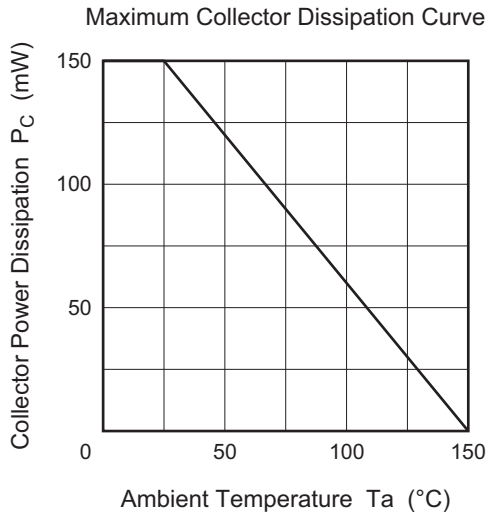
#### ELECTRICAL CHARACTERISTICS ( $T_a=25^{\circ}\text{C}$ unless otherwise specified)

Parameter	Symbol	Test conditions	Min	Typ	Max	Unit
Collector-base breakdown voltage	$V_{(BR)CBO}$	$I_C=10\mu\text{A}, I_E=0$	30			V
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C=1\text{mA}, I_B=0$	15			V
Emitter-base breakdown voltage	$V_{(BR)EBO}$	$I_E=10\mu\text{A}, I_C=0$	5			V
Collector cut-off current	$I_{CBO}$	$V_{CB}=20\text{V}, I_E=0$			1	$\mu\text{A}$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=4\text{V}, I_C=0$			1	$\mu\text{A}$
DC current gain	$h_{FE}^*$	$V_{CE}=1\text{V}, I_C=150\text{mA}$	250		800	
Collector-emitter saturation voltage	$V_{CE(sat)}^*$	$I_C=500\text{mA}, I_B=50\text{mA}$			0.5	V
Base-emitter voltage	$V_{BE}^*$	$V_{CE}=1\text{V}, I_C=150\text{mA}$			1	V
Transition frequency	$f_T^*$	$V_{CE}=1\text{V}, f=150\text{MHz}$		250		MHz

\* Pulse test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

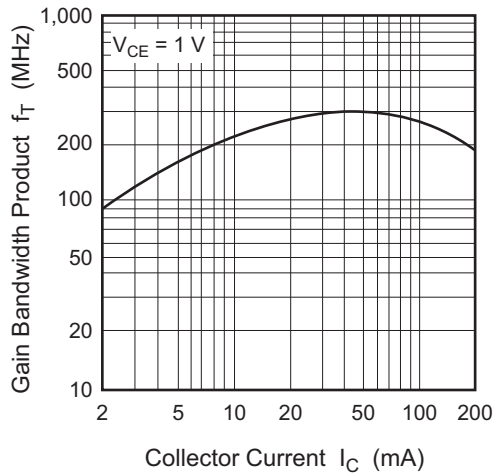
#### CLASSIFICATION of $h_{FE}$

Rank	D	E
Range	250-500	400-800
Marking	ND	NE

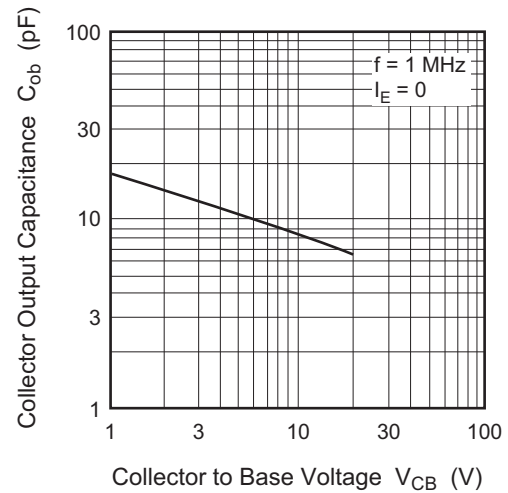
**Typical Characteristics**


## Typical Characteristics

Gain Bandwidth Product vs. Collector Current



Collector Output Capacitance vs. Collector to Base Voltage



On Resistance vs. Base Current

