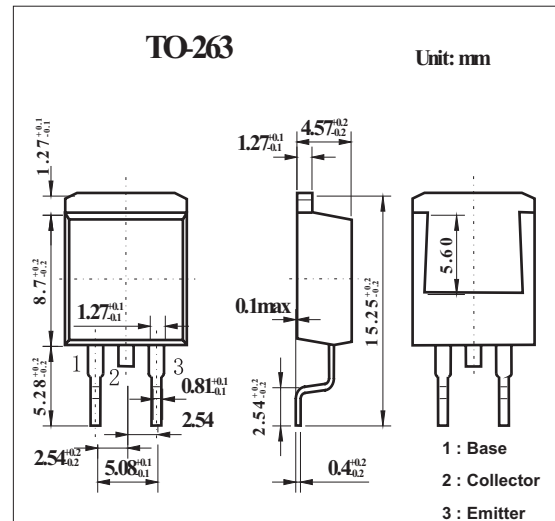


## Switching Applications

## 2SD2199

## ■ Features

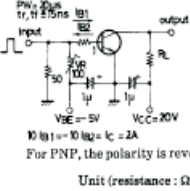
- Surface mount type device making the following possible.
- Low collector-to-emitter saturation voltage.

■ Absolute Maximum Ratings  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	60	V
Collector-emitter voltage	$V_{CE0}$	50	V
Emitter-base voltage	$V_{EB0}$	6	V
Collector current	$I_C$	7	A
Collector current (pulse)	$I_{CP}$	12	A
Collector dissipation	$P_C$	1.65	W
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature	$T_{stg}$	-55 to +150	$^\circ\text{C}$

## 2SD2199

## ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Testconditions	Min	Typ	Max	Unit	
Collector cutoff current	IcBO	V <sub>CB</sub> = 40V , I <sub>E</sub> = 0			0.1	mA	
Emitter cutoff current	I <sub>EBO</sub>	V <sub>EB</sub> = 4V , I <sub>C</sub> = 0			0.1	mA	
DC current Gain	h <sub>FE</sub>	V <sub>CE</sub> = 2V , I <sub>C</sub> = 1A	70		280		
		V <sub>CE</sub> = 2V , I <sub>C</sub> = 5A	30				
Gain bandwidth product	f <sub>T</sub>	V <sub>CE</sub> = 5V , I <sub>C</sub> = 1A		10		MHz	
Collector-emitter saturation voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> = 4A , I <sub>B</sub> = 0.4A			0.4	V	
Collector-to-base breakdown voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> = 1mA , I <sub>E</sub> = 0	60			V	
Collector-to-emitter breakdown voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> = 1mA , R <sub>BE</sub> = ∞	50			V	
Emitter-base breakdown voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> = 1mA , I <sub>C</sub> = 0	6			V	
Turn-on time	t <sub>on</sub>			0.2		μs	
Storage time	t <sub>stg</sub>				0.3		μs
Fall time	t <sub>f</sub>				0.9		μs

## ■ hFE Classification

Rank	Q	R	S
hFE	70~140	100~200	140~280