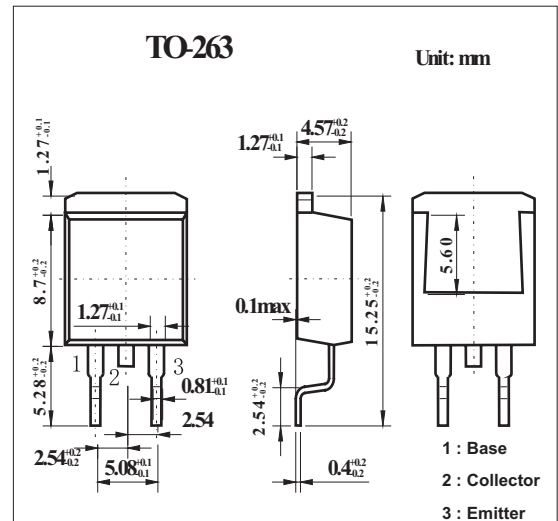


Switching Applications

2SD2199

■ Features

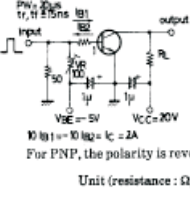
- Surface mount type device making the following possible.
- Low collector-to-emitter saturation voltage.

■ 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 _{CB} = 40V , I _E = 0			0.1	mA	
Emitter cutoff current	I _{EBO}	V _{EB} = 4V , I _C = 0			0.1	mA	
DC current Gain	h _{FE}	V _{CE} = 2V , I _C = 1A	70		280		
		V _{CE} = 2V , I _C = 5A	30				
Gain bandwidth product	f _T	V _{CE} = 5V , I _C = 1A		10		MHz	
Collector-emitter saturation voltage	V _{CE(sat)}	I _C = 4A , I _B = 0.4A			0.4	V	
Collector-to-base breakdown voltage	V _{(BR)CBO}	I _C = 1mA , I _E = 0	60			V	
Collector-to-emitter breakdown voltage	V _{(BR)CEO}	I _C = 1mA , R _{BE} = ∞	50			V	
Emitter-base breakdown voltage	V _{(BR)EBO}	I _E = 1mA , I _C = 0	6			V	
Turn-on time	t _{on}	 <p> $P_{IV}, 20\mu s$ t_r, t_{rr}, t_{f} </p> <p> $V_{CE} = 5V$ $V_{CC} = 10V$ $I_B = 10mA, I_C = 2A$ For PNP, the polarity is reversed. Unit (resistance : Ω, capacitance : F) </p>		0.2		μs	
Storage time	t _{stg}				0.3		μs
Fall time	t _f				0.9		μs

■ hFE Classification

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