2SD2009

Transistor, NPN, Darlington

Features

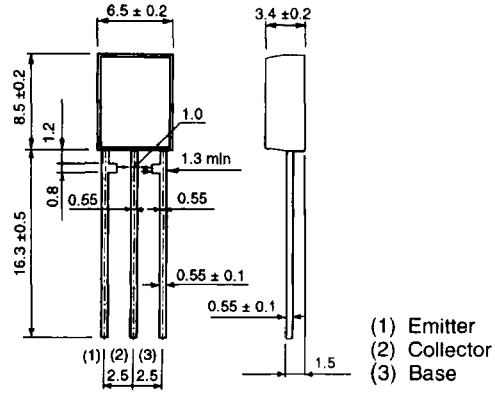
- available in MRT package
- Darlington connection provides high dc current gain, typically h_{FE} = 15000 at V_{CE} = 3 V, I_C = 500 mA
- high input impedance

Applications

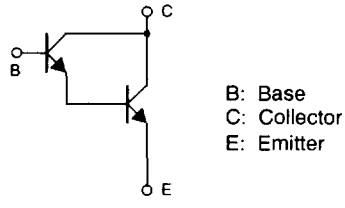
- medium power amplifier

Dimensions (Units : mm)

2SD2009 (MRT)



Equivalent circuit



Absolute maximum ratings (T_a = 25°C)

Parameter	Symbol	Limits	Unit	Conditions
Collector-to-base voltage	V_{CBO}	60	V	
Collector-to-emitter voltage	V_{CES}	60	V	R_{BE} = 0 Ω
Emitter-to-base voltage	V_{EBO}	7	V	
Collector current	I_C	1	A	Continuous (dc)
		2	A	Single pulse, P_W = 100 ms
Collector dissipation	P_C	1.2	W	
Junction temperature	T_j	150	°C	
Storage temperature	T_{stg}	−55 ~ +150	°C	

Electrical characteristics (unless otherwise noted, T_a = 25°C)

Parameter	Symbol	Min	Typical	Max	Unit	Conditions
Collector-to-base breakdown voltage	BV_{CBO}	60			V	I_C = 50 μA
Collector-to-emitter breakdown voltage	BV_{CES}	60			V	I_C = 100 μA, R_{BE} = 0 Ω
Emitter-to-base breakdown voltage	BV_{EBO}	7			V	I_E = 50 μA
Collector cutoff current	I_{CBO}			1.0	μA	V_{CB} = 60 V
Emitter cutoff current	I_{EBO}			1.0	μA	V_{EB} = 6 V
DC current gain	h_{FE}	2000	15000			V_{CE} = 3 V, I_C = 500 mA, single pulse
Collector-to-emitter saturation voltage	$V_{CE(sat)}$		0.9	1.5	V	I_C/I_B = 500 mA/500 μA
Output capacitance	C_{ob}		7		pF	V_{CB} = 10 V, I_E = 0 A, f = 1 MHz

Electrical characteristic curves

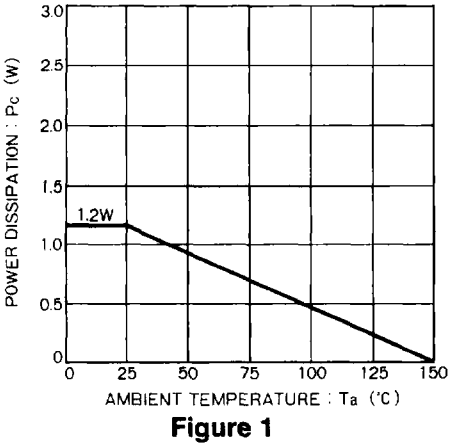


Figure 1

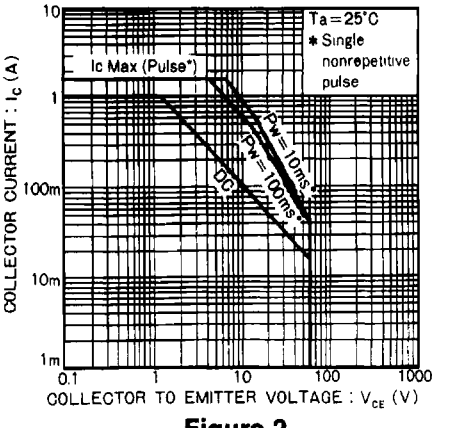


Figure 2

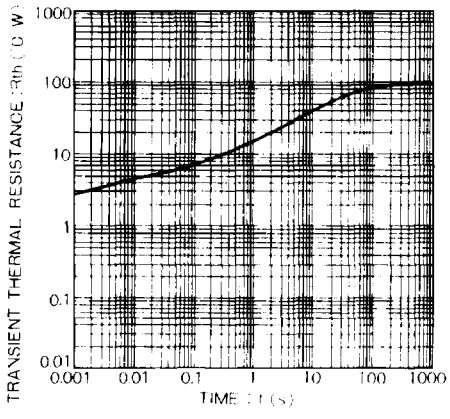


Figure 3

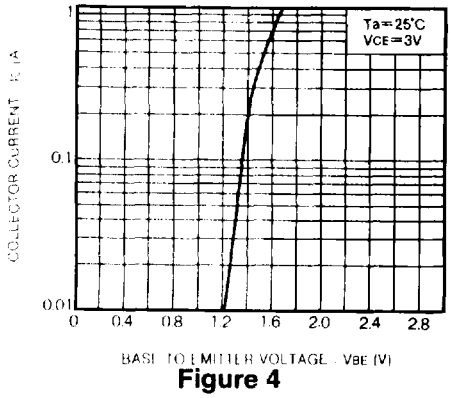


Figure 4

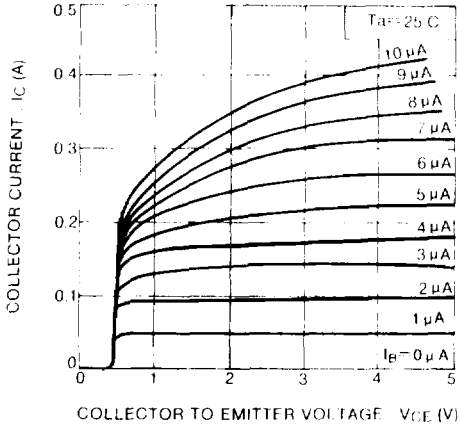


Figure 5

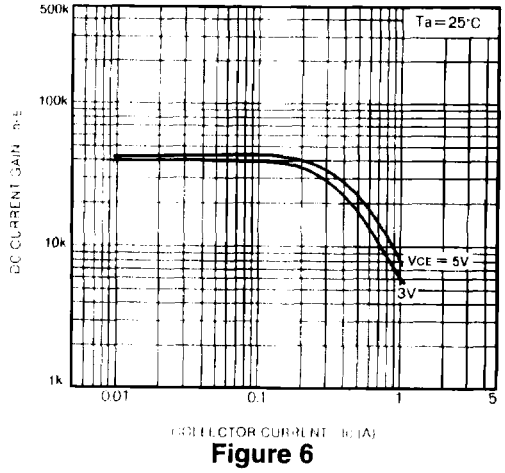


Figure 6

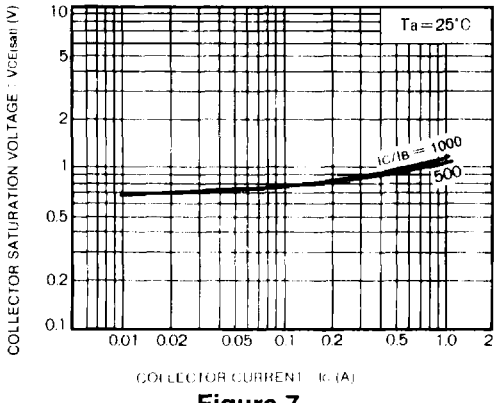


Figure 7

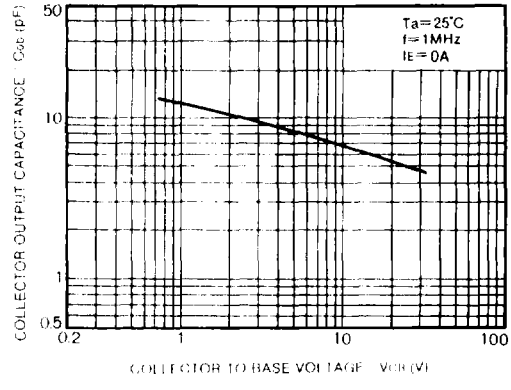


Figure 8

Ordering information

Package	Tape
Code	T105
Basic order quantity	2 000
2SD2009, h_{FE} = 2k ~	★
★ = Standard, ☆ = Semi-standard, ✳ = Special order	