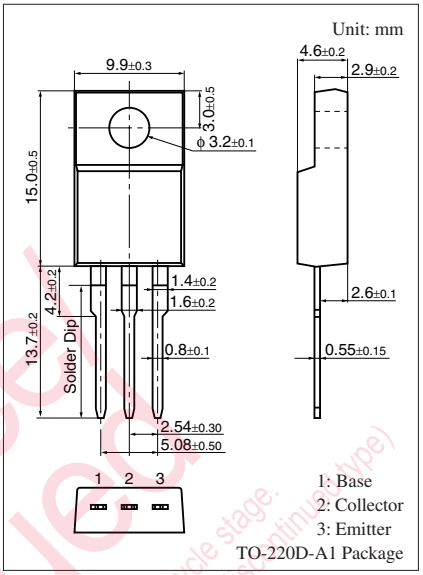
2SC5739

Silicon NPN epitaxial planar type

Power supply for Audio & Visual equipments
such as TVs and VCRs
Industrial equipments such as DC-DC converters



■ Features

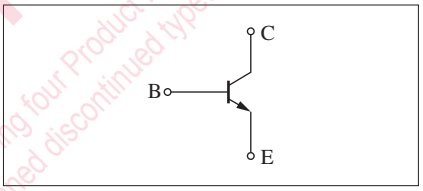
- High-speed switching (t_{stg}: storage time/t_f: fall time is short)
- Low collector-emitter saturation voltage $V_{CE(sat)}$
- Superior forward current transfer ratio h_{FE} linearity
- TO-220D built-in: Excellent package with withstand voltage 5 kV guaranteed

■ Absolute Maximum Ratings $T_C = 25°C$

Parameter	Symbol	Rating	Unit
Collector-base voltage (Emitter open)	V_{CBO}	60	V
Collector-emitter voltage (Base open)	V_{CEO}	60	V
Emitter-base voltage (Collector open)	V_{EBO}	6	V
Collector current	I_C	3	A
Peak collector current *	I_{CP}	6	A
Collector power dissipation	P_C	20	W
$T_a = 25°C$		2.0	
Junction temperature	T_j	150	°C
Storage temperature	T_{stg}	−55 to +150	°C

Note) *: Non-repetitive peak collector current

Internal Connection



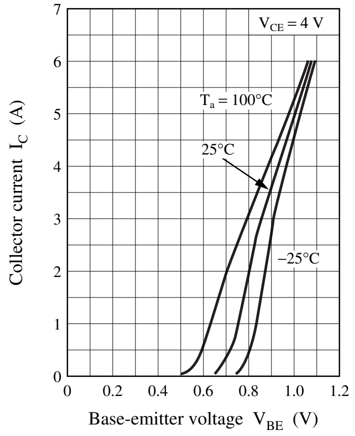
■ Electrical Characteristics $T_C = 25°C \pm 3°C$

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Collector-emitter voltage (Base open)	V_{CEO}	I_C = 10 mA, I_B = 0	60			V
Collector-base cutoff current (Emitter open)	I_{CBO}	V_{CB} = 60 V, I_E = 0			100	μA
Collector-emitter cutoff current (Base open)	I_{CEO}	V_{CE} = 60 V, I_B = 0			100	μA
Emitter-base cutoff current (Collector open)	I_{EBO}	V_{EB} = 6 V, I_C = 0			1	mA
Forward current transfer ratio	h_{FE1} *	V_{CE} = 4 V, I_C = 1 A	120		320	—
	h_{FE2}	V_{CE} = 4 V, I_C = 3 A	40			
Collector-emitter saturation voltage	$V_{CE(sat)}$	I_C = 3 A, I_B = 0.375 A			0.5	V
Transition frequency	f_T	V_{CE} = 10 V, I_C = 0.1 A, f = 10 MHz		180		MHz
Turn-on time	t_{on}	I_C = 1 A, Resistance loaded		0.2	0.3	μs
Storage time	t_{stg}	I_{B1} = 0.1 A, I_{B2} = − 0.1 A		0.55	0.70	μs
Fall time	t_f	V_{CC} = 50 V		0.10	0.15	μs

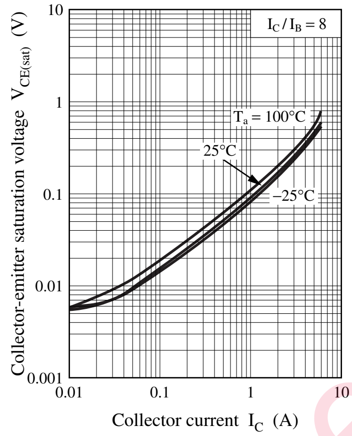
Note) 1. Measuring methods are based on JAPANESE INDUSTRIAL STANDARD JIS C 7030 measuring methods for transistors.
2. *: Rank classification

Rank	Q	P
h_{FE1}	120 to 250	160 to 320

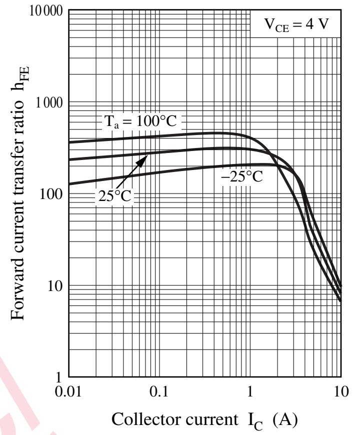
I_C — V_{BE}



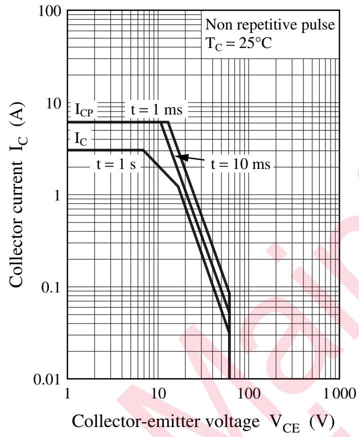
$V_{CE(sat)}$ — I_C



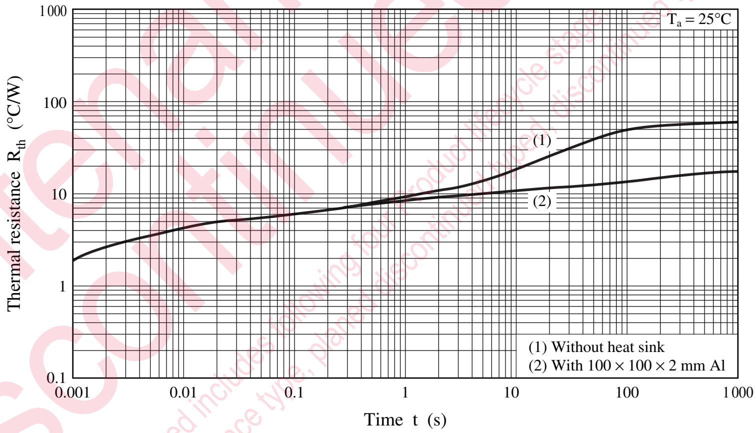
h_{FE} — I_C



Area of safe operation



R_{th} — t



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