

TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT process)

2SA1681

Power Amplifier Applications
Power Switching Applications

- Low saturation voltage: $V_{CE(sat)} = -0.5\text{ V (max)}$ ($I_C = -1\text{ A}$)
- High speed switching time: $t_{stg} = 300\text{ ns (typ.)}$
- Small flat package
- $P_C = 1.0\text{ to }2.0\text{ W}$ (mounted on a ceramic substrate)
- Complementary to 2SC4409

Absolute Maximum Ratings (Ta = 25°C)

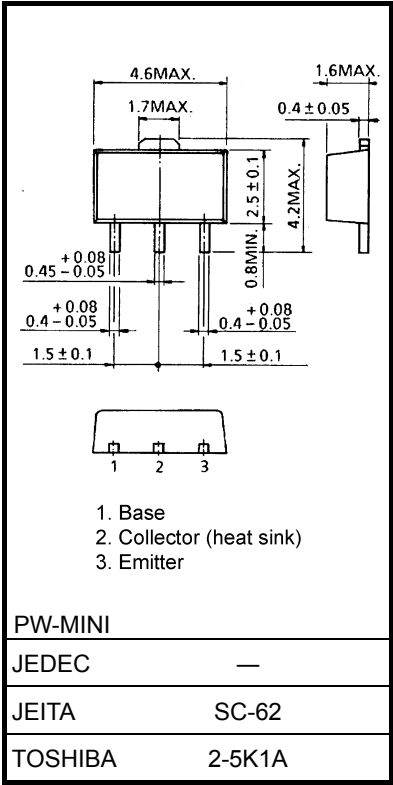
Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	-60	V
Collector-emitter voltage	V_{CEO}	-50	V
Emitter-base voltage	V_{EBO}	-6	V
Collector current	I_C	-2	A
Base current	I_B	-0.2	A
Collector power dissipation	P_C	500	mW
	P_C (Note 1)	1000	
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

Note 1: Mounted on a ceramic substrate (250 mm² × 0.8 t)

Note 2: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.

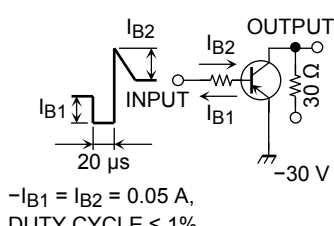
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

Unit: mm

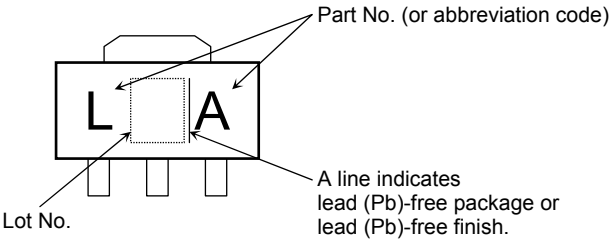


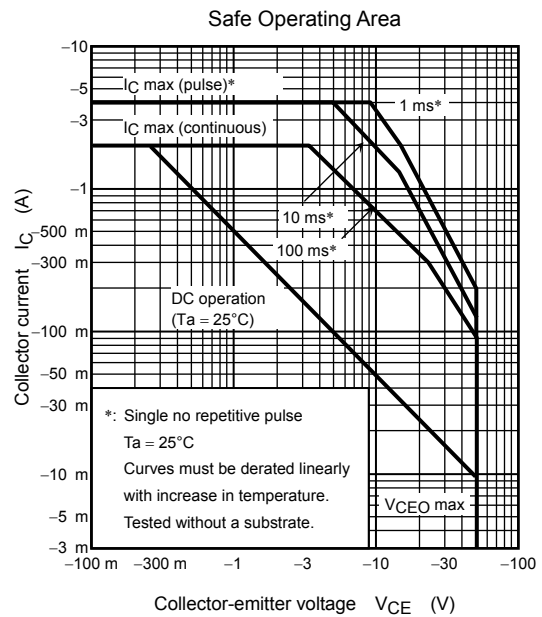
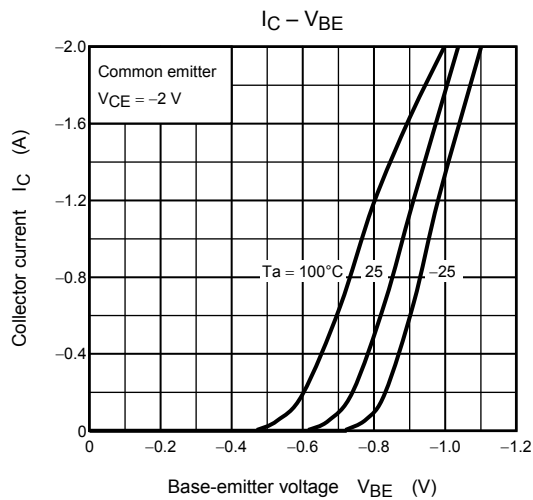
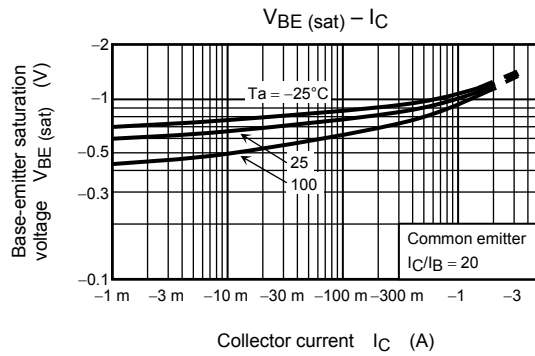
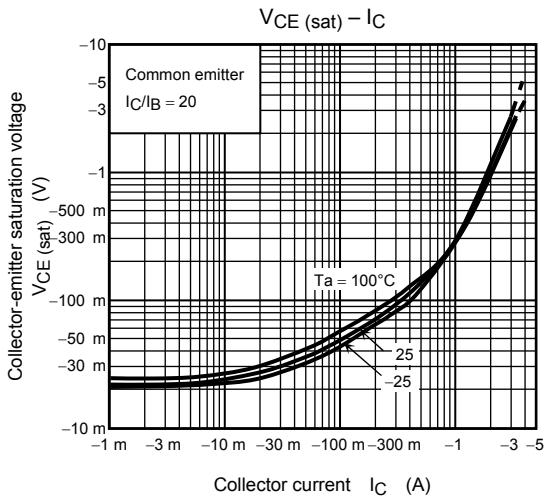
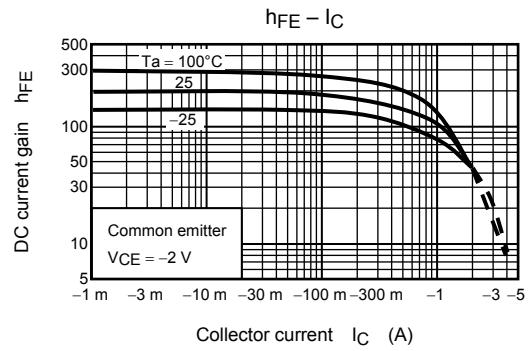
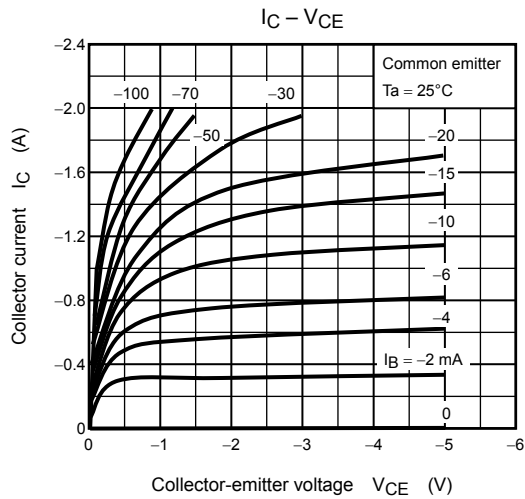
Weight: 0.05 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		ICBO	V _{CB} = -60 V, I _E = 0	—	—	-0.1	μA
Emitter cut-off current		IEBO	V _{EB} = -6 V, I _C = 0	—	—	-0.1	μA
Collector-emitter breakdown voltage		V (BR) CEO	I _C = -10 mA, I _B = 0	-50	—	—	V
DC current gain		h _{FE} (1)	V _{CE} = -2 V, I _C = -100 mA	120	—	400	
		h _{FE} (2)	V _{CE} = -2 V, I _C = -1.5 A	40	—	—	
Collector-emitter saturation voltage		V _{CE} (sat)	I _C = 1 A, I _B = -0.05 A	—	—	-0.5	V
Base-emitter saturation voltage		V _{BE} (sat)	I _C = 1 A, I _B = -0.05 A	—	—	-1.2	V
Transition frequency		f _T	V _{CE} = -2 V, I _C = -100 mA	—	100	—	MHz
Collector output capacitance		C _{ob}	V _{CB} = -10 V, I _E = 0, f = 1 MHz	—	23	—	pF
Switching time	Turn-on time	t _{on}	 -I _{B1} = I _{B2} = 0.05 A, DUTY CYCLE ≤ 1%	—	0.1	—	μs
	Storage time	t _{stg}		—	0.3	—	
	Fall time	t _f		—	0.1	—	

Marking





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