

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT process)

2SC5176

High-Current Switching Applications

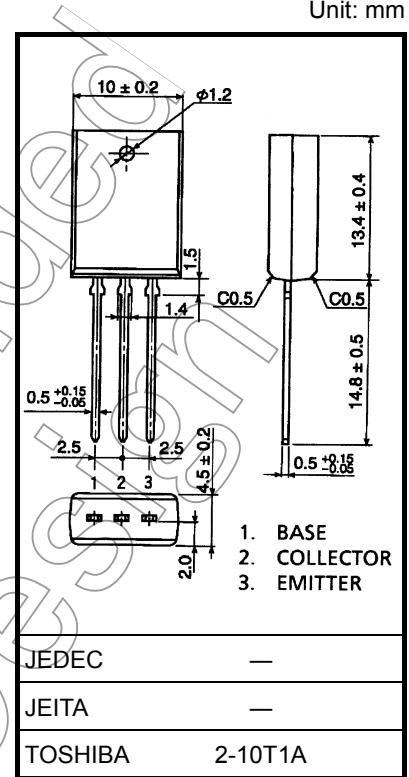
DC-DC Converter Applications

- Low collector saturation voltage: $V_{CE}(\text{sat}) = 0.4 \text{ V (max)}$ ($I_C = 3 \text{ A}$)
- High-speed switching: $t_{\text{stg}} = 1.0 \mu\text{s}$ (typ.)

Absolute Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	100	V
Collector-emitter voltage	V_{CEO}	80	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	DC	I_C	A
	Pulse	I_{CP}	
Base current	I_B	1	A
Collector power dissipation	P_C	1.8	W
Junction temperature	T_j	150	°C
Storage temperature range	T_{stg}	-55 to 150	°C

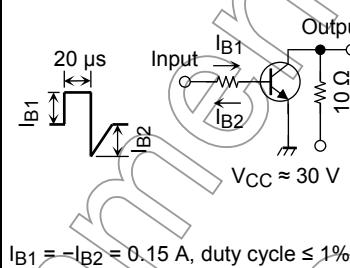
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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



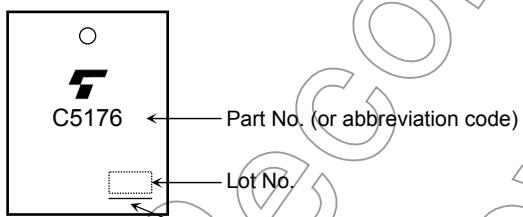
Weight: 1.5 g (typ.)

Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I _{CBO}	V _{CB} = 100 V, I _E = 0	—	—	1	μA
Emitter cut-off current	I _{EBO}	V _{EB} = 7 V, I _C = 0	—	—	1	μA
Collector-emitter breakdown voltage	V _{(BR) CEO}	I _C = 10 mA, I _B = 0	80	—	—	V
DC current gain	h _{FE} (1)	V _{CE} = 1 V, I _C = 1 A	70	—	240	
	h _{FE} (2)	V _{CE} = 1 V, I _C = 3 A	40	—	—	
Collector-emitter saturation voltage	V _{CE} (sat)	I _C = 3 A, I _B = 0.15 A	—	0.2	0.4	V
Base-emitter saturation voltage	V _{BE} (sat)	I _C = 3 A, I _B = 0.15 A	—	0.9	1.2	V
Transition frequency	f _T	V _{CE} = 4 V, I _C = 1 A	—	120	—	MHz
Collector output capacitance	C _{ob}	V _{CB} = 10 V, I _E = 0, f = 1 MHz	—	80	—	pF
Switching time	Turn-on time	t _{on}		0.2	—	μs
	Storage time	t _{stg}		1.0	—	
	Fall time	t _f		0.1	—	



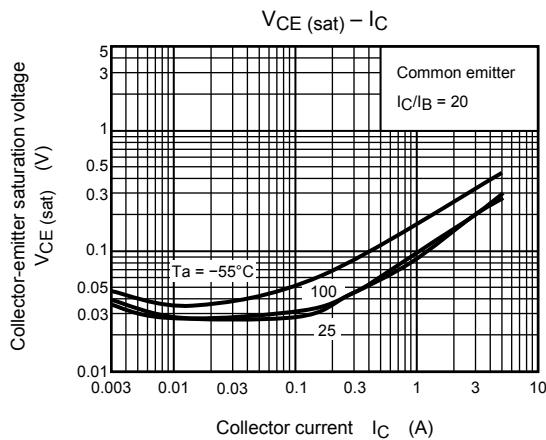
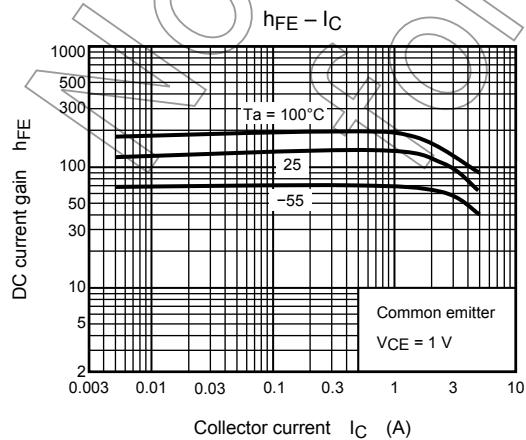
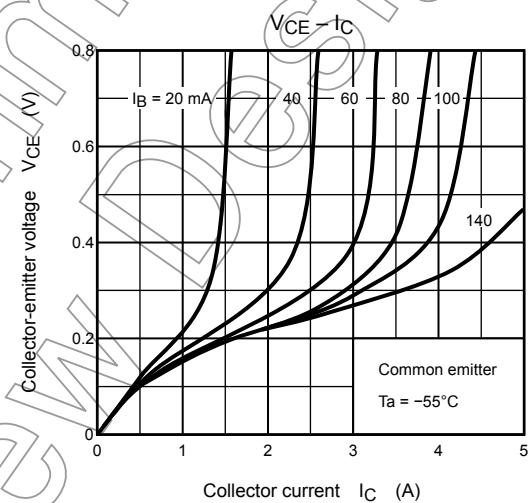
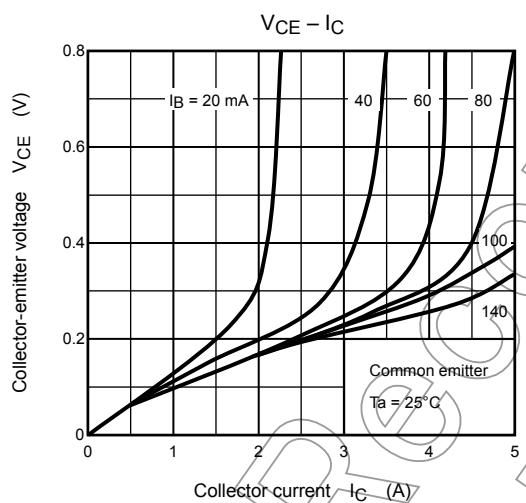
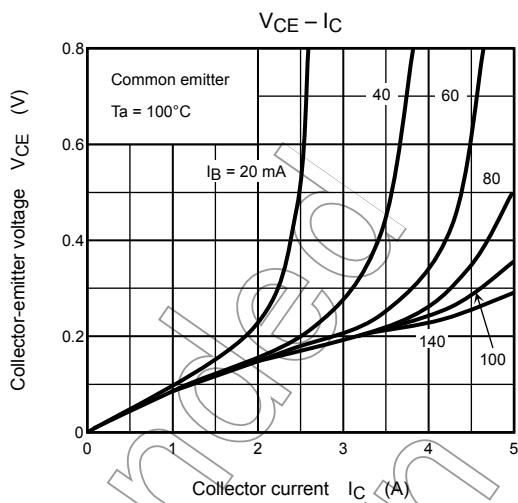
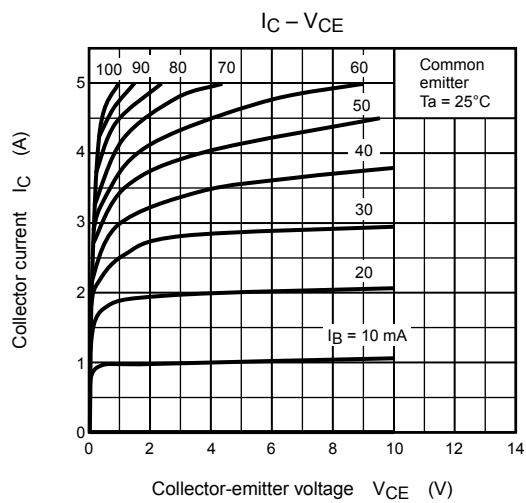
Marking

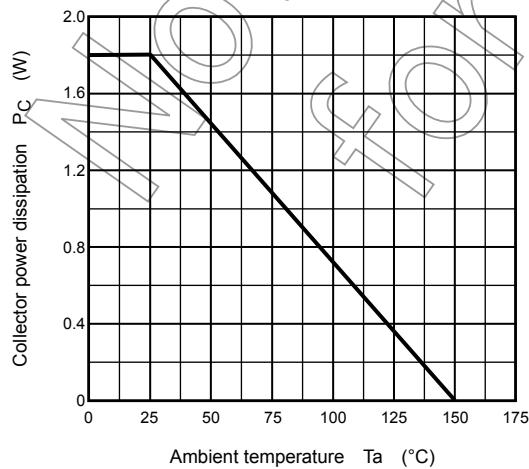
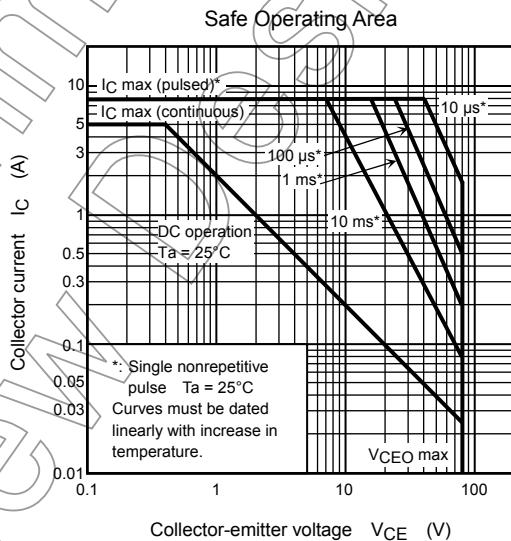
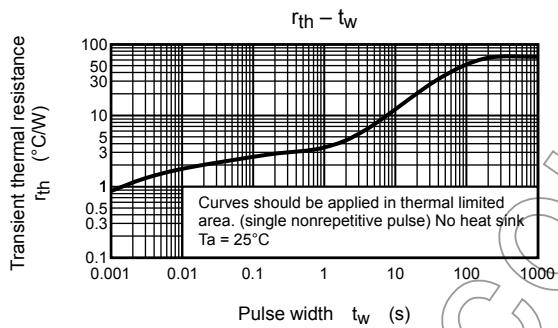
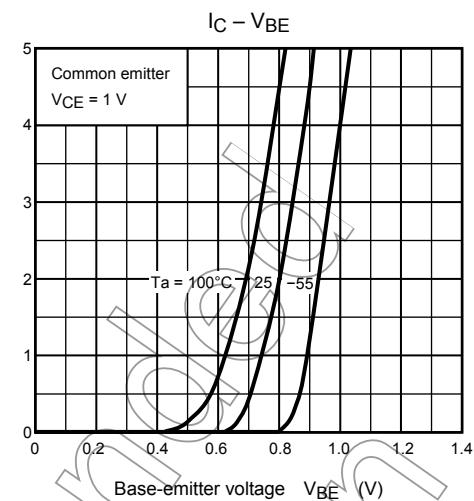
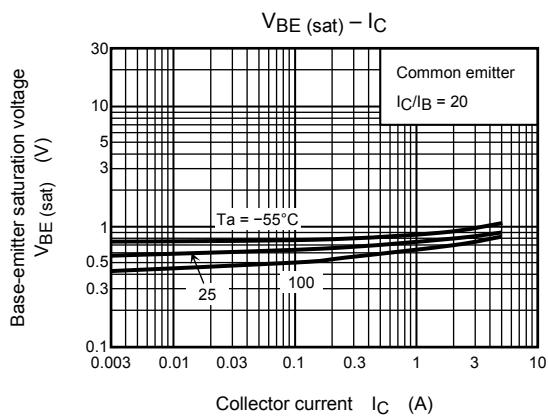


Part No. (or abbreviation code)

Lot No.

A line indicates
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lead-(Pb)-free finish.





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