

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

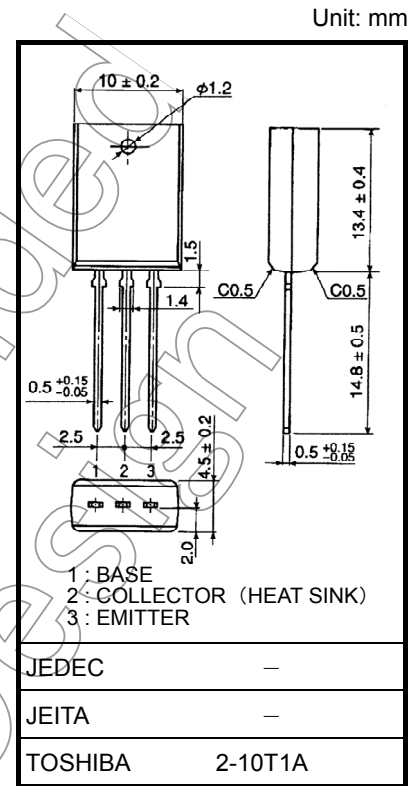
2SC6078

- Power Amplifier Applications
- Power Switching Applications

- Low collector saturation voltage: $V_{CE(sat)} = 0.5 \text{ V (max)}$ ($I_C = 1 \text{ A}$)
- High-speed switching: $t_{stg} = 0.4 \mu\text{s (typ)}$

Absolute Maximum Ratings ($T_a = 25^\circ\text{C}$)

Characteristic	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	160	V
Collector-emitter voltage	V_{CEX}	160	V
	V_{CEO}	80	V
Emitter-base voltage	V_{EBO}	7	V
Collector current	DC	I_C	3 A
	Pulse	I_{CP}	5 A
Base current	I_B	1.0	A
Collector power dissipation	P_C	1.8	W
Junction temperature	T_j	150	$^\circ\text{C}$
Storage temperature range	T_{stg}	-55~150	$^\circ\text{C}$



Weight: 1.5g (typ)

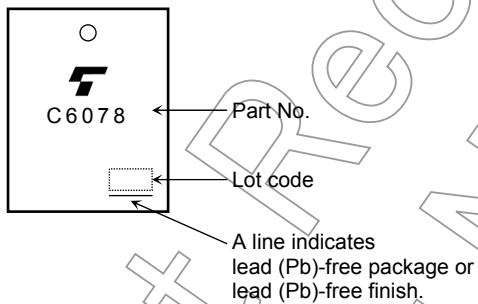
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

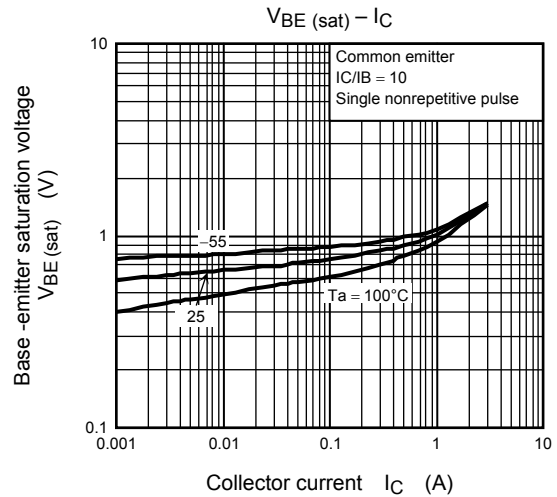
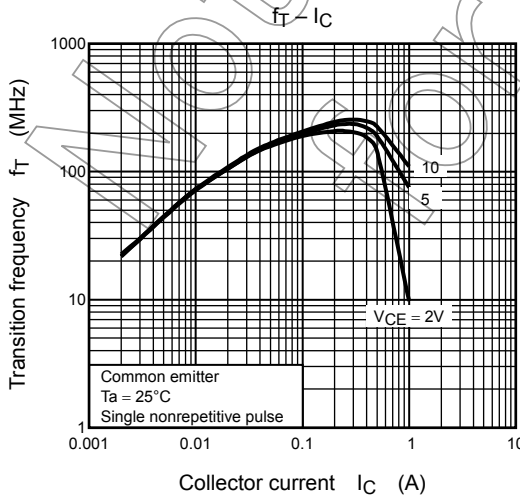
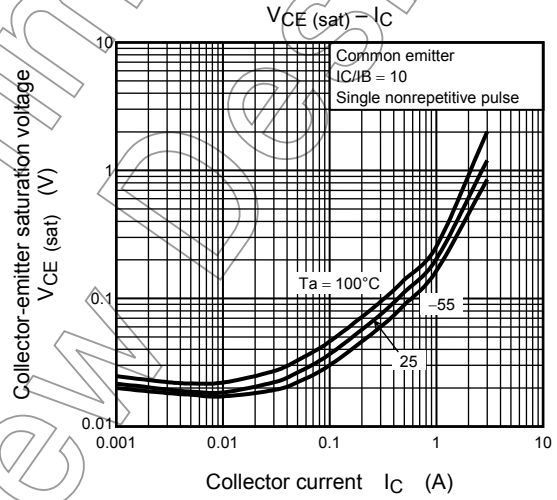
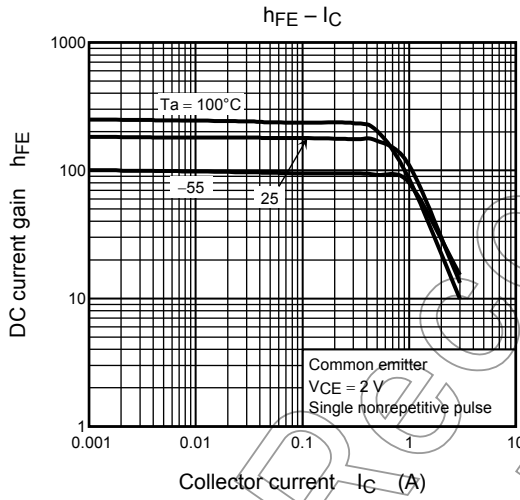
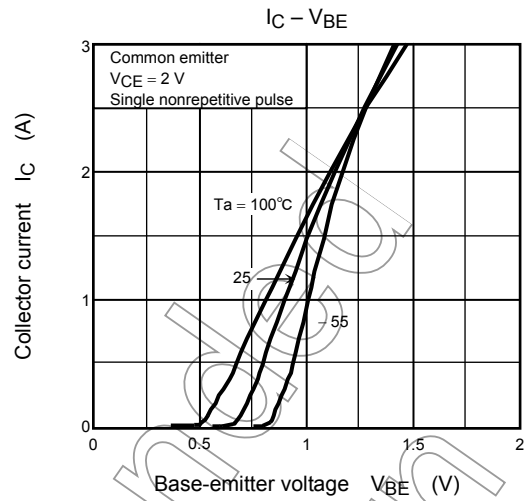
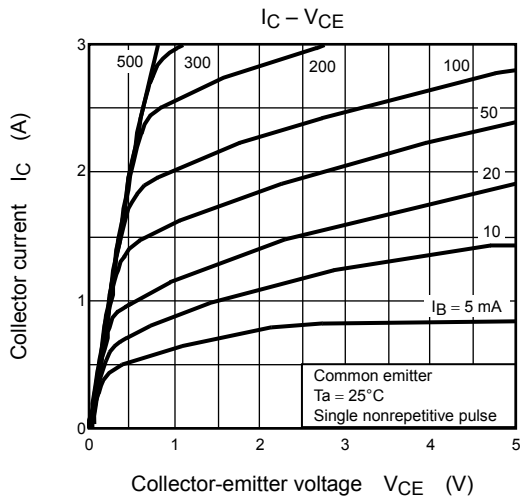
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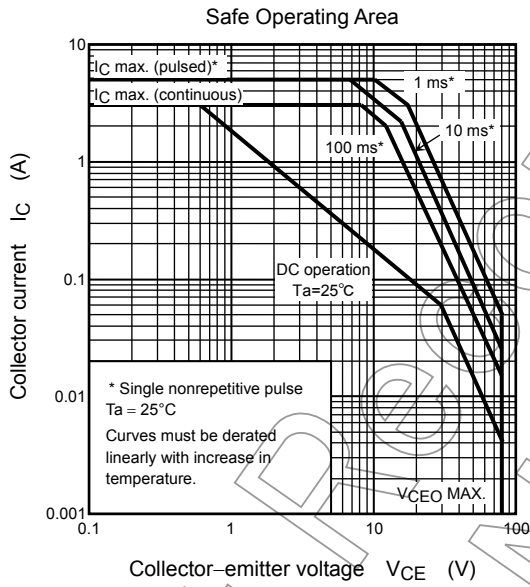
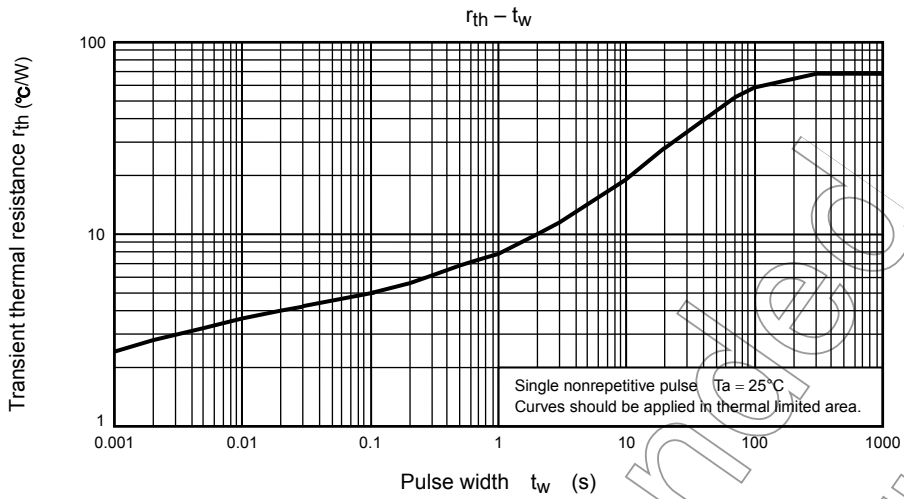
Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Conditions	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	$V_{CB} = 160\text{ V}, I_E = 0$	—	—	1.0	μA
Emitter cut-off current		I_{EBO}	$V_{EB} = 7\text{ V}, I_C = 0$	—	—	1.0	μA
Collector-emitter breakdown voltage		$V_{(BR)CEO}$	$I_C = 10\text{ mA}, I_B = 0$	80	—	—	V
DC current gain		$h_{FE(1)}$	$V_{CE} = 2\text{ V}, I_C = 1\text{ mA}$	80	—	—	
		$h_{FE(2)}$	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	100	—	200	
		$h_{FE(3)}$	$V_{CE} = 2\text{ V}, I_C = 1\text{ A}$	60	—	—	
Collector emitter saturation voltage		$V_{CE(sat)(1)}$	$I_C = 0.5\text{ A}, I_B = 50\text{ mA}$	—	—	0.3	V
		$V_{CE(sat)(2)}$	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	—	—	0.5	V
Base-emitter saturation voltage		$V_{BE(sat)}$	$I_C = 1\text{ A}, I_B = 100\text{ mA}$	—	—	1.5	V
Transition frequency		f_T	$V_{CE} = 2\text{ V}, I_C = 0.5\text{ A}$	—	150	—	MHz
Collector output capacitance		C_{ob}	$V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	14	—	pF
Switching time	Rise time	t_r	<p>$I_{B1} = -I_{B2} = 100\text{ mA}$ Duty cycle $\leq 1\%$</p>	—	0.05	—	μs
	Storage time	t_{stg}		—	0.4	—	
	Fall time	t_f		—	0.15	—	

Marking







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