

TOSHIBA Transistor Silicon NPN Epitaxial Type (PCT Process)

2SC6078

- Power Amplifier Applications
- Power Switching Applications

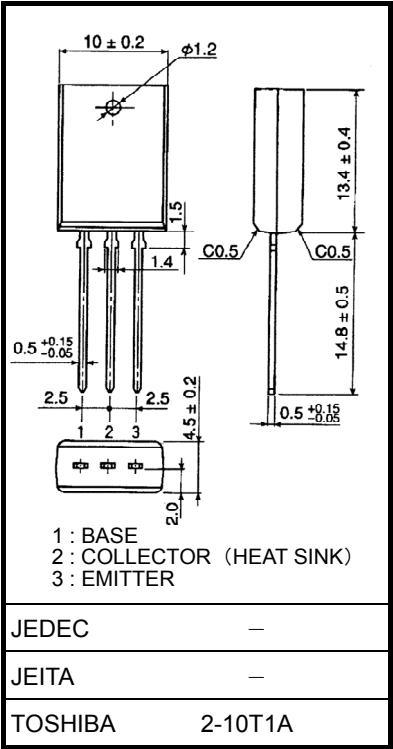
- Low collector saturation voltage:  $V_{CE(sat)} = 0.5\text{ V (max)}$  ( $I_C = 1\text{ A}$ )
- High-speed switching:  $t_{stg} = 0.4\text{ }\mu\text{s (typ)}$

Absolute Maximum Ratings (Ta = 25°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	°C
Storage temperature range		$T_{stg}$	-55~150	°C

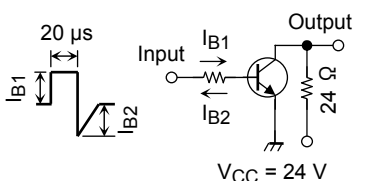
Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.)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

Unit: mm

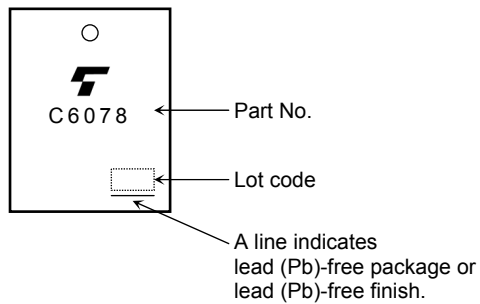


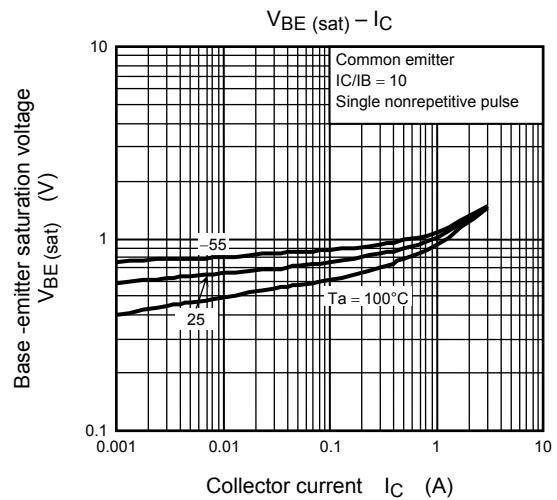
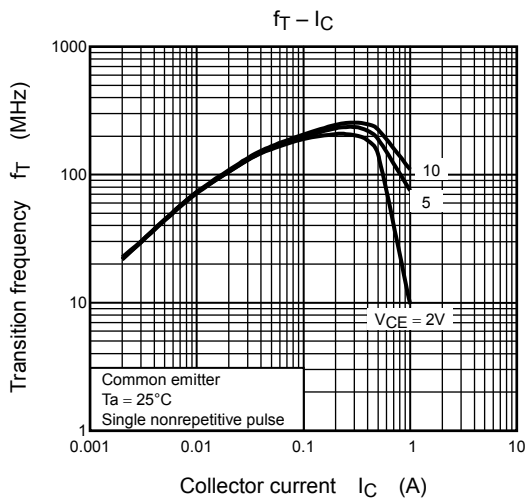
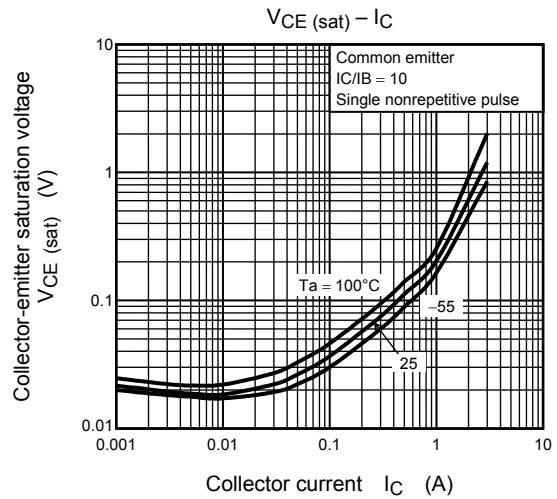
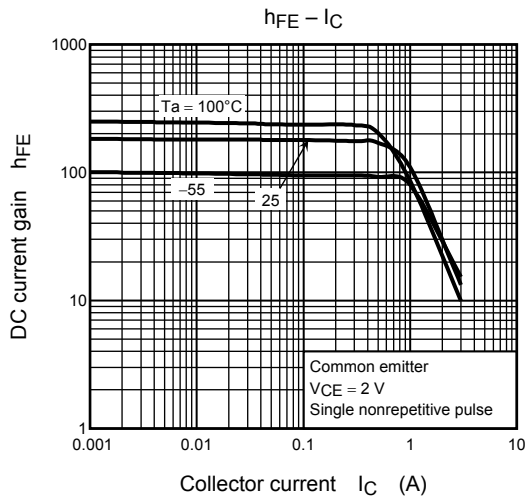
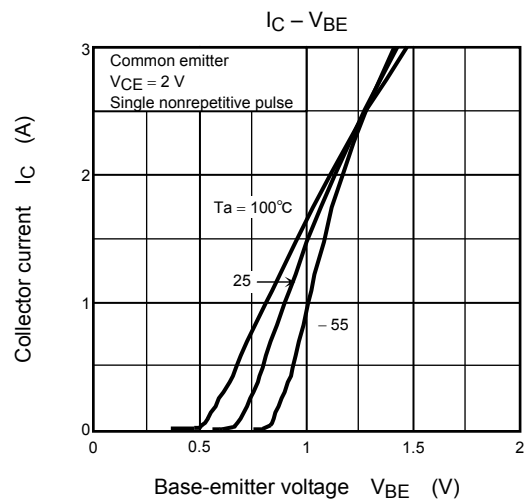
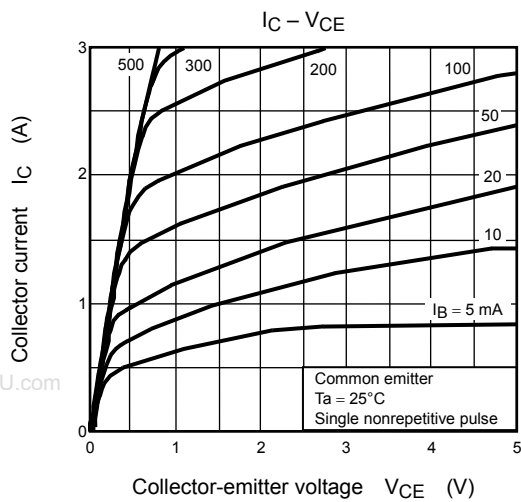
Weight:1.5g(typ)

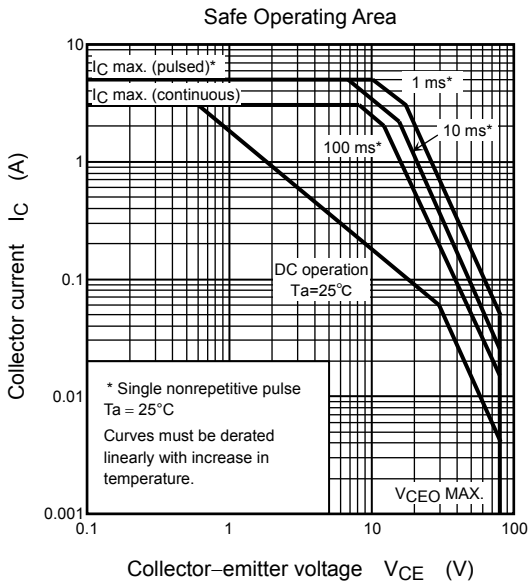
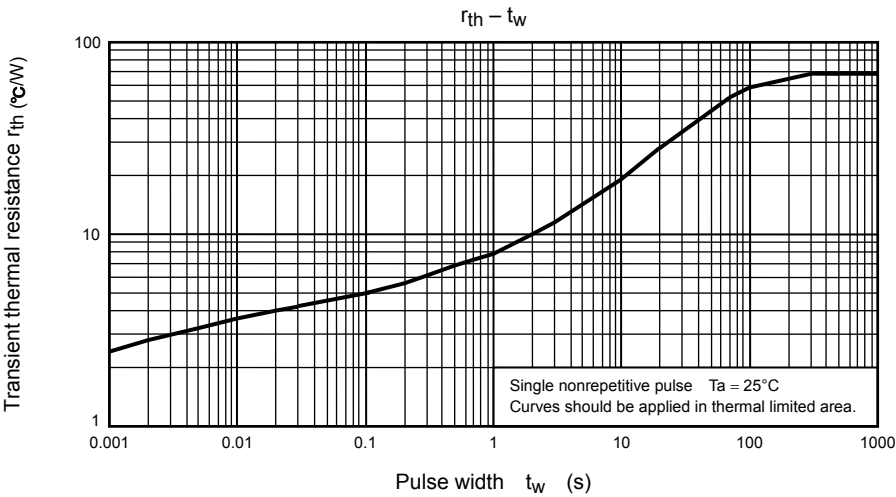
## Electrical Characteristics (Ta = 25°C)

Characteristic		Symbol	Test Conditions	Min	Typ.	Max	Unit
Collector cut-off current		$I_{CBO}$	$V_{CB} = 160 \text{ V}, I_E = 0$	—	—	1.0	$\mu\text{A}$
Emitter cut-off current		$I_{EBO}$	$V_{EB} = 7 \text{ V}, I_C = 0$	—	—	1.0	$\mu\text{A}$
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><math>I_{B1} = -I_{B2} = 100 \text{ mA}</math> Duty cycle <math>\leq 1\%</math></p>	—	0.05	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	0.4	—	
	Fall time	$t_f$		—	0.15	—	

## Marking







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