TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

2SC3709A

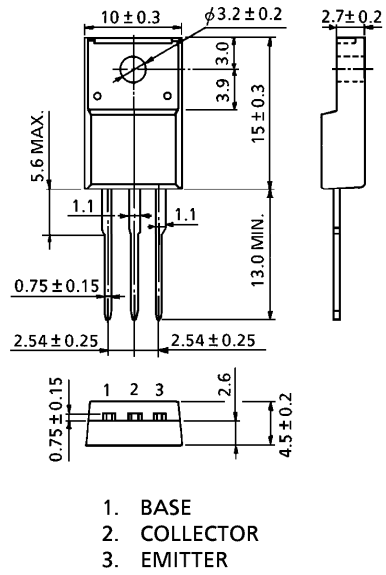
HIGH CURRENT SWITCHING APPLICATIONS

- Low Collector Saturation Voltage : $V_{CE\ (sat)}$ = 0.4V (Max.)
- High Speed Switching Time : t_{stg} = 1.0 μs (Typ.)
- Complementary to 2SA1451A

MAXIMUM RATINGS (Tc = 25°C)

CHARACTERISTIC	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	12	A
Base Current	I_B	2	A
Collector Power Dissipation (Tc = 25°C)	P_C	30	W
Junction Temperature	T_j	150	°C
Storage Temperature Range	T_{stg}	−55~150	°C

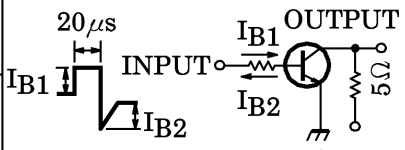
Unit in mm



JEDEC	—
JEITA	—
TOSHIBA	2-10R1A

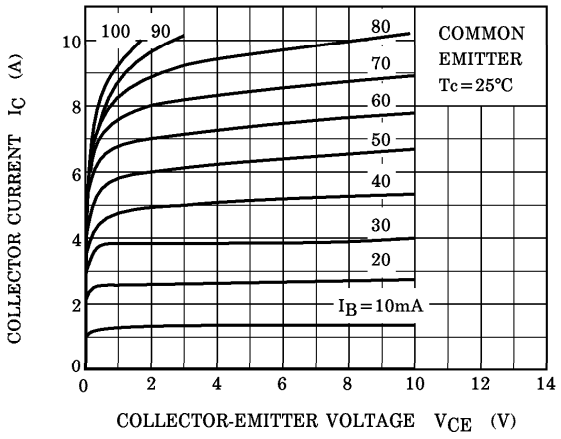
Weight : 1.7g (Typ.)

ELECTRICAL CHARACTERISTICS (Tc = 25°C)

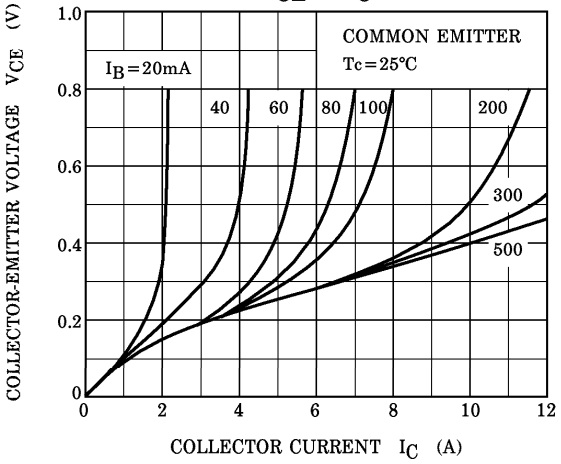
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 60V, I_E = 0	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 6V, I_C = 0	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C = 50mA, I_B = 0	50	—	—	V
DC Current Gain		$h_{FE(1)}$ (Note)	V_{CE} = 1V, I_C = 1A	70	—	240	
		$h_{FE(2)}$	V_{CE} = 1V, I_C = 6A	40	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 6A, I_B = 0.3A	—	0.25	0.4	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C = 6A, I_B = 0.3A	—	0.9	1.2	V
Transition Frequency		f_T	V_{CE} = 5V, I_C = 1A	—	90	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10V, I_E = 0, f = 1MHz	—	180	—	pF
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2} = 0.3A$, DUTY CYCLE ≦ 1%	—	0.2	—	μs
	Storage Time	t_{stg}		—	1.0	—	
	Fall Time	t_f		—	0.2	—	

(Note) $h_{FE(1)}$ Classification O : 70~140, Y : 120~240

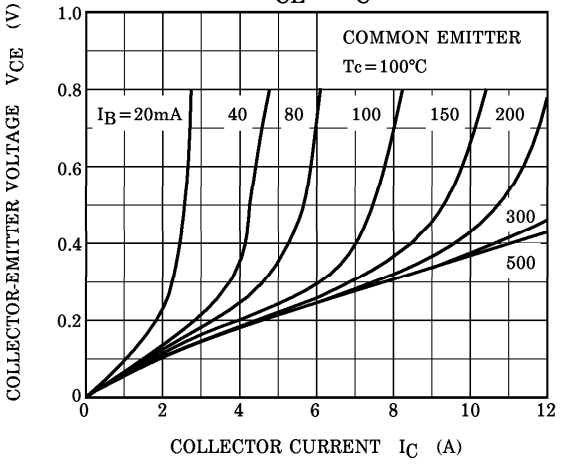
$I_C - V_{CE}$



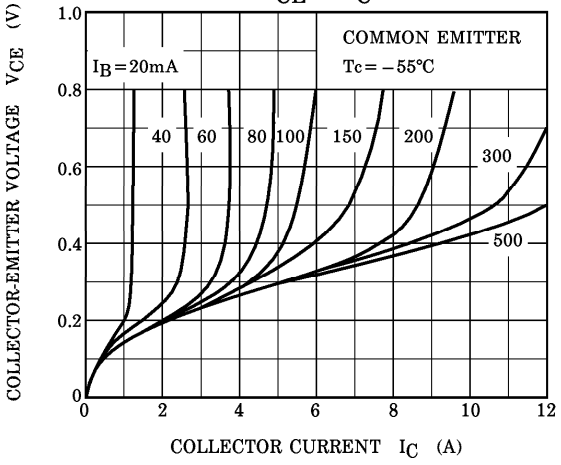
$V_{CE} - I_C$



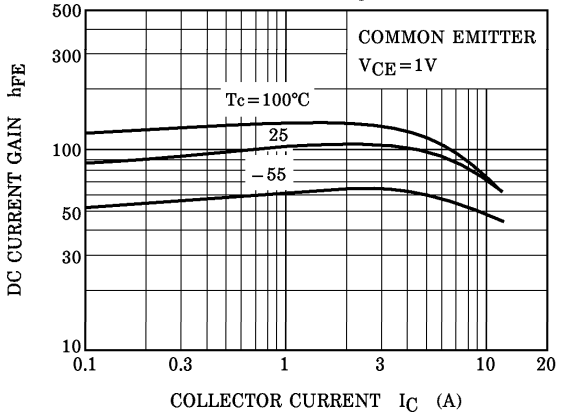
$V_{CE} - I_C$



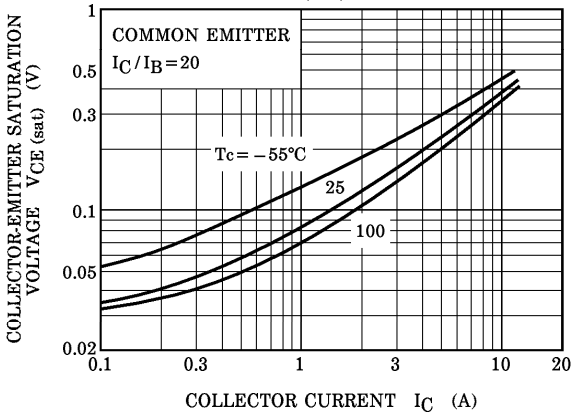
$V_{CE} - I_C$



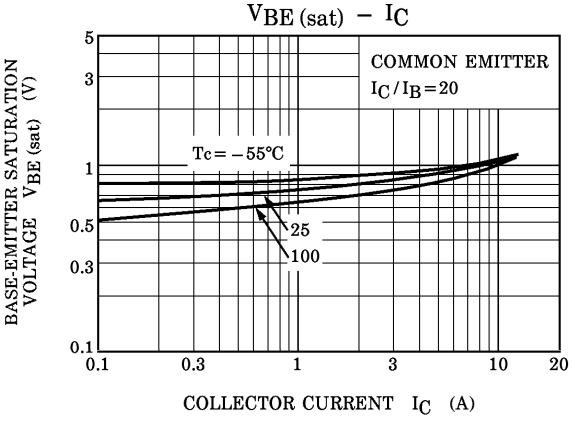
$h_{FE} - I_C$



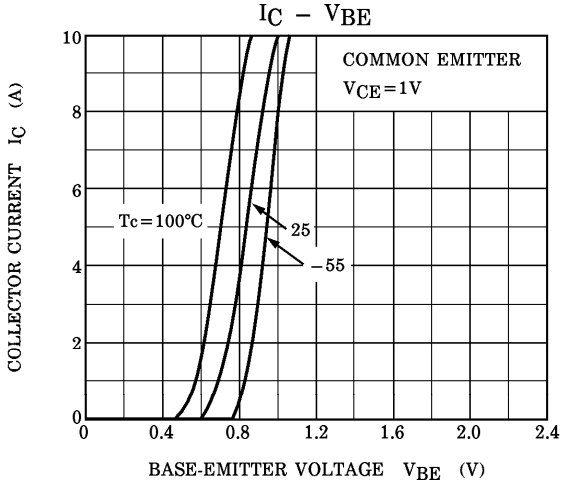
$V_{CE\,(sat)} - I_C$



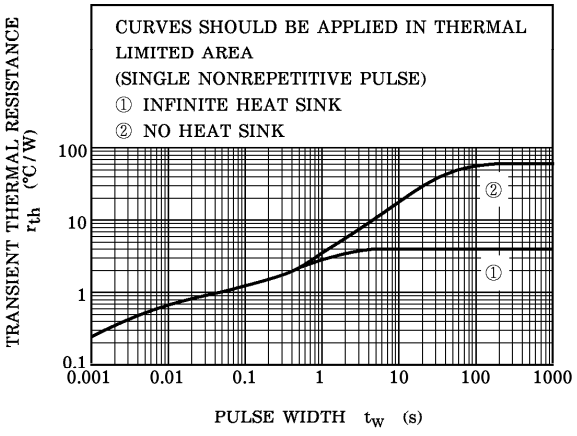
$V_{BE\,(sat)}$ – I_C



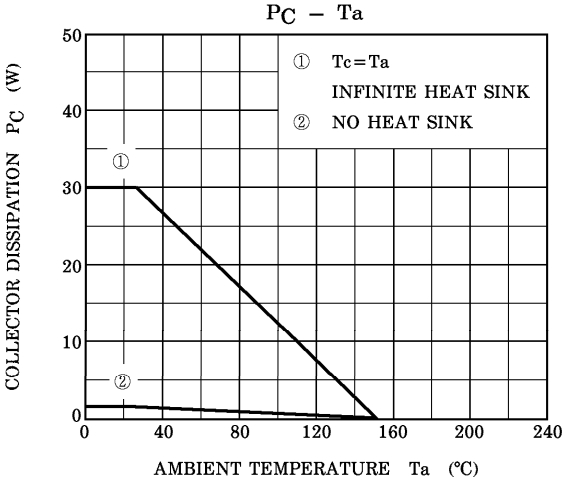
I_C – V_{BE}



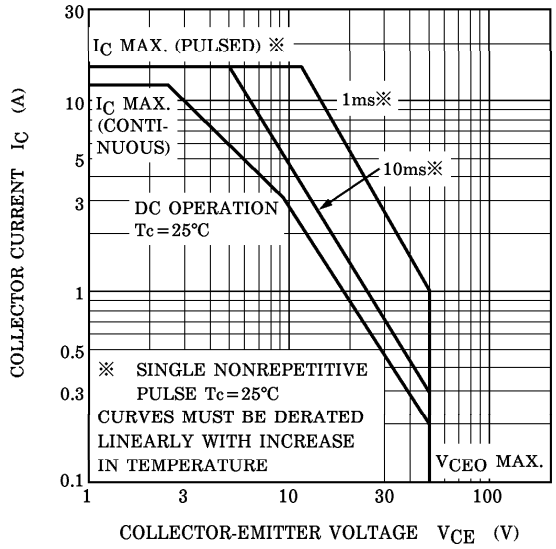
r_{th} – t_w



P_C – Ta



SAFE OPERATING AREA



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