

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

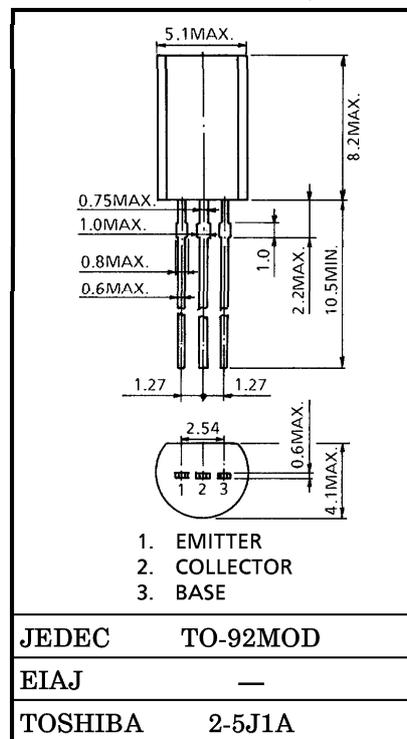
# 2SC2655

POWER AMPLIFIER APPLICATIONS.  
POWER SWITCHING APPLICATIONS.

INDUSTRIAL APPLICATIONS

Unit in mm

- Low Saturation Voltage  
:  $V_{CE(sat)} = 0.5V$  (Max.) ( $I_C = 1A$ )
- High Speed Switching Time :  $t_{stg} = 1.0\mu s$  (Typ.)
- Complementary to 2SA1020.



Weight : 0.36g

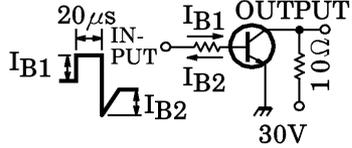
MAXIMUM RATINGS ( $T_a = 25^\circ C$ )

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	50	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Collector Current	$I_C$	2	A
Base Current	$I_B$	0.5	A
Collector Power Dissipation	$P_C$	900	mW
Junction Temperature	$T_j$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55~150	$^\circ C$

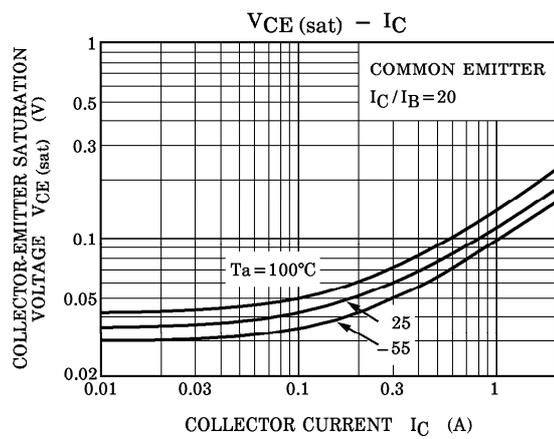
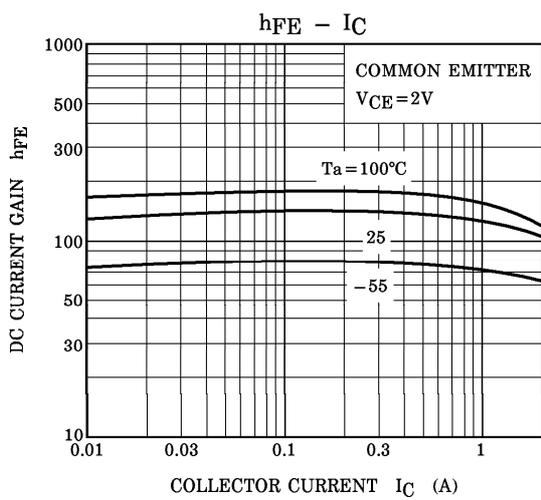
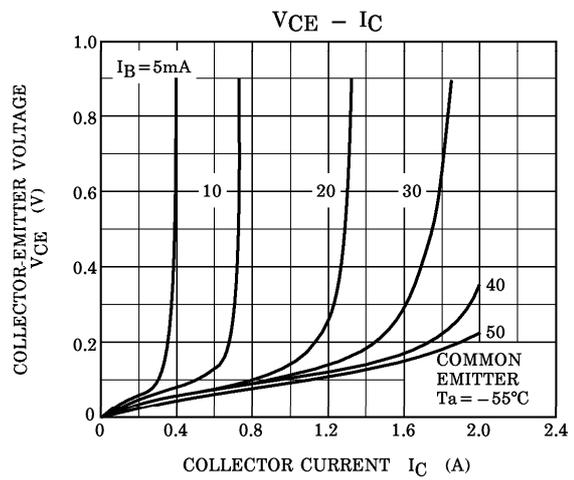
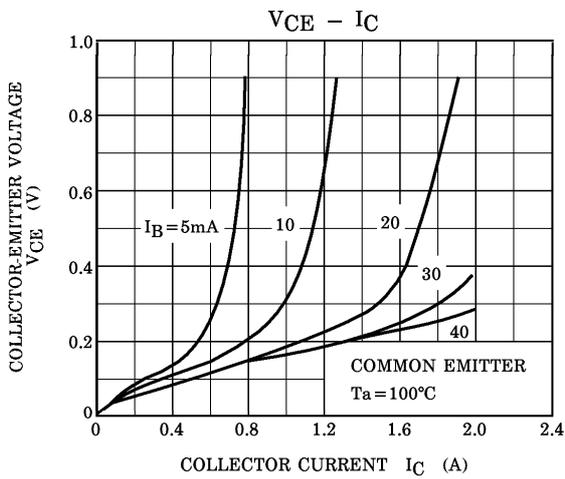
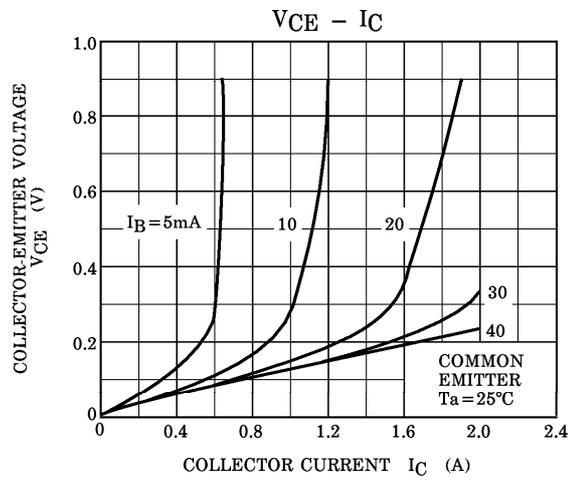
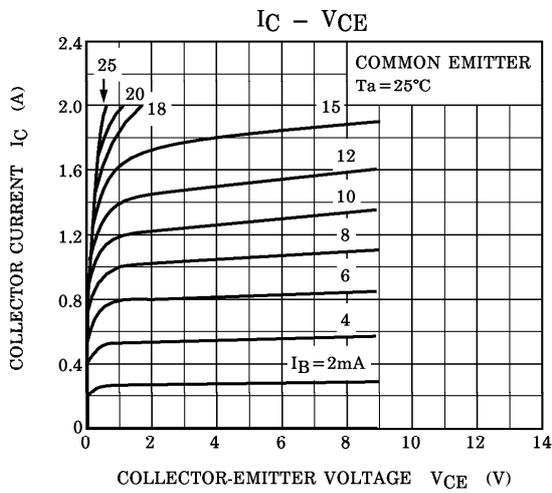
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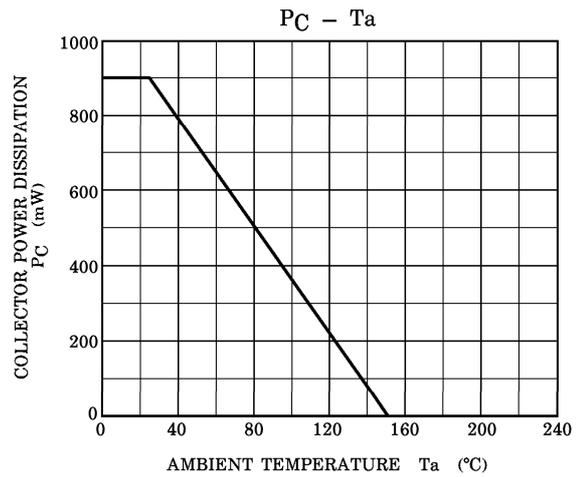
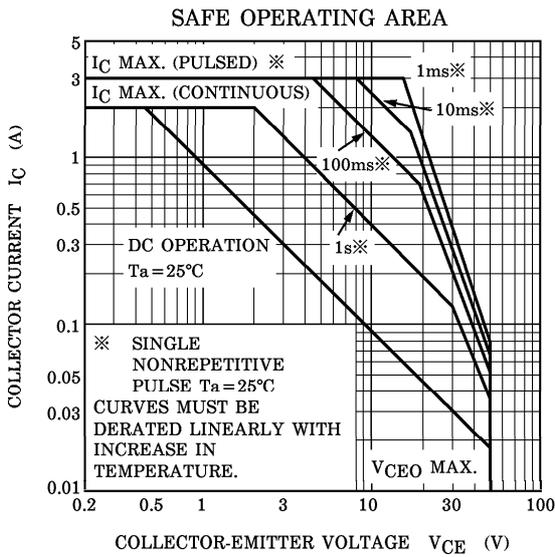
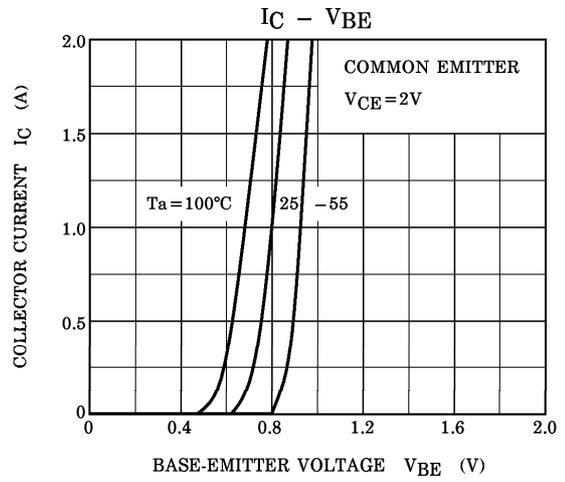
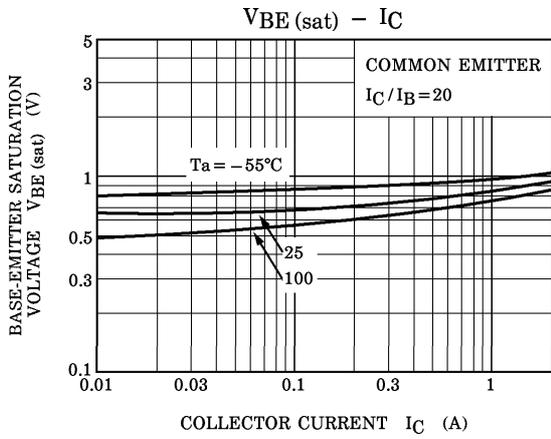
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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB} = 50V, I_E = 0$	—	—	1.0	$\mu A$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB} = 5V, I_C = 0$	—	—	1.0	$\mu A$
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 10mA, I_B = 0$	50	—	—	V
DC Current Gain		$h_{FE} (1)$ (Note)	$V_{CE} = 2V, I_C = 0.5A$	70	—	240	
		$h_{FE} (2)$	$V_{CE} = 2V, I_C = 1.5A$	40	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE (sat)}$	$I_C = 1A, I_B = 0.05A$	—	—	0.5	V
	Base-Emitter	$V_{BE (sat)}$	$I_C = 1A, I_B = 0.05A$	—	—	1.2	
Transition Frequency		$f_T$	$V_{CE} = 2V, I_C = 0.5A$	—	100	—	MHz
Collector Output Capacitance		$C_{ob}$	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	30	—	pF
Switching Time	Turn-on Time	$t_{on}$	 <p><math>I_{B1} = -I_{B2} = 0.05A,</math> DUTY CYCLE <math>\leq 1\%</math></p>	—	0.1	—	$\mu s$
	Storage Time	$t_{stg}$		—	1.0	—	
	Fall Time	$t_f$		—	—	0.1	

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





TOSHIBA Transistor Silicon PNP Epitaxial Type (PCT Process)

# 2SA1020

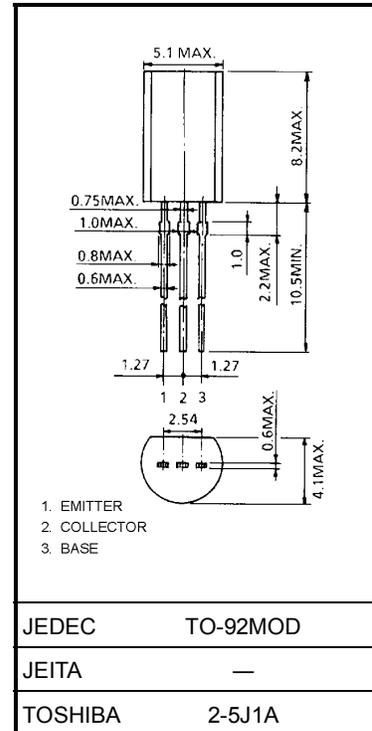
Power Amplifier Applications  
Power Switching Applications

Unit: mm

- Low Collector saturation voltage:  $V_{CE(sat)} = -0.5\text{ V (max)}$  ( $I_C = -1\text{ A}$ )
- High-speed switching:  $t_{stg} = 1.0\text{ }\mu\text{s (typ.)}$
- Complementary to 2SC2655

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

Characteristics	Symbol	Rating	Unit
Collector-base voltage	$V_{CB0}$	-50	V
Collector-emitter voltage	$V_{CEO}$	-50	V
Emitter-base voltage	$V_{EBO}$	-5	V
Collector current	$I_C$	-2	A
Collector power dissipation	$P_C$	900	mW
Junction temperature	$T_j$	150	$^\circ\text{C}$
Storage temperature range	$T_{stg}$	-55 to 150	$^\circ\text{C}$



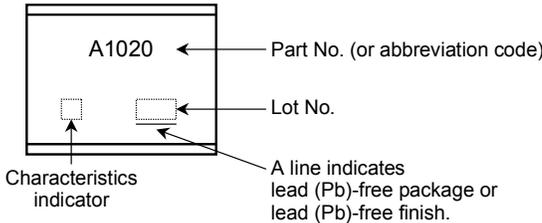
Weight: 0.36 g (typ.)

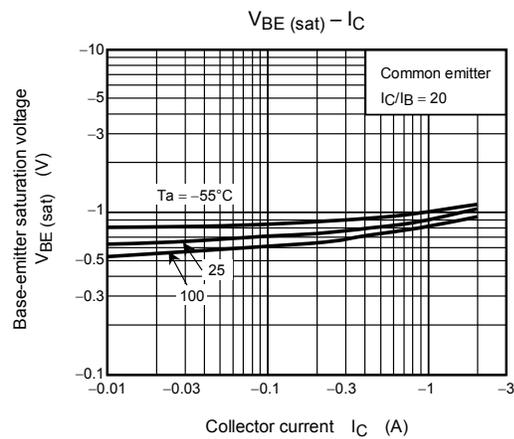
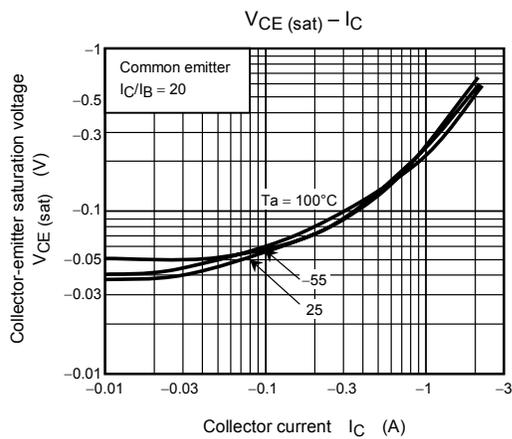
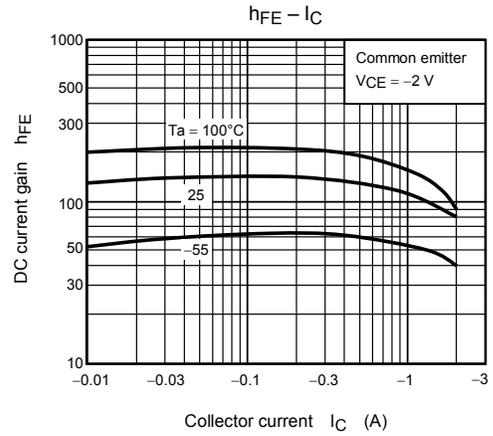
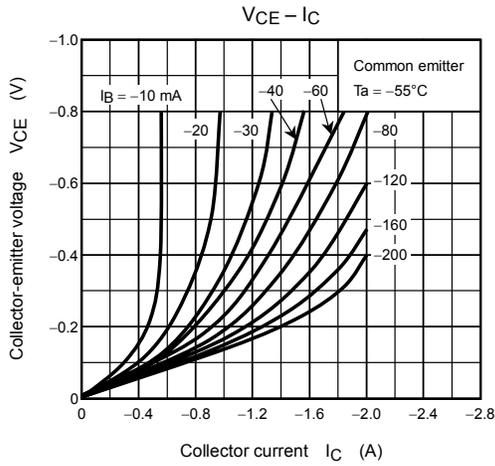
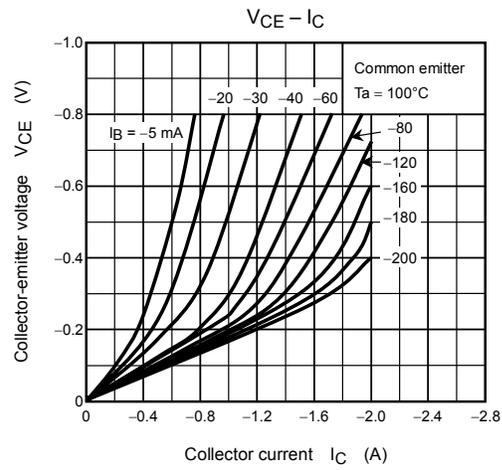
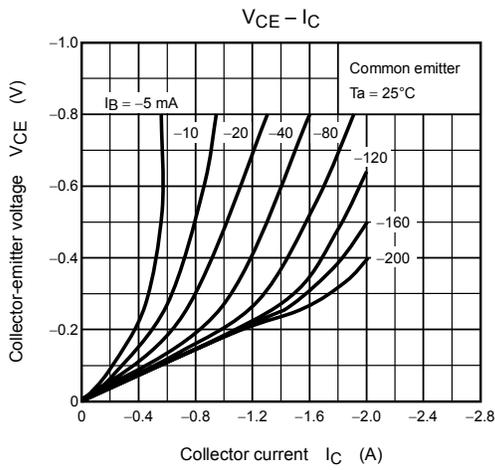
### Electrical Characteristics ( $T_a = 25^\circ\text{C}$ )

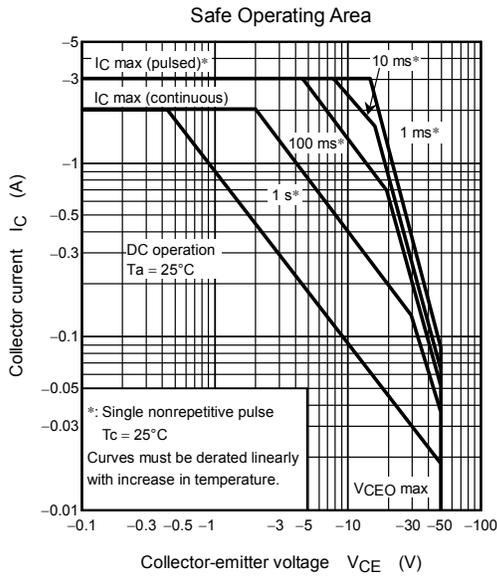
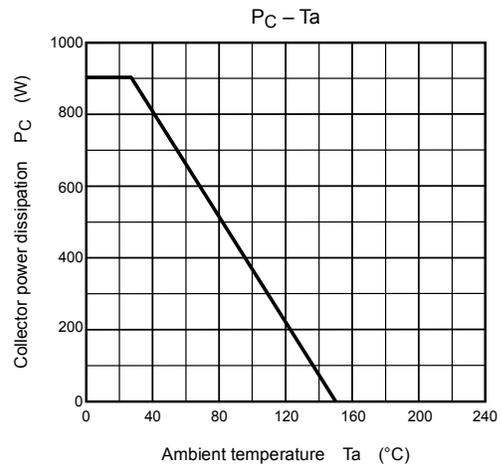
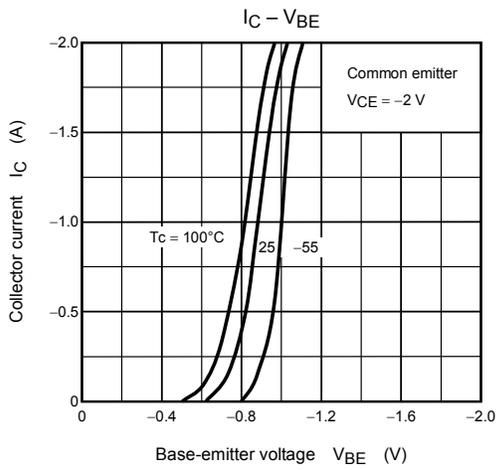
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit	
Collector cut-off current	$I_{CB0}$	$V_{CB} = -50\text{ V}, I_E = 0$	—	—	-1.0	$\mu\text{A}$	
Emitter cut-off current	$I_{EBO}$	$V_{EB} = -5\text{ V}, I_C = 0$	—	—	-1.0	$\mu\text{A}$	
Collector-emitter breakdown voltage	$V_{(BR)CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-50	—	—	V	
DC current gain	$h_{FE(1)}$	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	70	—	240		
	$h_{FE(2)}$	$V_{CE} = -2\text{ V}, I_C = -1.5\text{ A}$	40	—	—		
Collector-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -1\text{ A}, I_B = -0.05\text{ A}$	—	—	-0.5	V	
Base-emitter saturation voltage	$V_{BE(sat)}$	$I_C = -1\text{ A}, I_B = -0.05\text{ A}$	—	—	-1.2	V	
Transition frequency	$f_T$	$V_{CE} = -2\text{ V}, I_C = -0.5\text{ A}$	—	100	—	MHz	
Collector output capacitance	$C_{ob}$	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	40	—	pF	
Switching time	Turn-on time	$t_{on}$		—	0.1	—	$\mu\text{s}$
	Storage time	$t_{stg}$		—	1.0	—	
	Fall time	$t_f$		$-I_{B1} = I_{B2} = 0.05\text{ A}$ DUTY CYCLE $\leq 1\%$	—	0.1	

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

**Marking**







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