

2SA1160

Strobe Flash Applications
Medium Power Amplifier Applications

- High DC current gain and excellent hFE linearity
: $h_{FE(1)} = 140 \text{ to } 600$ ($V_{CE} = -1 \text{ V}$, $I_C = -0.5 \text{ A}$)
: $h_{FE(2)} = 60 \text{ (min)}$, 120 (typ.) ($V_{CE} = -1 \text{ V}$, $I_C = -4 \text{ A}$)
- Low saturation voltage
: $V_{CE(sat)} = -0.5 \text{ V (max)}$ ($I_C = -2 \text{ A}$, $I_B = -50 \text{ mA}$)

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

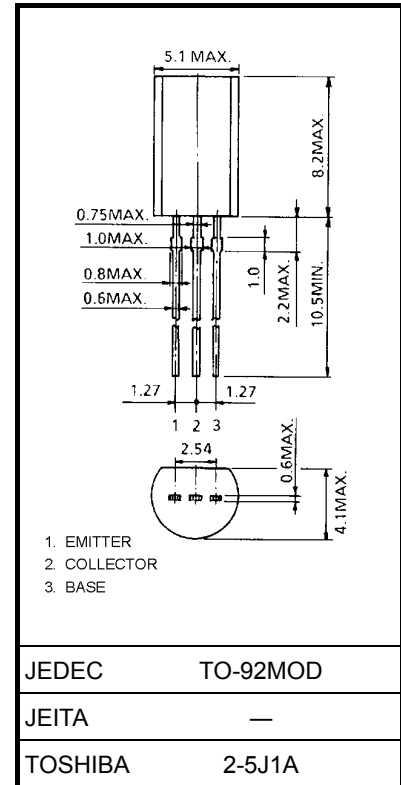
Characteristics		Symbol	Rating	Unit
Collector-base voltage		V_{CBO}	-20	V
Collector-emitter voltage		V_{CEO}	-10	V
Emitter-base voltage		V_{EBO}	-6	V
Collector current	DC	I_C	-2	A
	Pulsed (Note 1)	I_{CP}	-4	
Base current		I_B	-2	A
Collector power dissipation		P_C	900	mW
Junction temperature		T_j	150	$^\circ\text{C}$
Storage temperature range		T_{stg}	-55 to 150	$^\circ\text{C}$

Note 1: Pulse width = 10 ms (max), duty cycle = 30% (max)

Note 2: 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



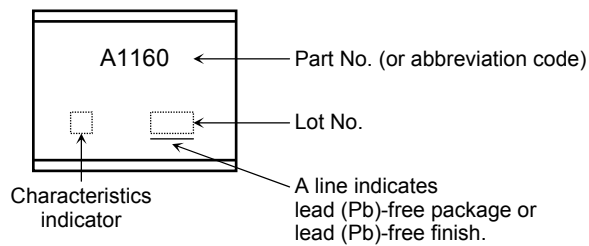
Weight: 0.36 g (typ.)

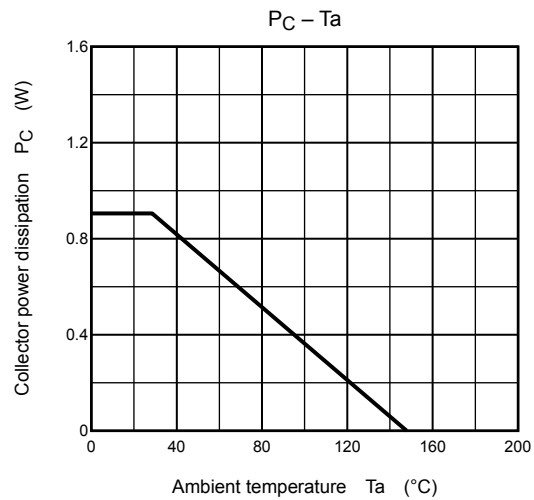
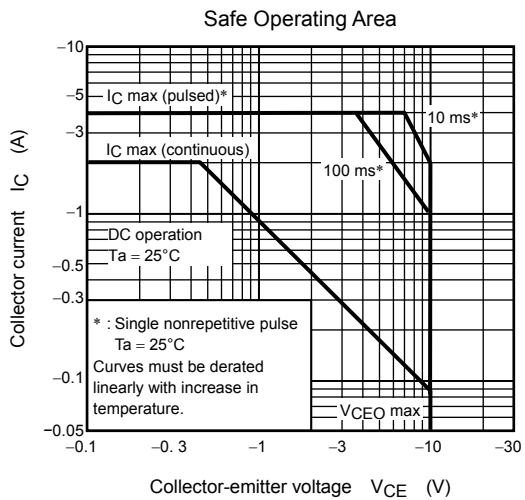
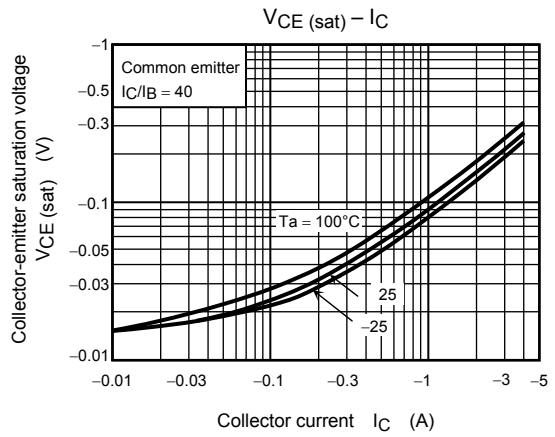
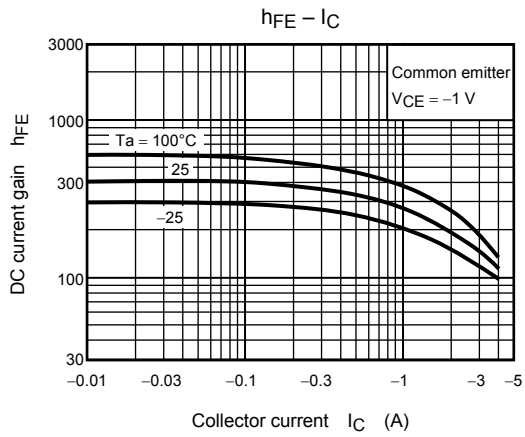
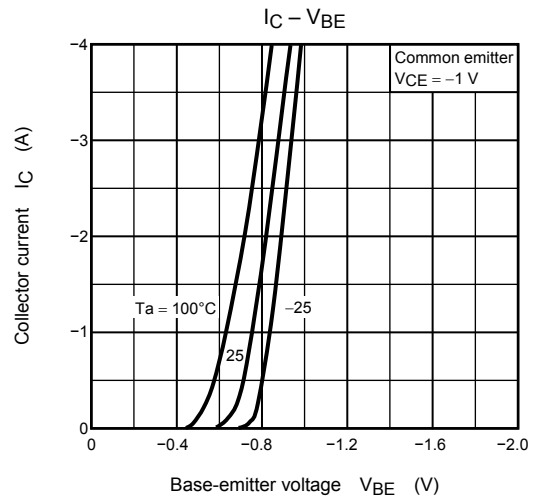
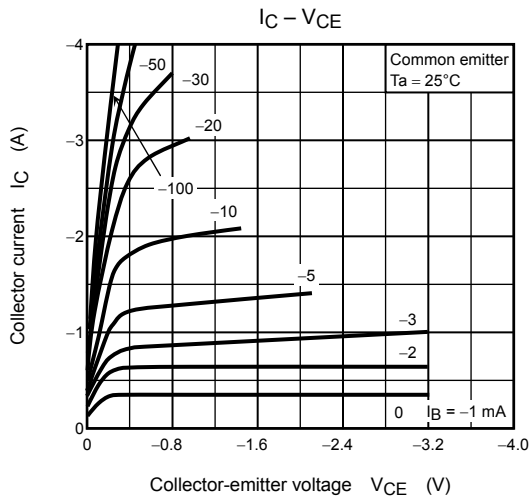
Electrical Characteristics (Ta = 25°C)

Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	$V_{CB} = -20\text{ V}, I_E = 0$	—	—	-100	nA
Emitter cut-off current	I_{EBO}	$V_{EB} = -6\text{ V}, I_C = 0$	—	—	-100	nA
Collector-emitter breakdown voltage	$V_{(BR) CEO}$	$I_C = -10\text{ mA}, I_B = 0$	-10	—	—	V
Emitter-base breakdown voltage	$V_{(BR) EBO}$	$I_E = -1\text{ mA}, I_C = 0$	-6	—	—	V
DC current gain	$h_{FE(1)}$ (Note 3)	$V_{CE} = -1\text{ V}, I_C = -0.5\text{ A}$	140	—	600	
Collector-emitter saturation voltage	$h_{FE(2)}$	$V_{CE} = -1\text{ V}, I_C = -4\text{ A}$	60	120	—	
Base-emitter saturation voltage	$V_{CE(sat)}$	$I_C = -2\text{ A}, I_B = -50\text{ mA}$	—	-0.20	-0.50	V
Base-emitter voltage	V_{BE}	$V_{CE} = -1\text{ V}, I_C = -2\text{ A}$	—	-0.83	-1.5	V
Transition frequency	f_T	$V_{CE} = -1\text{ V}, I_C = -0.5\text{ A}$	—	140	—	MHz
Collector output capacitance	C_{ob}	$V_{CB} = -10\text{ V}, I_E = 0, f = 1\text{ MHz}$	—	50	—	pF

Note 3: $h_{FE(1)}$ Classification A: 140 to 280, B: 200 to 400, C: 300 to 600

Marking





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20070701-EN

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