TOSHIBA Transistor Silicon NPN Triple Diffused Type

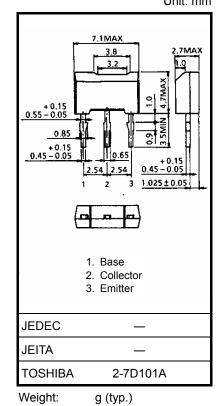
2SC6010

High Voltage Switching Applications Switching Regulator Applications DC-DC Converter Applications

• High speed switching: $t_f = 0.24 \mu s \text{ (max)} (I_C = 0.3A)$

Absolute	Maximum	Ratings	(Ta = 25°C)
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Characteristics		Symbol	Rating	Unit	
Collector-base voltage		V _{CBO}	600	V	
Collector-emitter voltage		V _{CEX}	600	V	
Collector-emitter voltage		V _{CEO}	285	V	
Emitter-base voltage		V _{EBO}	8	V	
Collector current	DC	ΙC	1.0	А	
Collector current	Pulse	I _{CP}	2.0	A	
Base current		Ι _Β	0.5	А	
Collector power dissipation	Ta = 25°C	PC	1.0	W	
Junction temperature		Tj	150	°C	
Storage temperature range		T _{stg}	-55 to 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).

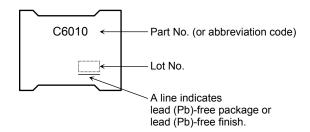
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Unit: mm

Electrical Characteristics (Ta = 25°C)

Characteristics		Symbol	Test Condition	Min	Тур.	Max	Unit
Collector cut-off current		I _{CBO}	V _{CB} = 600 V, I _E = 0	_	—	100	μA
Emitter cut-off current		I _{EBO}	V _{EB} = 8 V, I _C = 0		_	100	μA
Collector-base breakdown voltage		V (BR) CBO	I _C = 1 mA, I _B = 0	600	_	_	V
Collector-emitter breakdown voltage		V (BR) CEO	I _C = 10 mA, I _B = 0	285	_	_	V
DC current gain		h _{FE (1)}	V _{CE} = 5 V, I _C = 1 mA	80	_	200	
		h _{FE (2)}	V _{CE} = 5 V, I _C = 0.1 A	100	_	200	
		h _{FE (3)}	V _{CE} = 5 V, I _C = 0.2 A	60	_	_	
Collector emitter saturation voltage		V _{CE (sat)}	I _C = 0.6 A, I _B = 75 mA	_	_	1.0	V
Base-emitter saturation voltage		V _{BE (sat)}	I _C = 0.6 A, I _B = 75 mA		_	1.3	V
Switching time Store	Rise time	tr	$20 \ \mu s \qquad V_{CC} \approx 200 \ V$ $\xrightarrow{\text{Em}} I_{B2} \qquad I_{B21} \qquad OUT-PUT$ $INPUT \qquad HB21 \qquad H$	_	_	0.4	
	Storage time	t _{stg}		_	_	3.0	μs
	Fall time	t _f	I _{B1} = 20 mA, −I _{B2} = 50 mA DUTY CYCLE ≤ 1%	_	_	0.24	

Marking



TOSHIBA

200

150

100

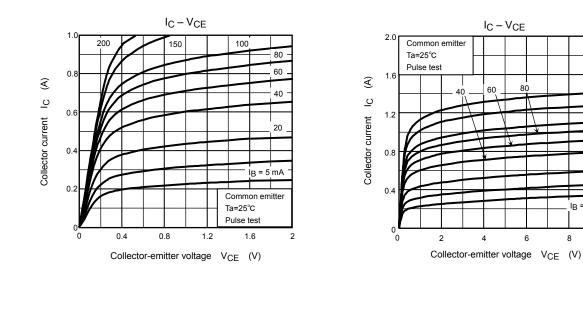
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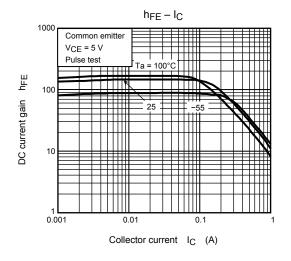
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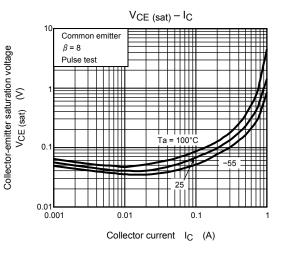
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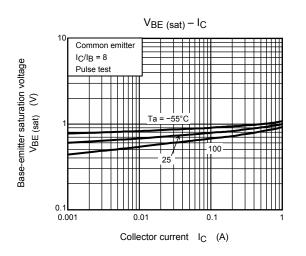
ΙB = 5 mA

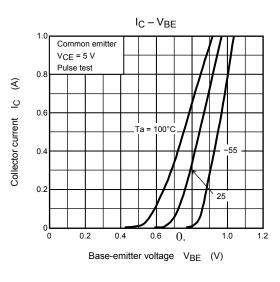
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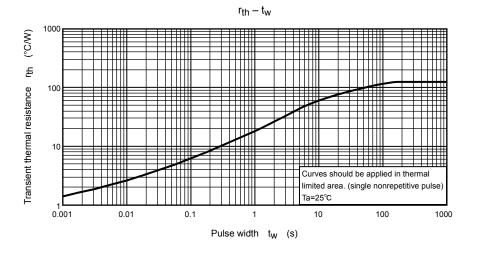






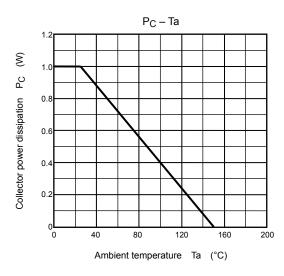






Safe Operating Area 10 IC max (Pulse)* 00 us 100 10 µs € 10 m <u>ں</u> Collector current 0.1 DC operation Ta = 25°C 0.01 *:Single nonrepetitive pulse Ta = 25°C Curves must be derated linearly with increase in VCEO max ∐∏I I temperature. 0.001 10 100 1000 Collector-emitter voltage V_{CE} (V)

Switching Characteristics – IC $I_{C} = 8I_{B1}$ $2I_{B1} = -I_{B2}$ $V_{CC} \approx 200 V$ Pulse width = 20µs Duty cycle tstg (srl) ≤ 1% Ta = 25°C Switching time 0.5 1 1 1 1 0.3 0.1 0.1 0.3 0.5 3 5 10 1 Collector current I_C (A)



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20070701-EN

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