

9097250 TOSHIBA (DISCRETE/OPTO)

56C 07690 D 7-33-65

SILICON NPN TRIPLE DIFFUSED TYPE

**2SC3309**

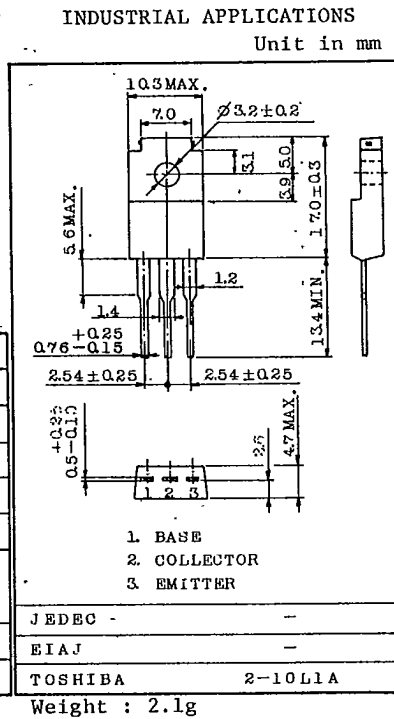
SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING APPLICATIONS.  
HIGH SPEED DC-DC CONVERTER APPLICATION.

**FEATURES:**

- Excellent Switching Times  
 $t_r=1.0\mu s$ (Max.),  $t_f=1.0\mu s$ (Max.) at  $I_C=0.8A$
- High Collector Breakdown Voltage:  $V_{CE0}=400V$

**MAXIMUM RATINGS (Ta=25°C)**

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V <sub>CB0</sub>	500	V
Collector-Emitter Voltage	V <sub>CE0</sub>	400	V
Emitter-Base Voltage	V <sub>EB0</sub>	7	V
Collector Current	I <sub>C</sub>	2	A
Base Current	I <sub>B</sub>	0.5	A
Collector Power Dissipation	P <sub>C</sub>	Ta=25°C	2.0
		Tc=25°C	20
Junction Temperature	T <sub>j</sub>	150	°C
Storage Temperature Range	T <sub>stg</sub>	-55 ~ 150	°C



**ELECTRICAL CHARACTERISTICS (Ta=25°C)**

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I <sub>CB0</sub>	V <sub>CB</sub> =400V, I <sub>E</sub> =0	-	-	100	μA
Emitter Cut-off Current	I <sub>EB0</sub>	V <sub>EB</sub> =7V, I <sub>C</sub> =0	-	-	1	mA
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =1mA, I <sub>E</sub> =0	500	-	-	V
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =10mA, I <sub>B</sub> =0	400	-	-	V
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =5V, I <sub>C</sub> =0.1A	20	-	-	
		V <sub>CE</sub> =5V, I <sub>C</sub> =1A	8	-	-	
Collector-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =0.2A	-	-	1.0	V
Base-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =1A, I <sub>B</sub> =0.2A	-	-	1.5	V
Switching Time	Rise Time	t <sub>r</sub>	-	-	1.0	μs
	Storage Time	t <sub>stg</sub>	-	-	2.5	
	Fall Time	t <sub>f</sub>	-	-	1.0	

20μs INPUT I<sub>B1</sub> I<sub>B2</sub> OUTPUT V<sub>CC</sub>=200V  
I<sub>B1</sub> ~ -I<sub>B2</sub> = 0.08A DUTY CYCLE < 1%

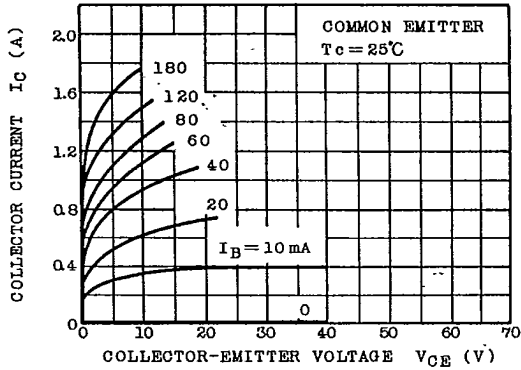
TOSHIBA CORPORATION

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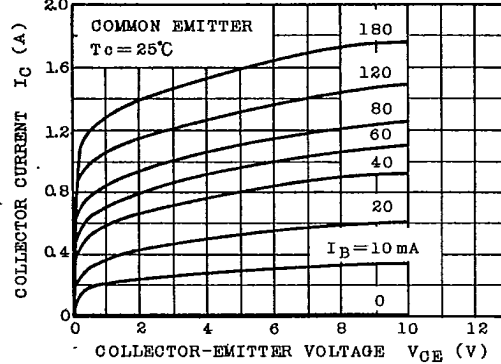
56C 07691 DT-33-05

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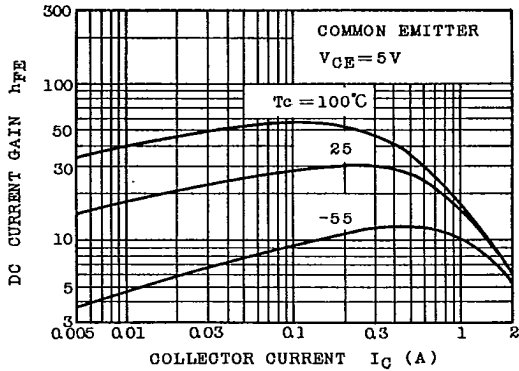
STATIC CHARACTERISTICS



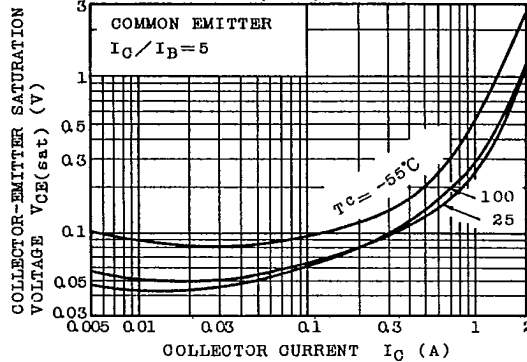
I<sub>C</sub> - V<sub>CE</sub> (LOW VOLTAGE REGION)



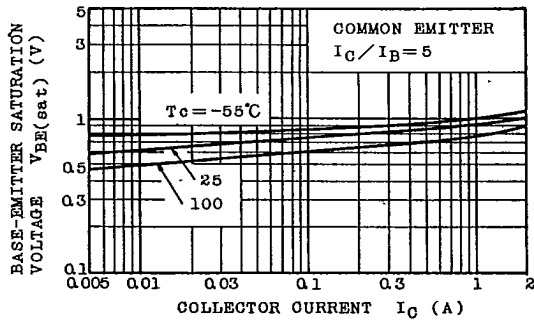
h<sub>FE</sub> - I<sub>C</sub>



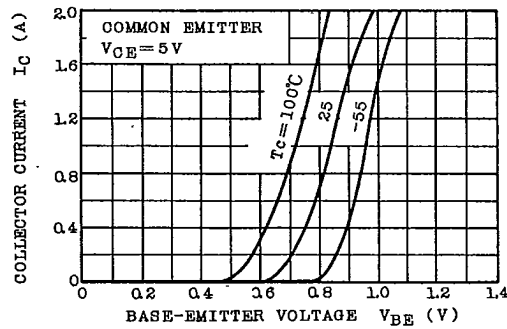
V<sub>CE(sat)</sub> - I<sub>C</sub>



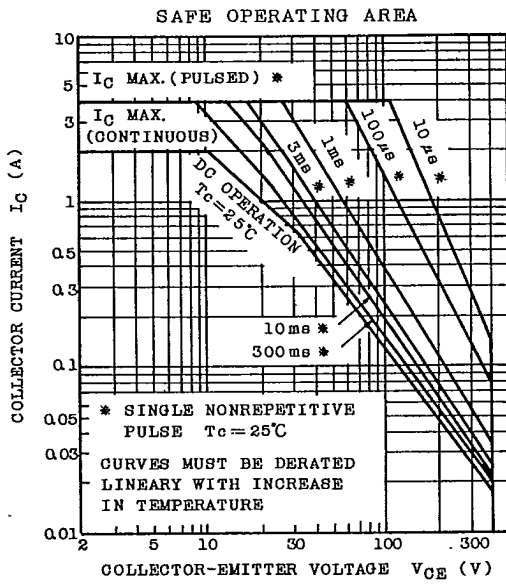
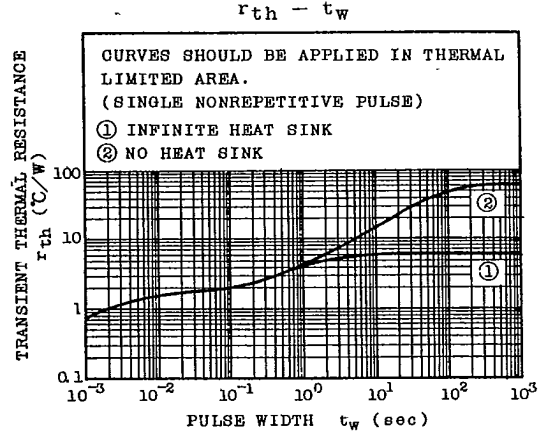
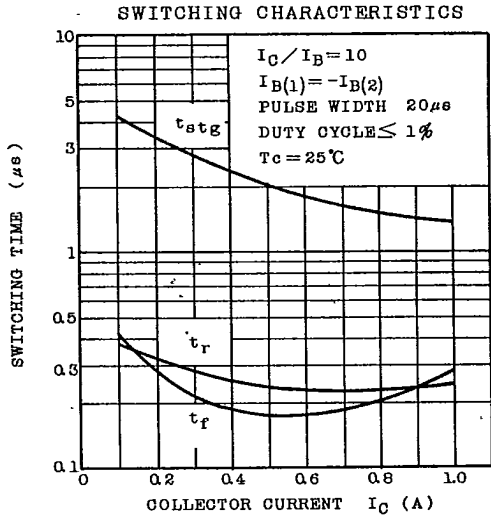
V<sub>BE(sat)</sub> - I<sub>C</sub>



I<sub>C</sub> - V<sub>BE</sub>



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