SILICON NPN TRIPLE DIFFUSED TYPE

2SC3051

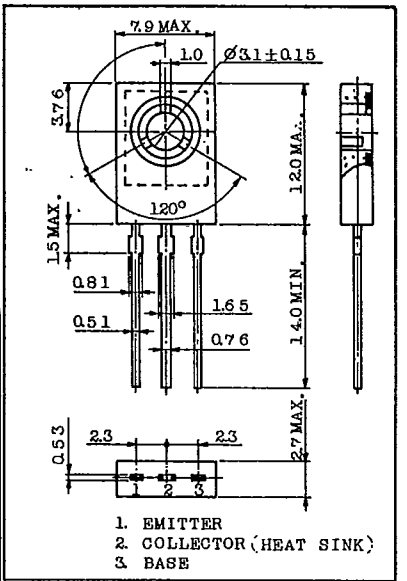
SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING APPLICATIONS.

HIGH SPEED DC-DC CONVERTER APPLICATION.

FEATURES:

- Excellent Switching Times
  : t_r=1.0μs(Max.), t_f=1.5μs(Max.) at I_C=0.5A
- High Collector Breakdown Voltage : V_{CEO}=400V

Unit in mm



JEDEC	TO-126
EIAJ	–
TOSHIBA	2-8F1A

Mounting Kit No. AC46C
Weight : 0.72g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	500	V
Collector-Emitter Voltage		V_{CEO}	400	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	0.8	A
	Pulse	I_{CP}	1.5	
Base Current		I_B	0.5	A
Collector Power Dissipation	Ta=25°C	P_C	1.0	W
	Tc=25°C		10	
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	-55～150	°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB}=400V, I_E=0	–	–	100	μA
Emitter Cut-off Current		I_{EBO}	V_{EB}=7V, I_C=0	–	–	100	μA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	I_C=1mA, I_E=0	500	–	–	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C=10mA, I_B=0	400	–	–	V
DC Current Gain		h_{FE}	V_{CE}=5V, I_C=0.1A	20	–	100	
			V_{CE}=5V, I_C=0.5A	10	–	–	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C=0.1A, I_B=0.01A	–	–	0.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C=0.1A, I_B=0.01A	–	–	1.0	V
Switching Time	Rise Time	t_r	20μs INPUT I_{B1} OUTPUT I_{B2} 400Ω I_{B1}=−I_{B2}=0.05A V_{CC}≒200V DUTY CYCLE≦1%	–	–	1.0	μs
	Storage Time	t_{stg}		–	–	2.5	
	Fall Time	t_f		–	–	1.5	

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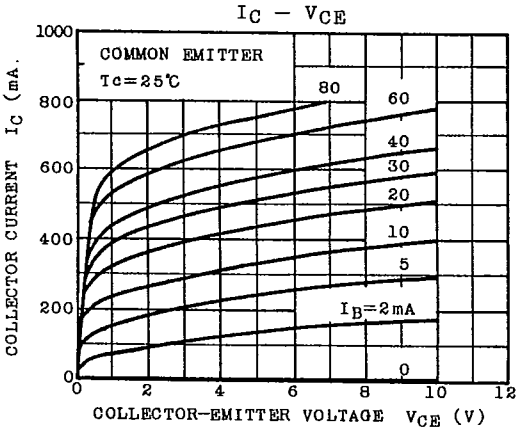
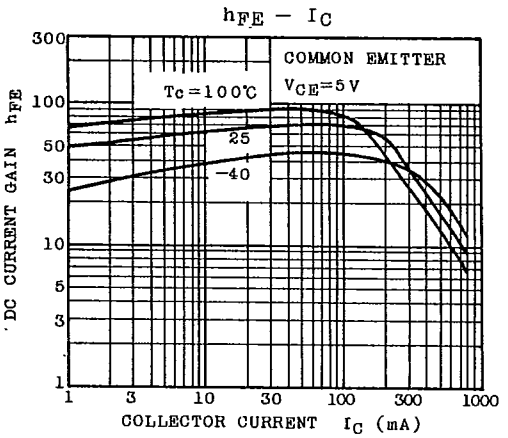
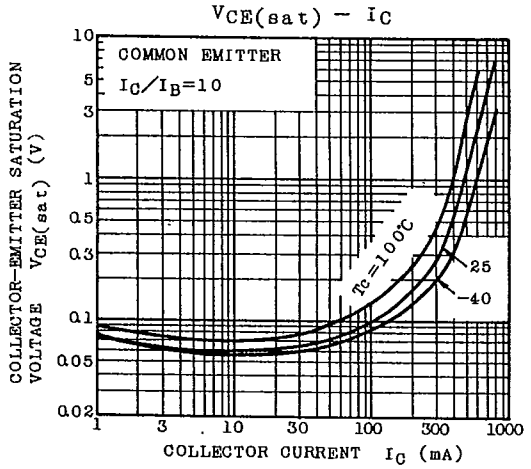
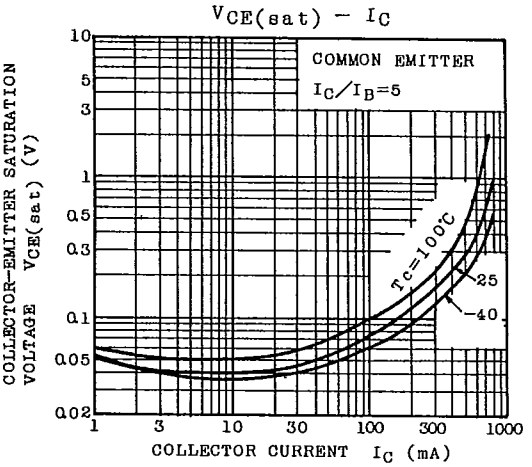
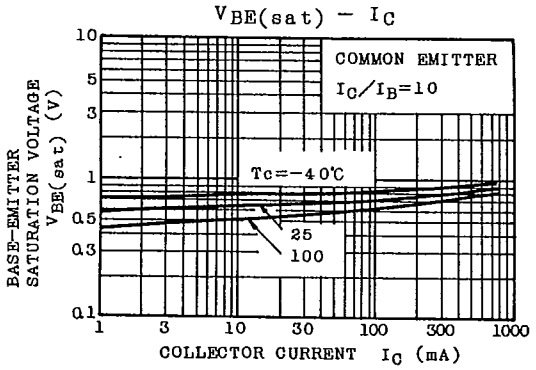
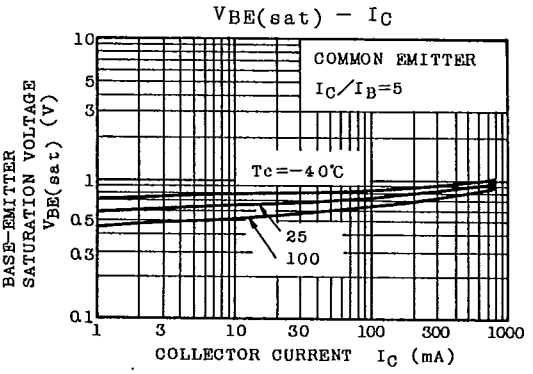

$I_C - V_{CE}$
COMMON EMITTER
Tc=25℃
80
60
40
30
20
10
5
I_B=2mA
0
COLLECTOR CURRENT I_C (mA)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)


$h_{FE} - I_C$
COMMON EMITTER
V_{CE}=5V
Tc=100℃
25
−40
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (mA)


$V_{CE(sat)} - I_C$
COMMON EMITTER
I_C/I_B=10
Tc=100℃
25
−40
COLLECTOR-EMITTER SATURATION VOLTAGE $V_{CE(sat)}$ (V)
COLLECTOR CURRENT I_C (mA)


$V_{CE(sat)} - I_C$
COMMON EMITTER
I_C/I_B=5
Tc=100℃
25
−40
COLLECTOR-EMITTER SATURATION VOLTAGE $V_{CE(sat)}$ (V)
COLLECTOR CURRENT I_C (mA)


$V_{BE(sat)} - I_C$
COMMON EMITTER
I_C/I_B=10
Tc=−40℃
25
100
BASE-EMITTER SATURATION VOLTAGE $V_{BE(sat)}$ (V)
COLLECTOR CURRENT I_C (mA)


$V_{BE(sat)} - I_C$
COMMON EMITTER
I_C/I_B=5
Tc=−40℃
25
100
BASE-EMITTER SATURATION VOLTAGE $V_{BE(sat)}$ (V)
COLLECTOR CURRENT I_C (mA)

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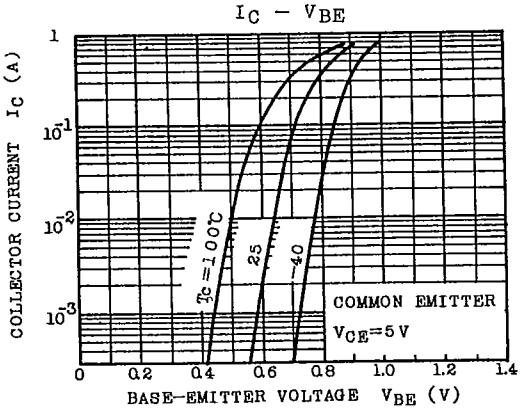
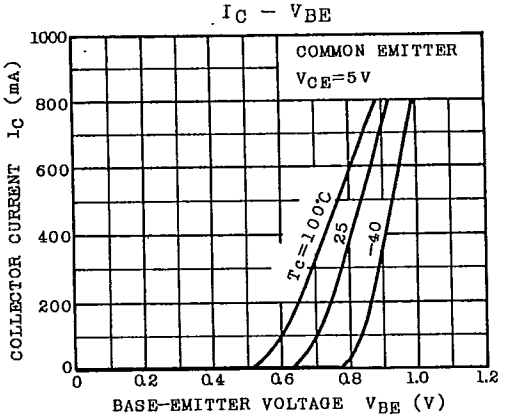
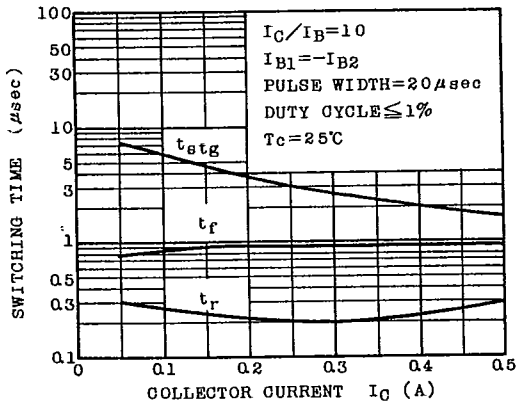
$I_C - V_{BE}$



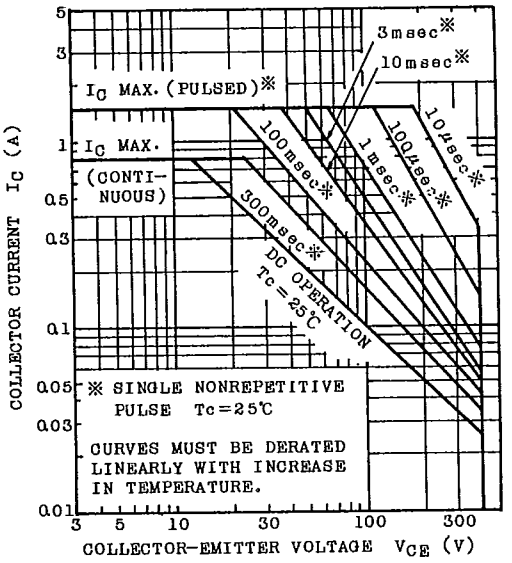
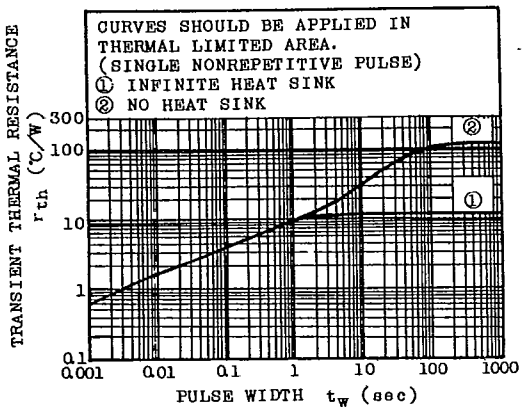
$I_C - V_{BE}$



SWITCHING CHARACTERISTICS



SAFE OPERATING AREA



$r_{th} - t_w$