

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD1411A

HIGH CURRENT SWITCHING APPLICATIONS

POWER AMPLIFIER APPLICATIONS

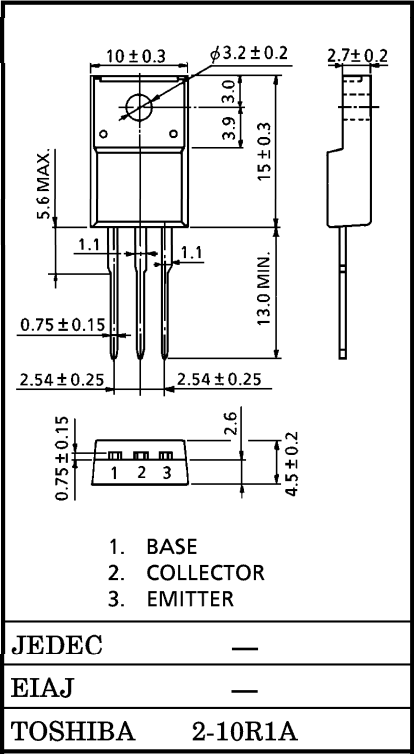
- Low Saturation Voltage :  $V_{CE(sat)}=0.5V$  (Max.) at  $I_C=4A$
- Complementary to 2SB1018A

MAXIMUM RATINGS (Ta = 25°C)

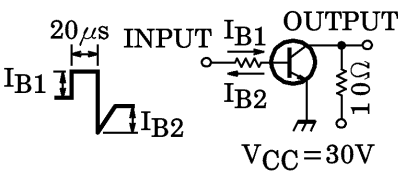
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	100	V
Collector-Emitter Voltage		$V_{CEO}$	80	V
Emitter-Base Voltage		$V_{EBO}$	5	V
Collector Current		$I_C$	7	A
Base Current		$I_B$	1	A
Collector Power Dissipation	Ta = 25°C	$P_C$	2.0	W
	Tc = 25°C		30	
Junction Temperature		$T_j$	150	°C
Storage Temperature Range		$T_{stg}$	-55~150	°C

INDUSTRIAL APPLICATIONS

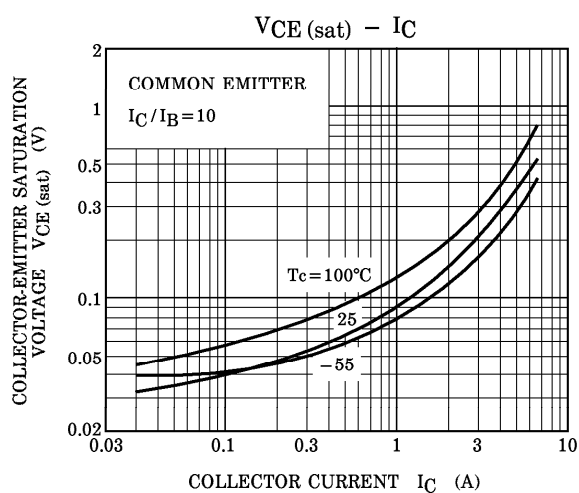
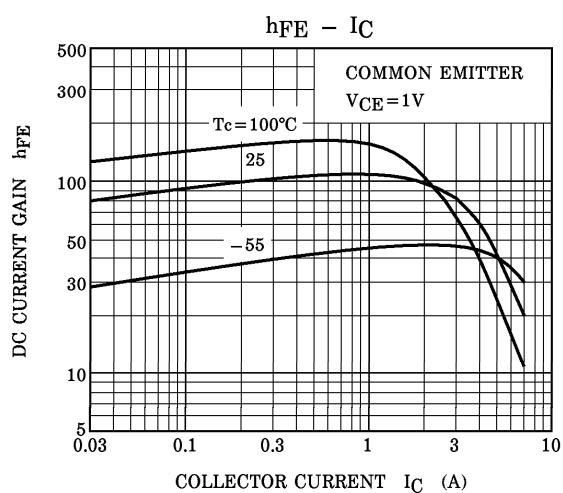
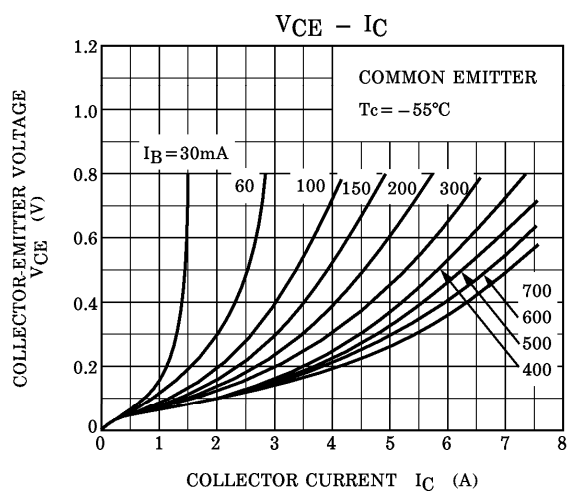
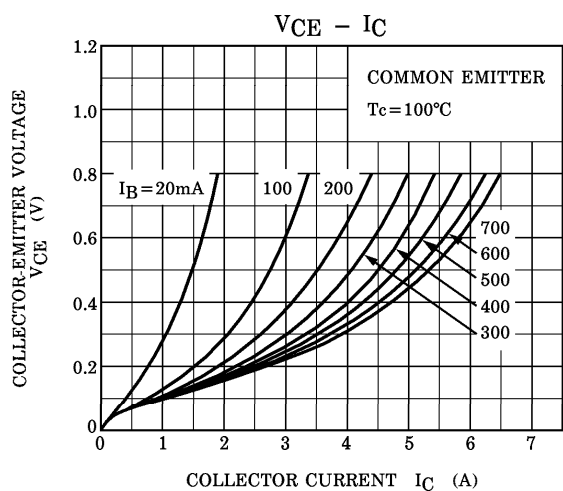
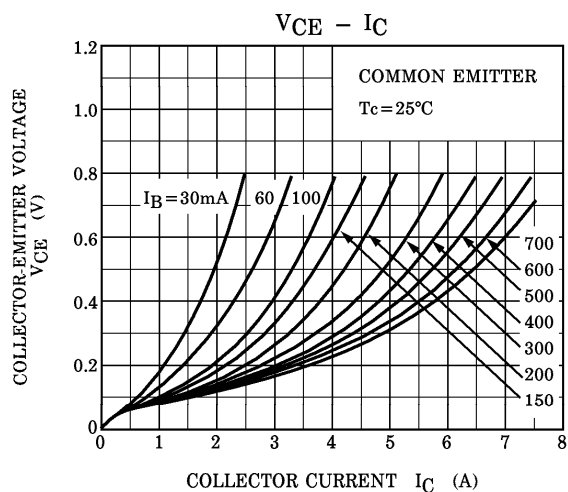
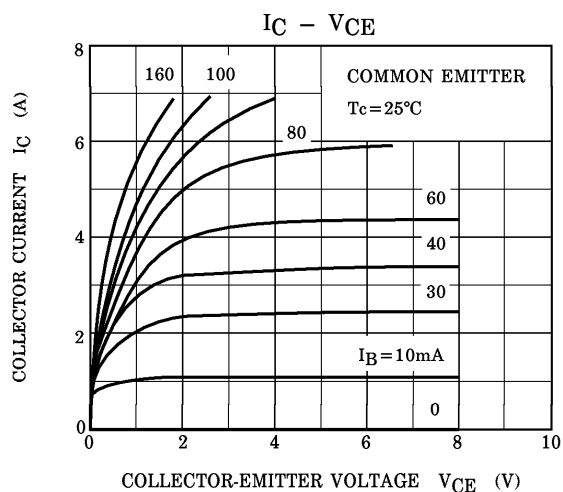
Unit in mm

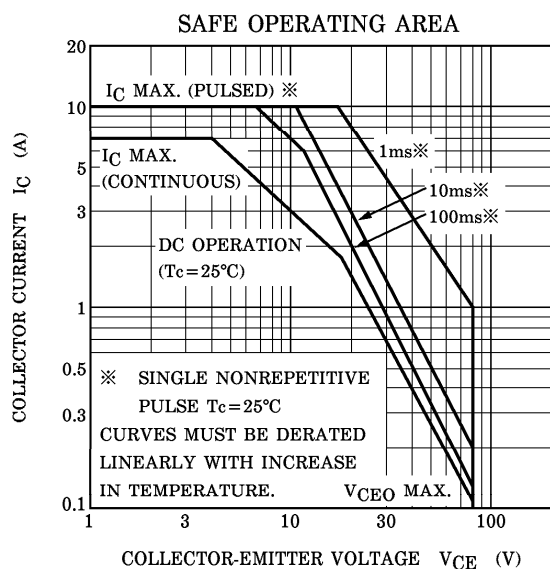
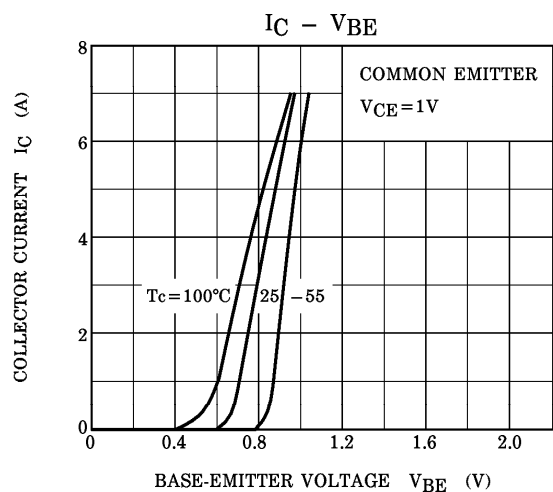
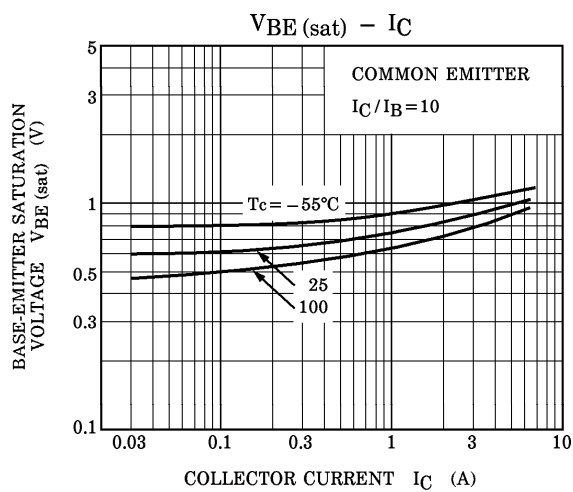


## ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		$I_{CBO}$	$V_{CB}=100V, I_E=0$	—	—	5	$\mu A$
Emitter Cut-off Current		$I_{EBO}$	$V_{EB}=5V, I_C=0$	—	—	5	$\mu A$
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C=50mA, I_B=0$	80	—	—	V
DC Current Gain	$h_{FE(1)}$ (Note)		$V_{CE}=1V, I_C=1A$	70	—	240	
	$h_{FE(2)}$		$V_{CE}=1V, I_C=4A$	30	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C=4A, I_B=0.4A$	—	0.25	0.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C=4A, I_B=0.4A$	—	0.9	1.4	V
Transition Frequency		$f_T$	$V_{CE}=4V, I_C=1A$	—	10	—	MHz
Collector Output Capacitance		$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$	—	200	—	pF
Switching Time	Turn-on Time	$t_{on}$	 <p><math>I_{B1} = -I_{B2} = 0.3A</math>, DUTY CYCLE <math>\leq 1\%</math></p>	—	0.4	—	$\mu s$
	Storage Time	$t_{stg}$		—	2.5	—	
	Fall Time	$t_f$		—	0.5	—	

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





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