

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE (DARLINGTON POWER)

# 2SB1020A

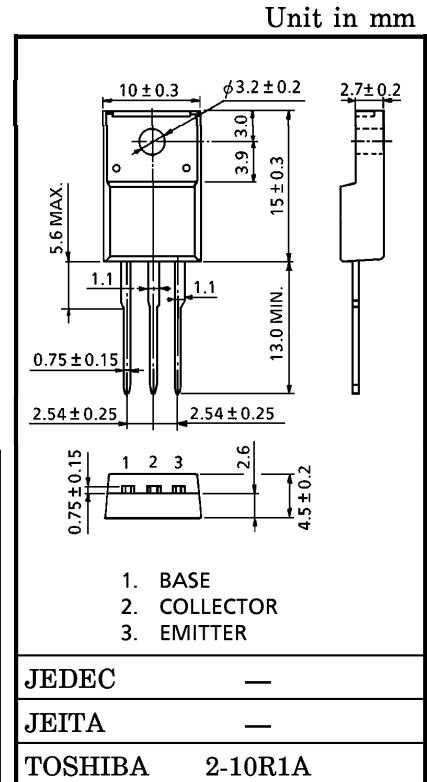
HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

- High DC Current Gain  
:  $h_{FE} = 2000$  (Min.) (at  $V_{CE} = -3V$ ,  $I_C = -3A$ )
- Low Saturation Voltage  
:  $V_{CE(sat)} = -1.5V$  (Max.) (at  $I_C = -3A$ )
- Complementary to 2SD1415A

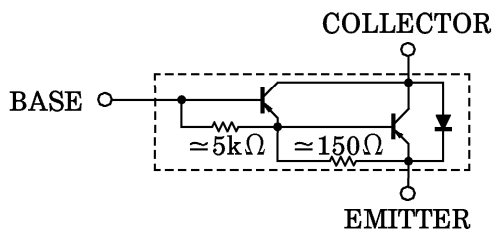
MAXIMUM RATINGS ( $T_c = 25^\circ C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	-100	V
Collector-Emitter Voltage		$V_{CEO}$	-100	V
Emitter-Base Voltage		$V_{EBO}$	-5	V
Collector Current	DC	$I_C$	-7	A
	Pulse	$I_{CP}$	-10	
Base Current		$I_B$	-0.7	A
Collector Power Dissipation	$T_a = 25^\circ C$	$P_C$	2.0	W
	$T_c = 25^\circ C$		30	
Junction Temperature		$T_j$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ C$



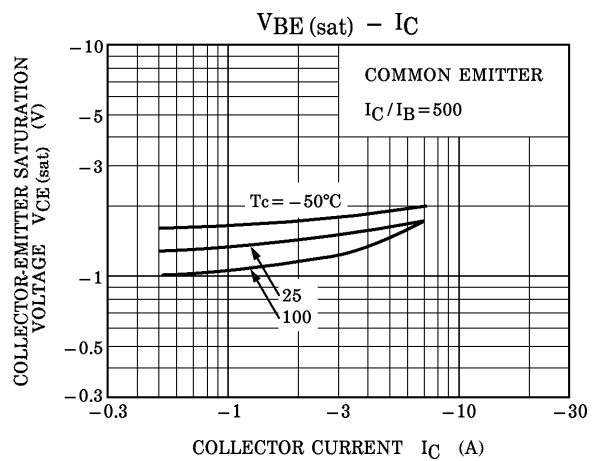
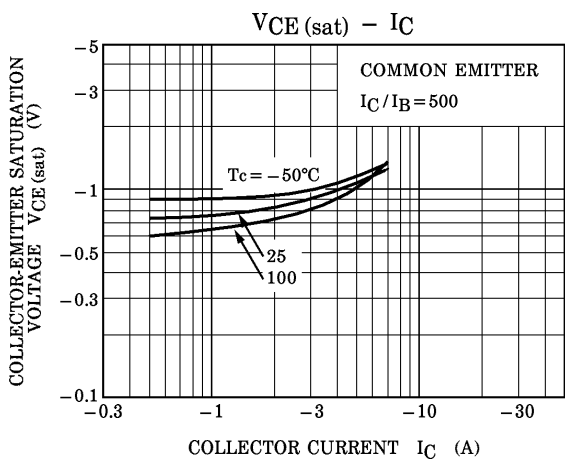
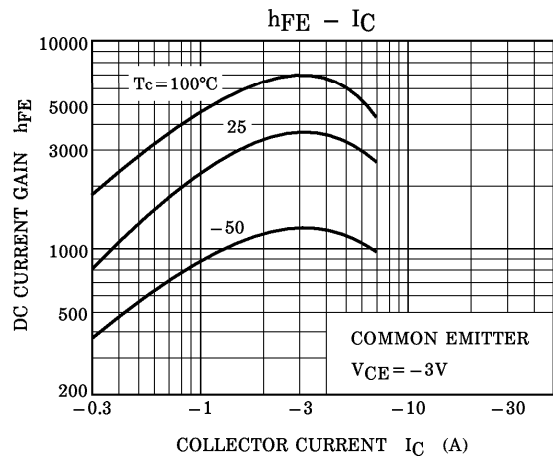
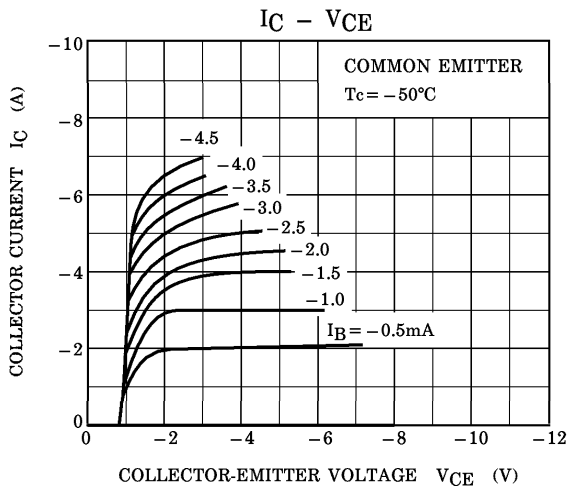
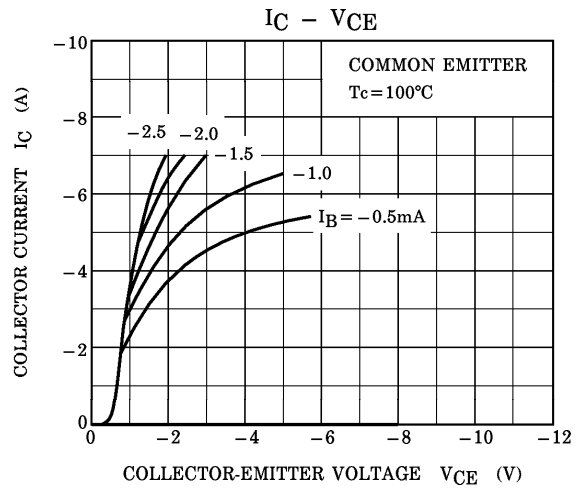
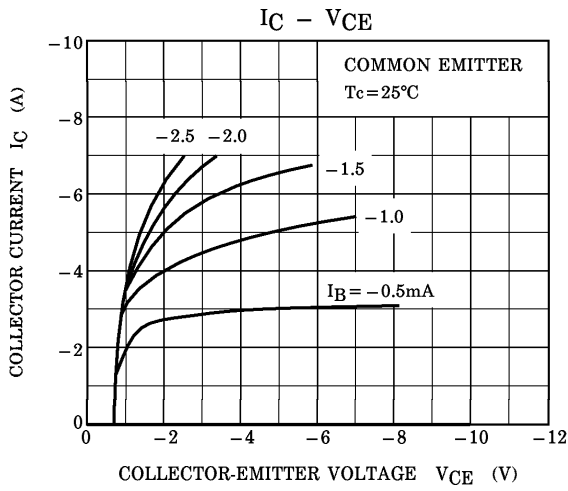
Weight : 1.7g (Typ.)

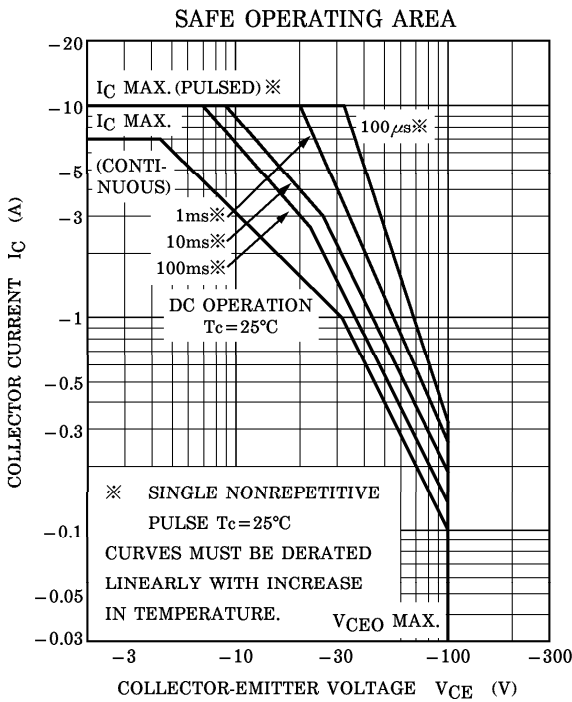
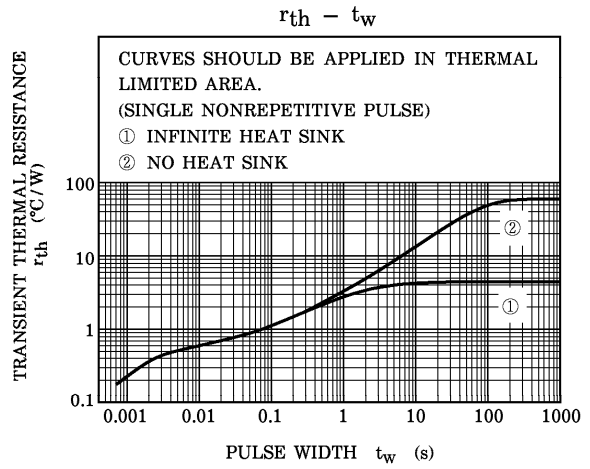
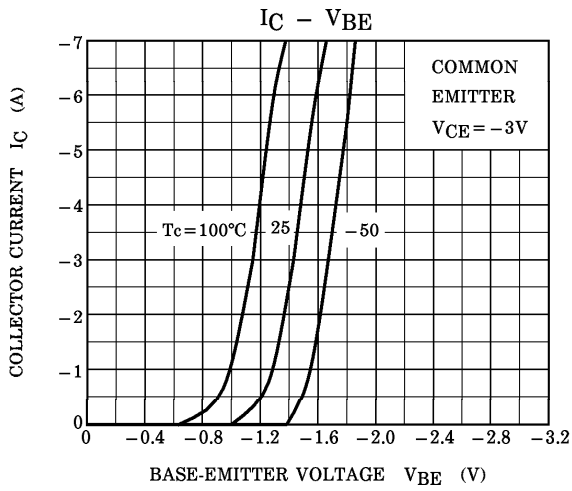
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (T<sub>c</sub> = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I <sub>CBO</sub>	V <sub>CB</sub> = -100V, I <sub>E</sub> = 0	—	—	-100	μA
Emitter Cut-off Current		I <sub>EBO</sub>	V <sub>EB</sub> = -5V, I <sub>C</sub> = 0	—	—	-4.0	mA
Collector-Emitter Breakdown Voltage		V <sub>(BR)CEO</sub>	I <sub>C</sub> = -50mA, I <sub>B</sub> = 0	-100	—	—	V
DC Current Gain		h <sub>FE</sub> (1)	V <sub>CE</sub> = -3V, I <sub>C</sub> = -3A	2000	—	15000	
		h <sub>FE</sub> (2)	V <sub>CE</sub> = -3V, I <sub>C</sub> = -7A	1000	—	—	
Collector-Emitter Saturation Voltage		V <sub>CE(sat)</sub> (1)	I <sub>C</sub> = -3A, I <sub>B</sub> = -6mA	—	-0.95	-1.5	V
		V <sub>CE(sat)</sub> (2)	I <sub>C</sub> = -7A, I <sub>B</sub> = -14mA	—	-1.3	-2.0	
Base-Emitter Saturation Voltage		V <sub>BE(sat)</sub>	I <sub>C</sub> = -3A, I <sub>B</sub> = -6mA	—	-1.55	-2.5	V
Switching Time	Turn-on Time	t <sub>on</sub>	<p> <math>-I_{B1} = I_{B2} = 6\text{mA}</math>,  DUTY CYCLE <math>\leq 1\%</math> </p>	—	0.8	—	μs
	Storage Time	t <sub>stg</sub>		—	2.0	—	
	Fall Time	t <sub>f</sub>		—	2.5	—	





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