

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE (DARLINGTON POWER)

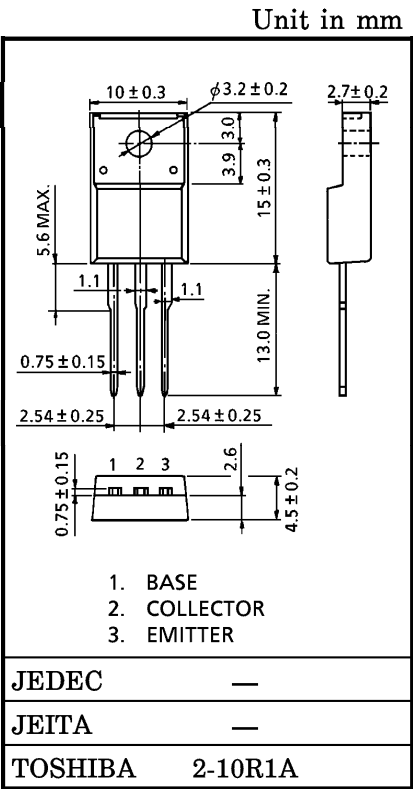
2SB1020A

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

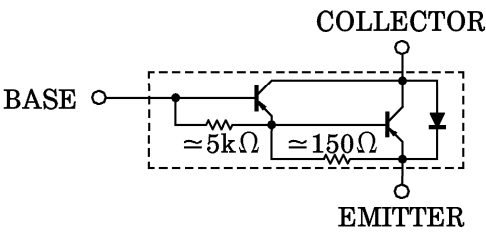
MAXIMUM RATINGS ($T_c = 25^{\circ}C$)

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	$^{\circ}C$

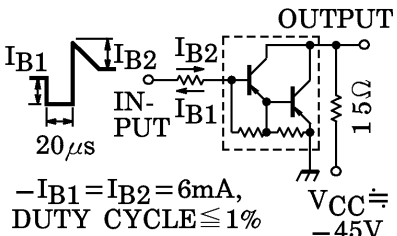


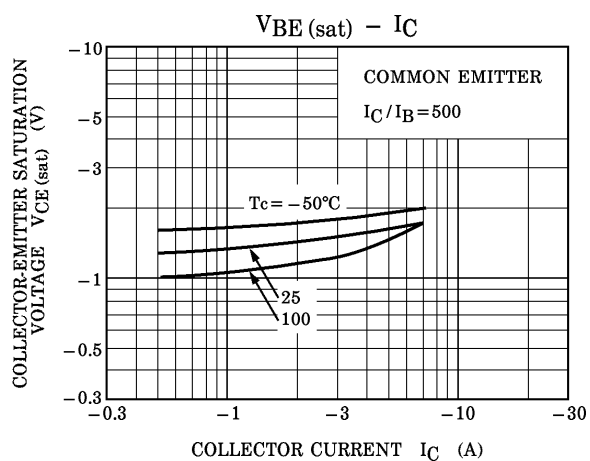
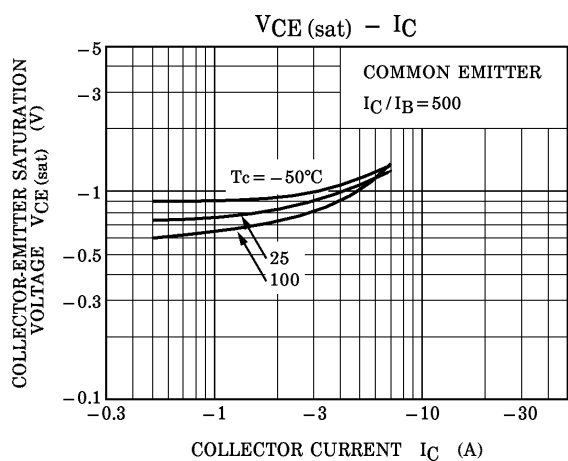
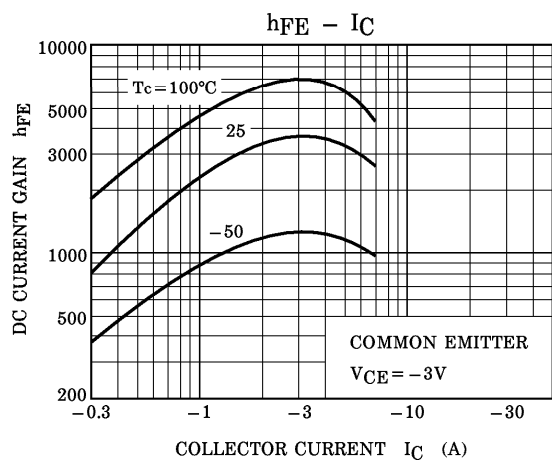
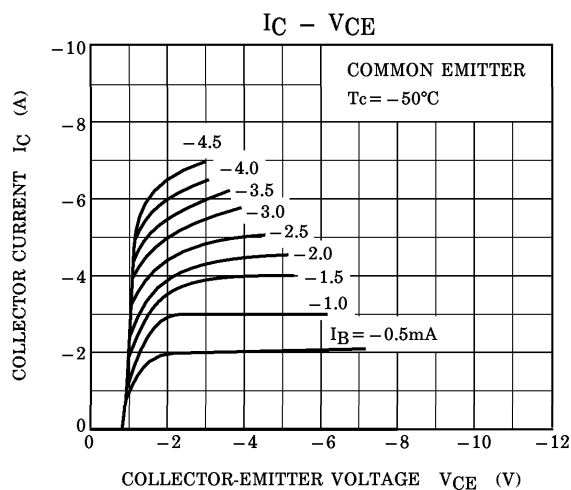
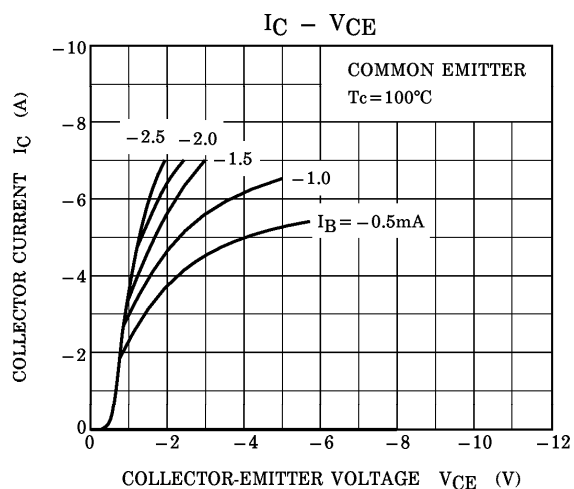
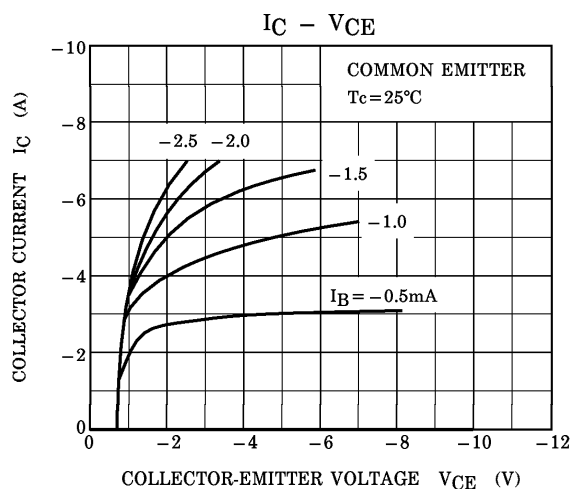
Weight : 1.7g (Typ.)

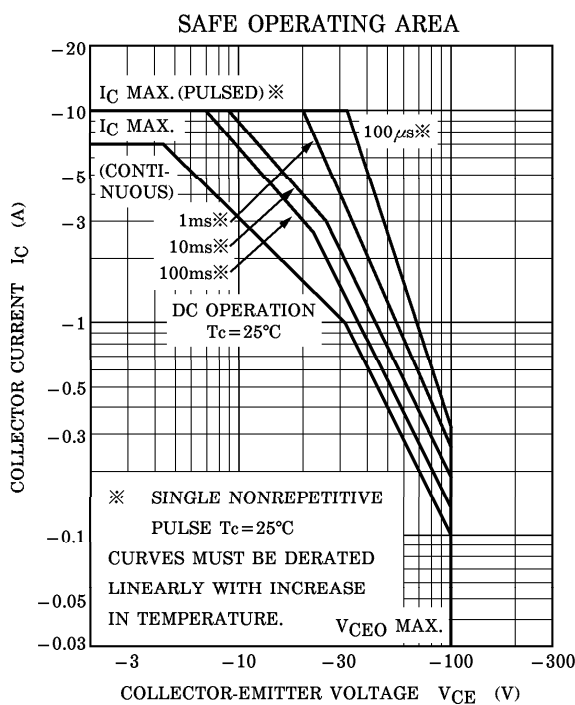
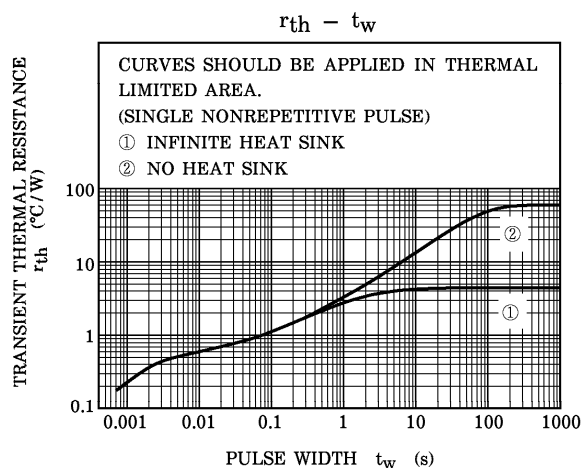
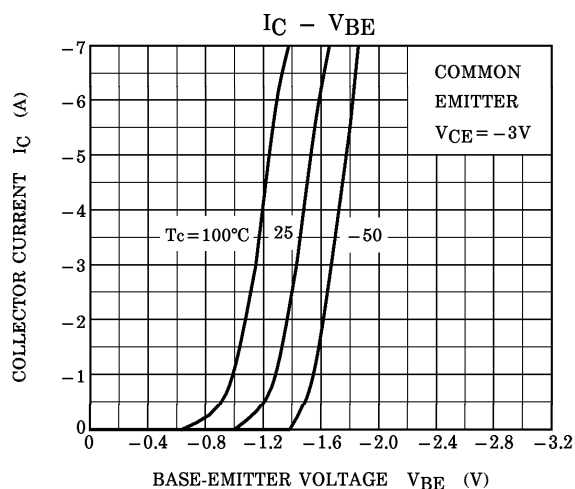
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS ($T_c = 25^\circ\text{C}$)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = -100\text{V}$, $I_E = 0$	—	—	-100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = -5\text{V}$, $I_C = 0$	—	—	-4.0	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -50\text{mA}$, $I_B = 0$	-100	—	—	V
DC Current Gain		$h_{FE}(1)$	$V_{CE} = -3\text{V}$, $I_C = -3\text{A}$	2000	—	15000	
		$h_{FE}(2)$	$V_{CE} = -3\text{V}$, $I_C = -7\text{A}$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}(1)$	$I_C = -3\text{A}$, $I_B = -6\text{mA}$	—	-0.95	-1.5	V
		$V_{CE(sat)}(2)$	$I_C = -7\text{A}$, $I_B = -14\text{mA}$	—	-1.3	-2.0	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = -3\text{A}$, $I_B = -6\text{mA}$	—	-1.55	-2.5	V
Switching Time	Turn-on Time	t_{on}	 I_{B1} I_{B2} I_{B2} I_{B1} IN-PUT $20\mu\text{s}$ $-I_{B1} = I_{B2} = 6\text{mA}$, DUTY CYCLE $\leq 1\%$ $V_{CC} = -45\text{V}$	—	0.8	—	μs
	Storage Time	t_{stg}		—	2.0	—	
	Fall Time	t_f		—	2.5	—	





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