

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE (DARLINGTON POWER)

# 2SB1020A

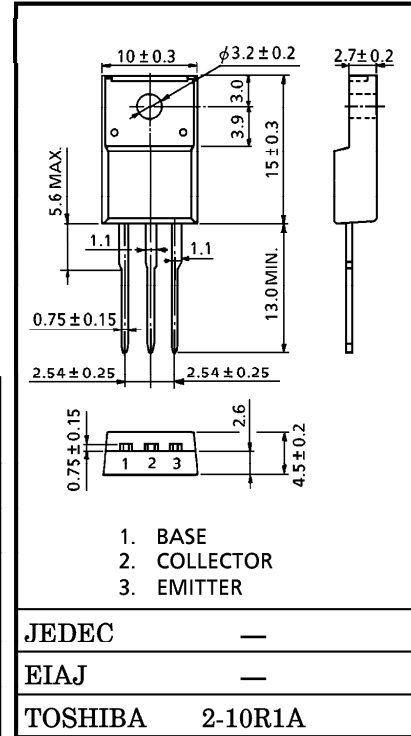
HIGH POWER SWITCHING APPLICATIONS

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

INDUSTRIAL APPLICATIONS

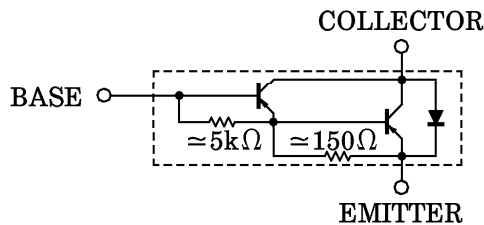
Unit in mm



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

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	$^\circ C$

EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

