

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (DARLINGTON)

2SD1415A

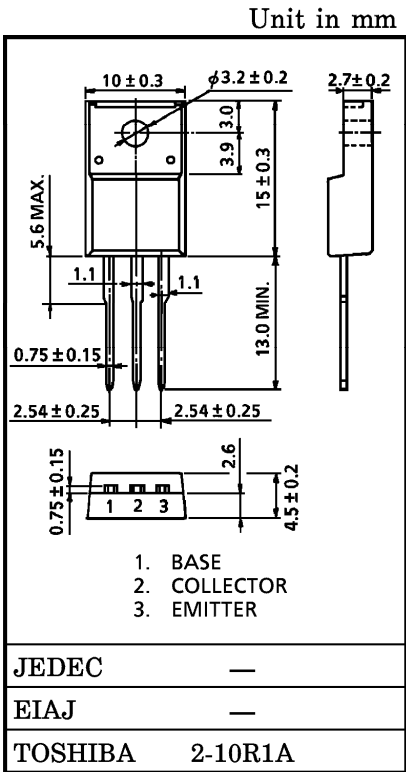
HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

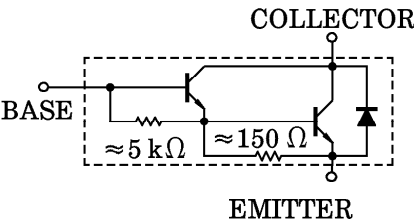
- High DC Current Gain
: $h_{FE} = 2000$ (Min.) ($V_{CE} = 3\text{ V}$, $I_C = 3\text{ A}$)
- Low Saturation Voltage : $V_{CE(sat)} = 1.5\text{ V}$ (Max.) ($I_C = 3\text{ A}$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	120	V
Collector-Emitter Voltage		V_{CEO}	100	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	7	A
	Pulse	I_{CP}	10	
Base Current		I_B	0.7	A
Collector Power Dissipation	$T_a = 25^\circ\text{C}$	P_C	2.0	W
	$T_c = 25^\circ\text{C}$		25	
Junction Temperature		T_j	150	$^\circ\text{C}$
Storage Temperature Range		T_{stg}	$-55\sim 150$	$^\circ\text{C}$



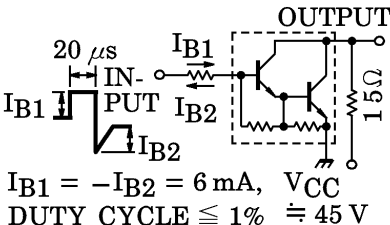
EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 100 \text{ V}, I_E = 0$	—	—	100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 6 \text{ V}, I_C = 0$	0.75	—	3.0	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	
		$h_{FE(2)}$	$V_{CE} = 3 \text{ V}, I_C = 6 \text{ A}$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 3 \text{ A}, I_B = 6 \text{ mA}$	—	0.9	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 3 \text{ A}, I_B = 6 \text{ mA}$	—	1.5	2.0	V
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2} = 6 \text{ mA}, V_{CC} \doteq 45 \text{ V}$ DUTY CYCLE $\leq 1\%$	—	0.3	—	μs
	Storage Time	t_{stg}		—	5.1	—	
	Fall Time	t_f		—	0.6	—	

