

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SD1947A

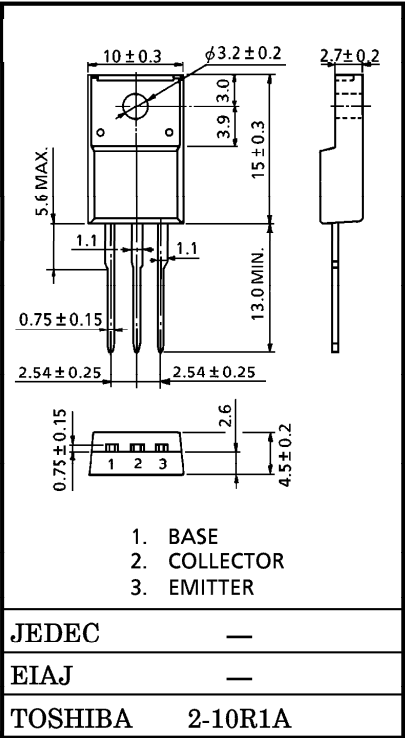
HIGH CURRENT SWITCHING APPLICATIONS
LAMP, SOLENOID DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

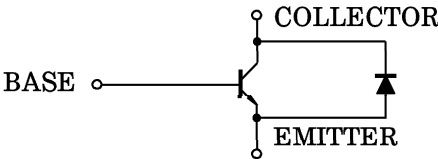
- High DC Current Gain : $h_{FE}=500\sim1500$ ($I_C=1A$)
- Low Collector Saturation Voltage
: $V_{CE(sat)}=0.3V$ (Max.) ($I_C=5A$)

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}	7	V
Collector Current	DC	I_C	10	A
	Pulse	I_{CP}	15	
Base Current		I_B	2	A
Collector Power Dissipation	$T_a = 25^{\circ}C$	P_C	2.0	W
	$T_c = 25^{\circ}C$		40	
Junction Temperature		T_j	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	$-55\sim150$	$^{\circ}C$



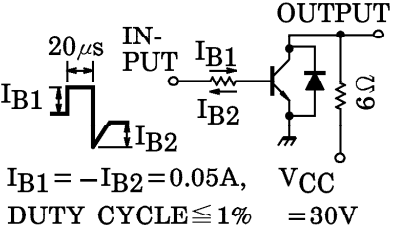
EQUIVALENT CIRCUIT



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ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = 100V, I_E = 0$	—	—	10	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 7V, I_C = 0$	—	—	10	μA
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 50mA, I_B = 0$	100	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = 1V, I_C = 1A$	500	—	1500	
		$h_{FE(2)}$	$V_{CE} = 1V, I_C = 5A$	150	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	$I_C = 5A, I_B = 0.05A$	—	—	0.3	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = 5A, I_B = 0.05A$	—	—	1.2	V
Collector-Emitter Forward Voltage		V_{ECF}	$I_E = 5A, I_B = 0$	—	—	2.0	V
Transition Frequency		f_T	$V_{CE} = 5V, I_C = 1A$	—	70	—	MHz
Collector Output Capacitance		C_{ob}	$V_{CB} = 10V, I_E = 0, f = 1MHz$	—	160	—	pF
Switching Time	Turn-on Time	t_{on}	 20μs IN-PUT I_{B1} I_{B2} OUTPUT 6Ω 9V $V_{CC} = 30V$ $I_{B1} = -I_{B2} = 0.05A$, DUTY CYCLE $\leq 1\%$	—	0.5	—	μs
	Storage Time	t_{stg}		—	6.0	—	
	Fall Time	t_f		—	1.0	—	

