

TOSHIBA TRANSISTOR SILICON NPN EPITAXIAL TYPE

2SD1947A

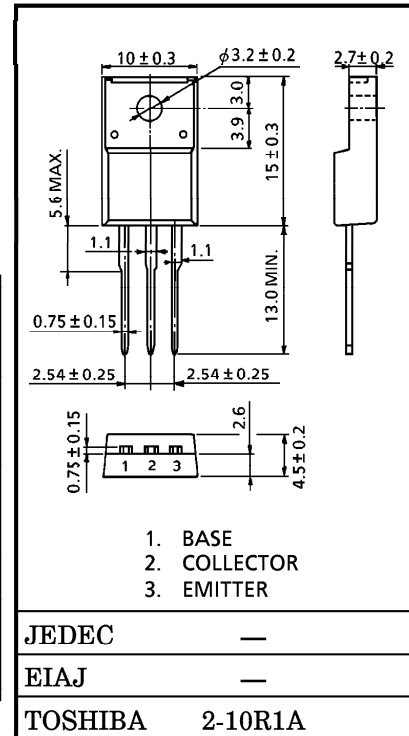
HIGH CURRENT SWITCHING APPLICATIONS
LAMP, SOLENOID DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS
Unit in mm

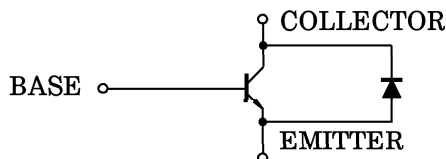
- High DC Current Gain : $h_{FE} = 500 \sim 1500$ ($I_C = 1A$)
- Low Collector Saturation Voltage : $V_{CE(sat)} = 0.3V$ (Max.) ($I_C = 5A$)

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}	-55~150	$^\circ C$



EQUIVALENT CIRCUIT



961001FAA1

- TOSHIBA is continually working to improve the quality and the reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to observe standards of safety, and to avoid situations in which a malfunction or failure of a TOSHIBA product could cause loss of human life, bodily injury or damage to property. In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent products specifications. Also, please keep in mind the precautions and conditions set forth in the TOSHIBA Semiconductor Reliability Handbook.
- The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by TOSHIBA CORPORATION for any infringements of intellectual property or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any intellectual property or other rights of TOSHIBA CORPORATION or others.
- The information contained herein is subject to change without notice.

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V _{CB} = 100V, I _E = 0	—	—	10	μA
Emitter Cut-off Current		IEBO	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		hFE (1)	V _{CE} = 1V, I _C = 1A	500	—	1500	
		hFE (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}	<p> $I_{B1} = -I_{B2} = 0.05A$, DUTY CYCLE $\leq 1\%$ $V_{CC} = 30V$ </p>	—	0.5	—	μs
	Storage Time	t _{stg}		—	6.0	—	
	Fall Time	t _f		—	—	1.0	

