

TOSHIBA

2SD2204

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD2204

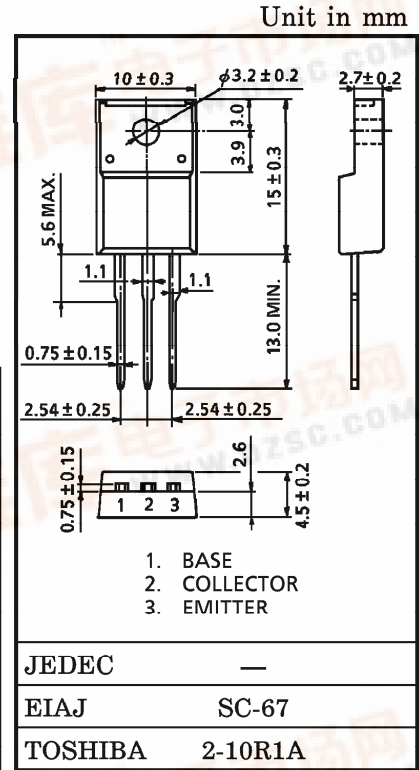
HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

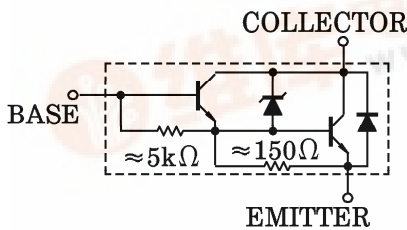
- High DC Current Gain : $h_{FE} = 2000$ (Min.)
($V_{CE} = 3V, I_C = 1.5A$)
- Low Saturation Voltage : $V_{CE(sat)} = 1.5V$ (Max.) ($I_C = 1.5A$)

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

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	65 ± 10	V
Collector-Emitter Voltage		V_{CEO}	65 ± 10	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	4	A
	Pulse	I_{CP}	6	
Base Current		I_B	0.5	A
Collector Power Dissipation		P_C	$T_a = 25^\circ C$	W
			$T_c = 25^\circ C$	
Junction Temperature		T_j	150	$^\circ C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^\circ C$



EQUIVALENT CIRCUIT



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● 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.

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● 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		I_{CBO}	$V_{CB} = 45V, I_E = 0$	—	—	100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 6V, I_C = 0$	—	—	2.5	mA
Collector-Emitter Breakdown Voltage		$V_{(BR) CEO}$	$I_C = 10mA, I_B = 0$	55	65	75	V
DC Current Gain		$h_{FE} (1)$	$V_{CE} = 3V, I_C = 1.5A$	2000	—	15000	
		$h_{FE} (2)$	$V_{CE} = 3V, I_C = 3A$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE (sat) (1)}$	$I_C = 1.5A, I_B = 3mA$	—	—	1.5	V
		$V_{CE (sat) (2)}$	$I_C = 3A, I_B = 12mA$	—	—	2.0	
Base-Emitter Saturation Voltage		$V_{BE (sat)}$	$I_C = 1.5A, I_B = 3mA$	—	—	2.0	V
Switching Time	Turn-on Time	t_{on}	<p> $I_{B1} = -I_{B2} = 3mA,$ $DUTY\ CYCLE \leq 1\%$ $V_{CC} = 30V$ </p>	—	1.0	—	μs
	Storage Time	t_{stg}		—	5.0	—	
	Fall Time	t_f		—	—	2.0	

