

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

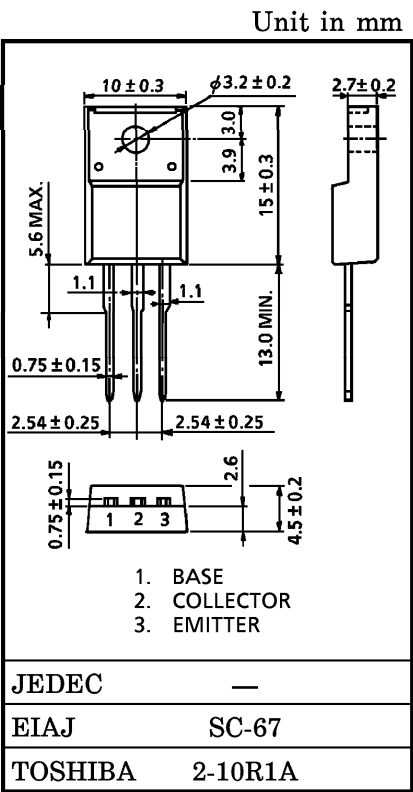
2SD2204

HIGH POWER SWITCHING APPLICATIONS
HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

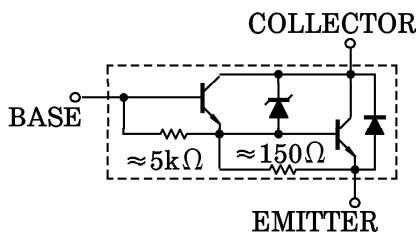
- High DC Current Gain : $h_{FE}=2000$ (Min.)
($V_{CE}=3V$, $I_C=1.5A$)
- Low Saturation Voltage : $V_{CE(sat)}=1.5V$ (Max.) ($I_C=1.5A$)

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

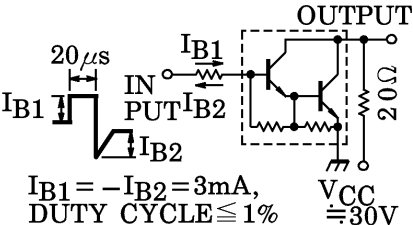
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	65 ± 10	V
Collector-Emitter Voltage		V_{CEO}	65 ± 10	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	4	A
	Pulse	I_{CP}	6	
Base Current		I_B	0.5	A
Collector Power Dissipation	$T_a = 25^{\circ}C$	P_C	2.0	W
	$T_c = 25^{\circ}C$		25	
Junction Temperature		T_j	150	$^{\circ}C$
Storage Temperature Range		T_{stg}	$-55 \sim 150$	$^{\circ}C$

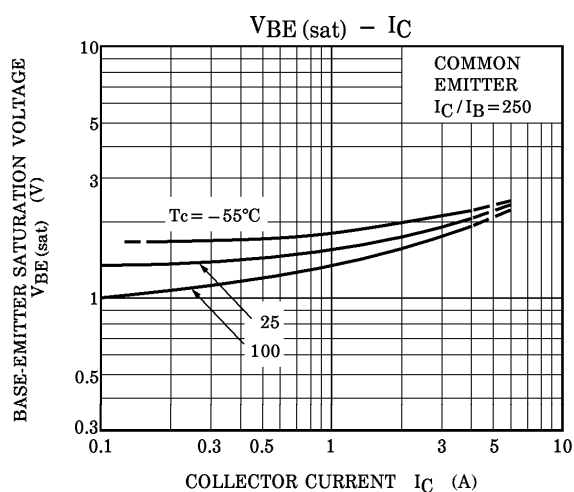
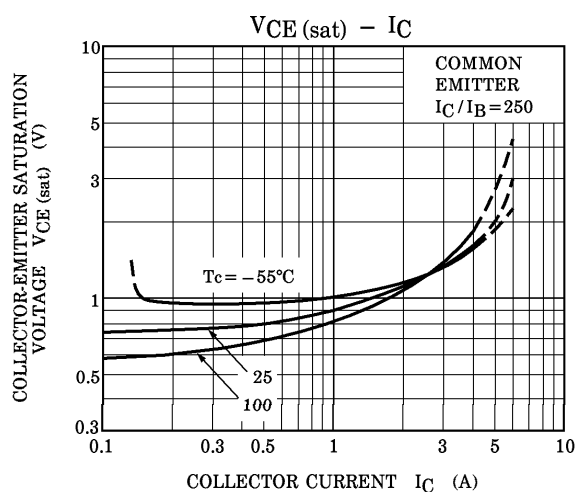
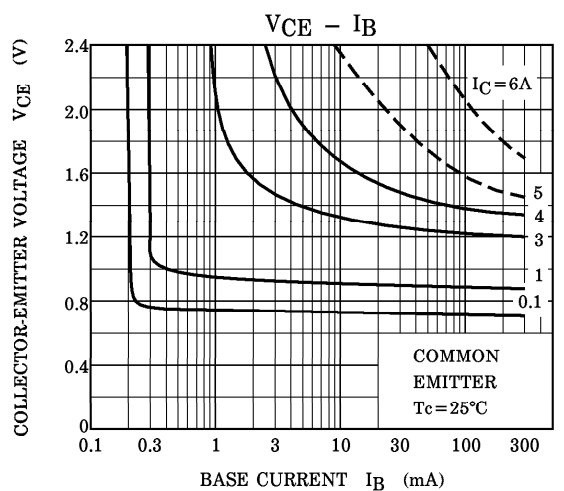
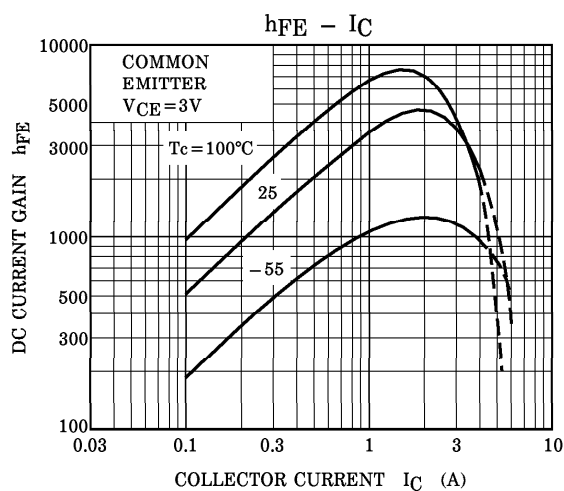
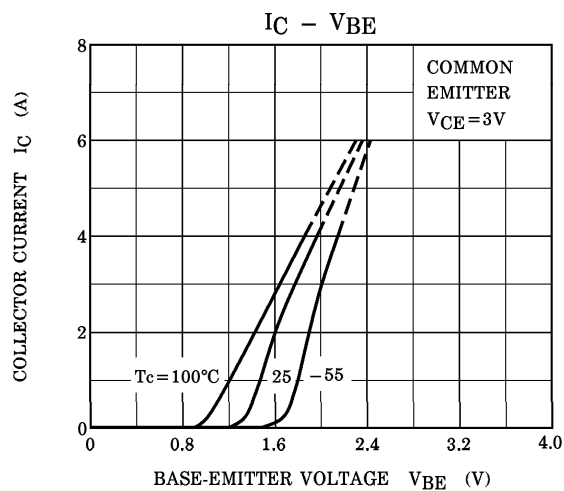
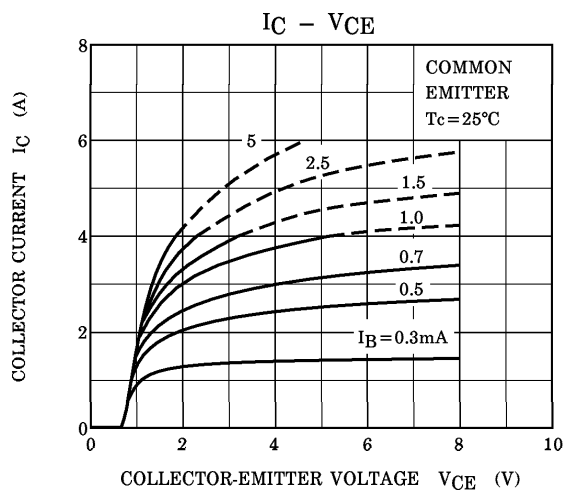


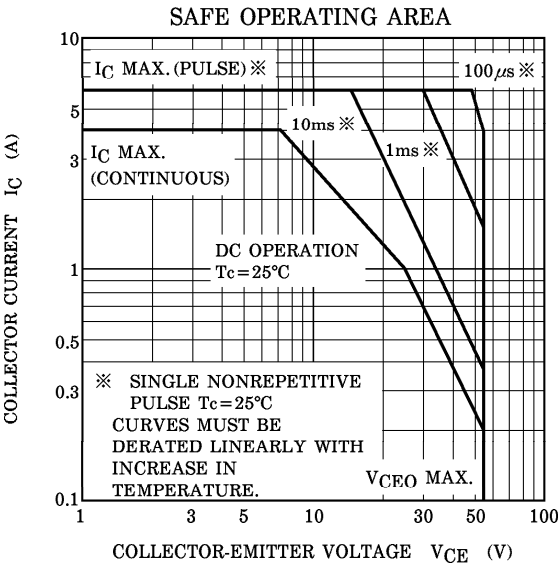
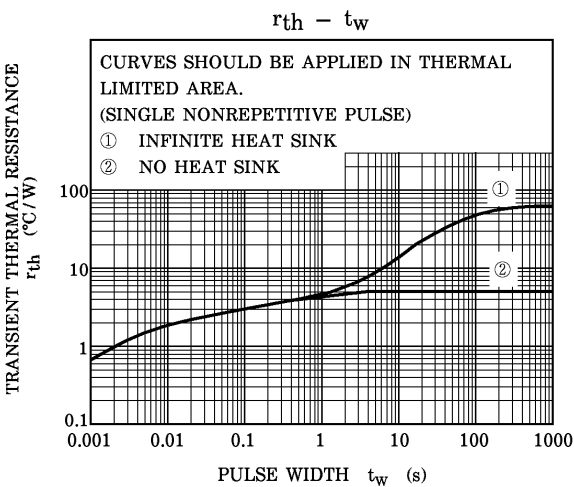
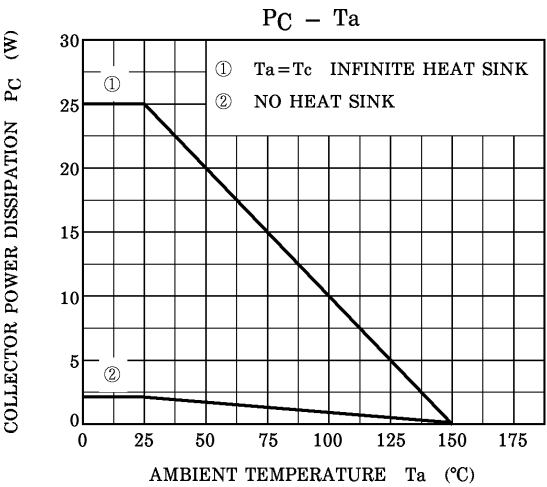
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

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





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