TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

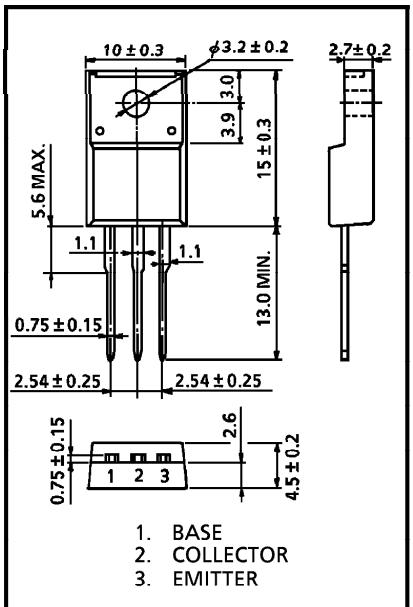
2SD2204

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)

Unit in mm

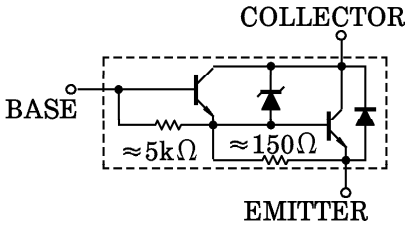


JEDEC	—
EIAJ	SC-67
TOSHIBA	2-10R1A

MAXIMUM RATINGS (Ta = 25°C)

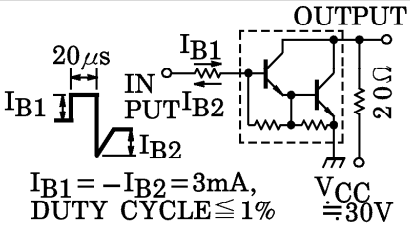
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	65 ± 10	V
Collector-Emitter Voltage		V_{CEO}	65 ± 10	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	4	A
	Pulse	I_{CP}	6	
Base Current		I_B	0.5	A
Collector Power Dissipation	Ta = 25°C	P_C	2.0	W
	Tc = 25°C		25	
Junction Temperature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

EQUIVALENT CIRCUIT

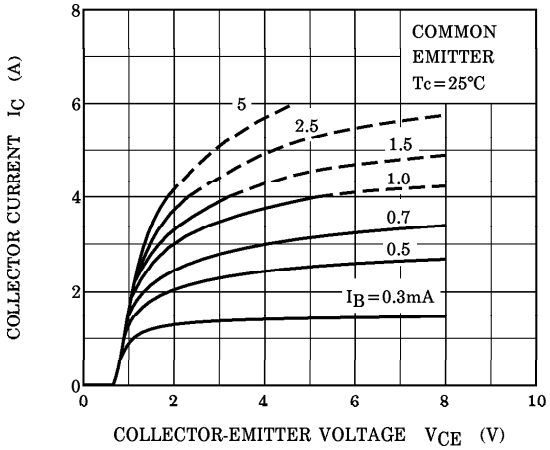


961001EAA1

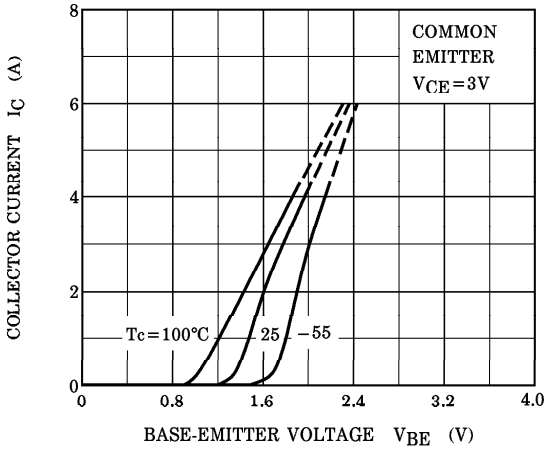
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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}		—	1.0	—	μs
	Storage Time	t_{stg}		—	5.0	—	
	Fall Time	t_f		—	2.0	—	

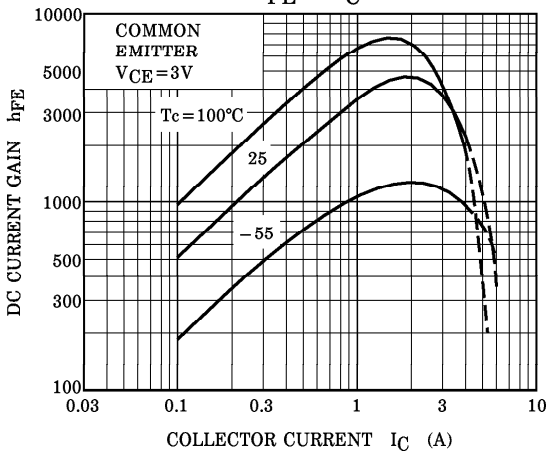
I_C – V_{CE}



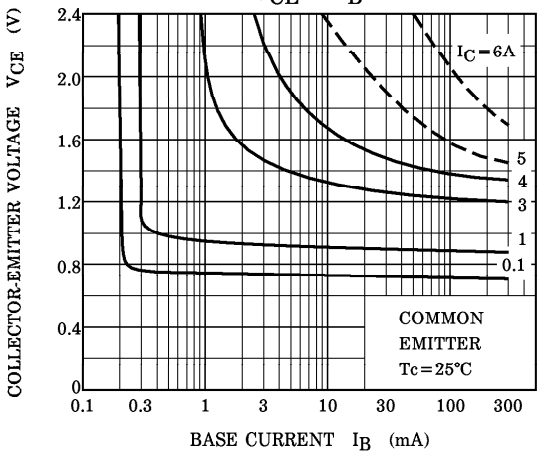
I_C – V_{BE}



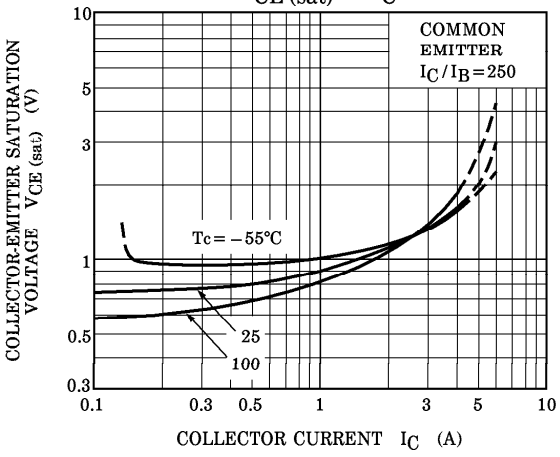
h_{FE} – I_C



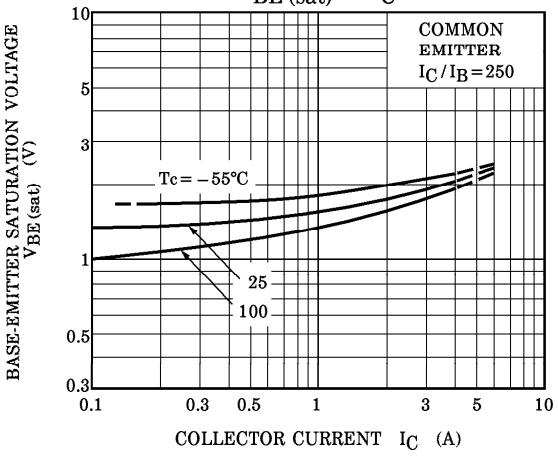
V_{CE} – I_B



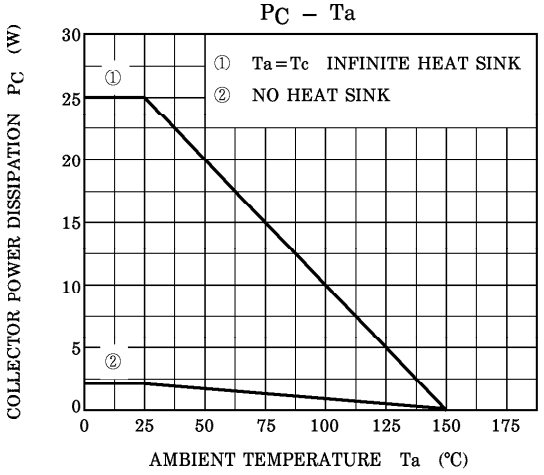
$V_{CE\,(sat)}$ – I_C



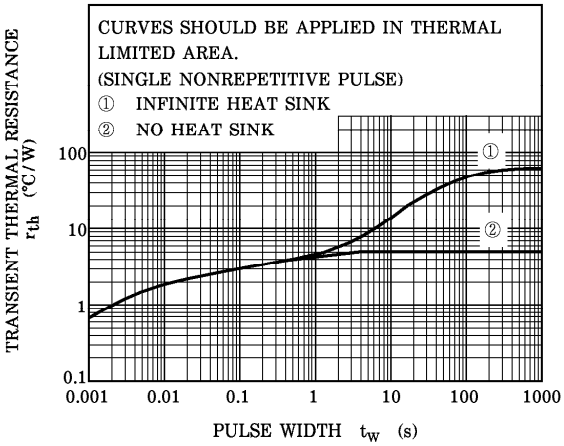
$V_{BE\,(sat)}$ – I_C



P_C – Ta



r_{th} – t_w



SAFE OPERATING AREA