TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE (DARLINGTON)

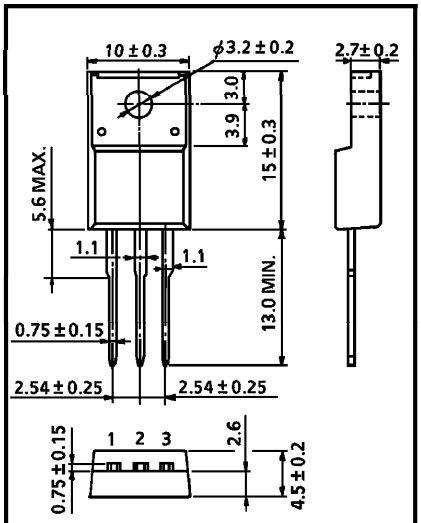
2SD1415A

HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

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

Unit in mm



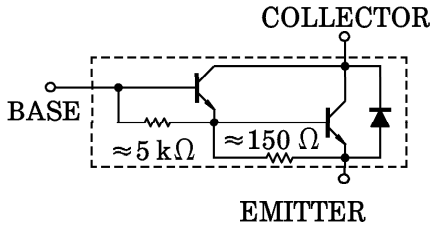
JEDEC	—
JEITA	—
TOSHIBA	2-10R1A

Weight : 1.7 g (Typ.)

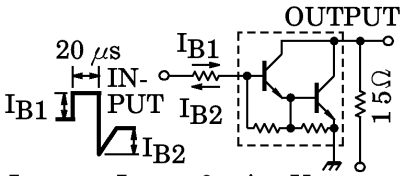
MAXIMUM RATINGS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	120	V
Collector-Emitter Voltage		V_{CEO}	100	V
Emitter-Base Voltage		V_{EBO}	6	V
Collector Current	DC	I_C	7	A
	Pulse	I_{CP}	10	
Base Current		I_B	0.7	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

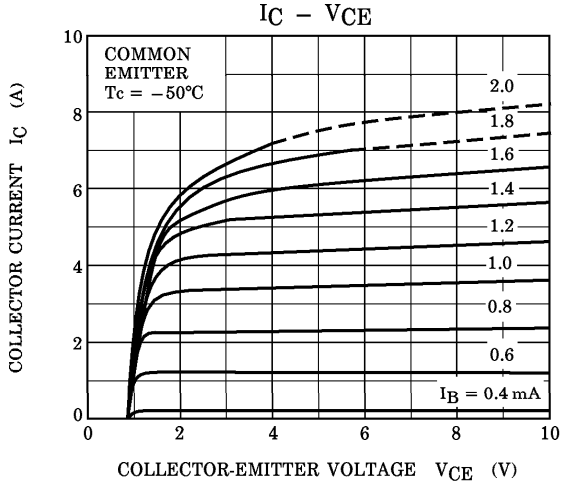
EQUIVALENT CIRCUIT



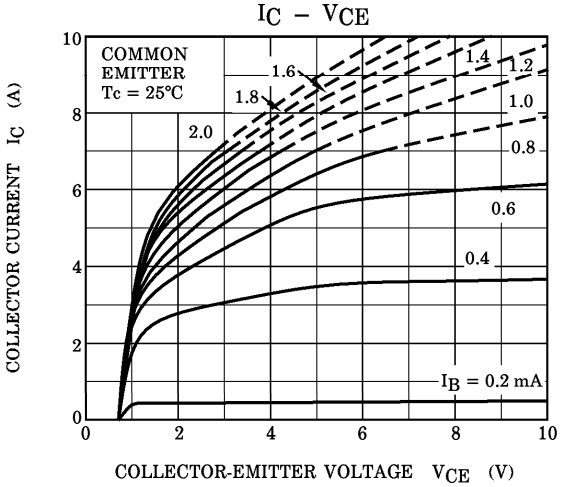
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 100 V, I_E = 0	—	—	100	μA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 6 V, I_C = 0	0.75	—	3.0	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C = 50 mA, I_B = 0	100	—	—	V
DC Current Gain		$h_{FE(1)}$	V_{CE} = 3 V, I_C = 3 A	2000	—	15000	
		$h_{FE(2)}$	V_{CE} = 3 V, I_C = 6 A	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 3 A, I_B = 6 mA	—	0.9	1.5	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C = 3 A, I_B = 6 mA	—	1.5	2.0	V
Switching Time	Turn-on Time	t_{on}	 $I_{B1} = -I_{B2}$ = 6 mA, V_{CC} ≒ 45 V DUTY CYCLE ≦ 1%	—	0.3	—	μs
	Storage Time	t_{stg}		—	5.1	—	
	Fall Time	t_f		—	0.6	—	

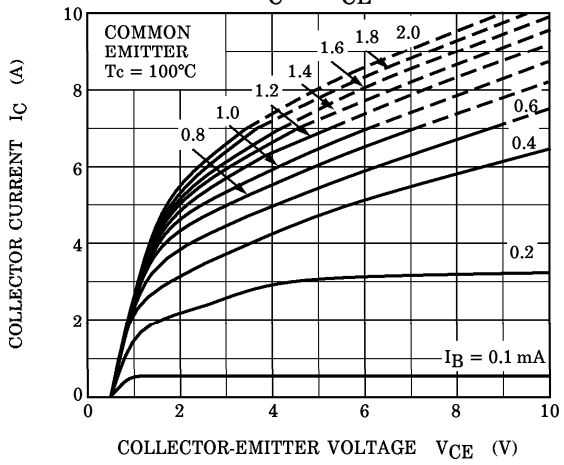
$I_C - V_{CE}$



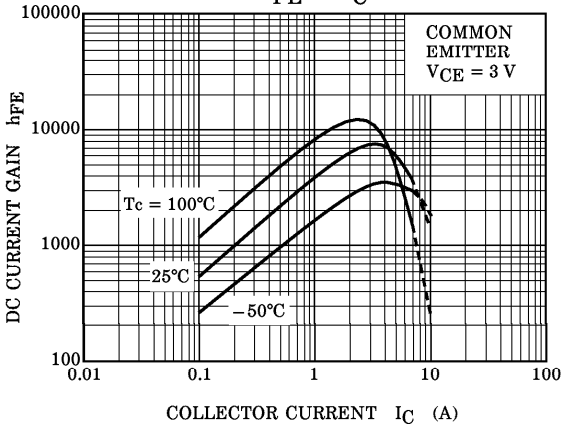
$I_C - V_{CE}$



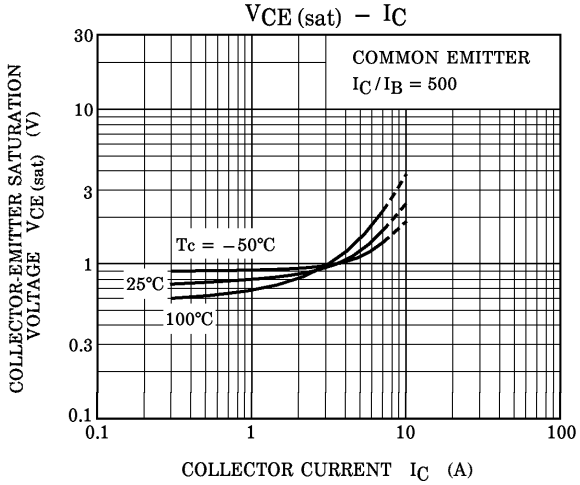
$I_C - V_{CE}$



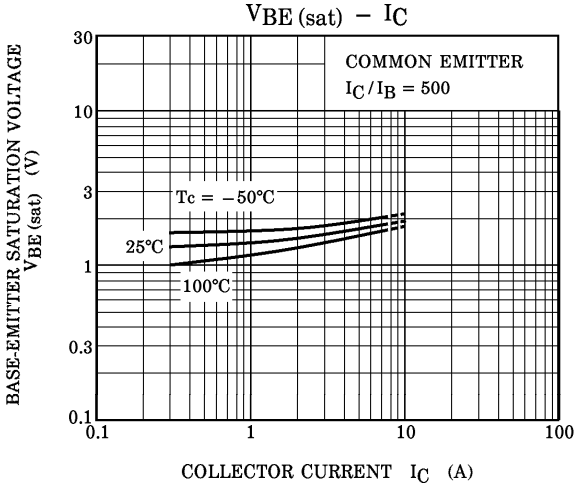
$h_{FE} - I_C$



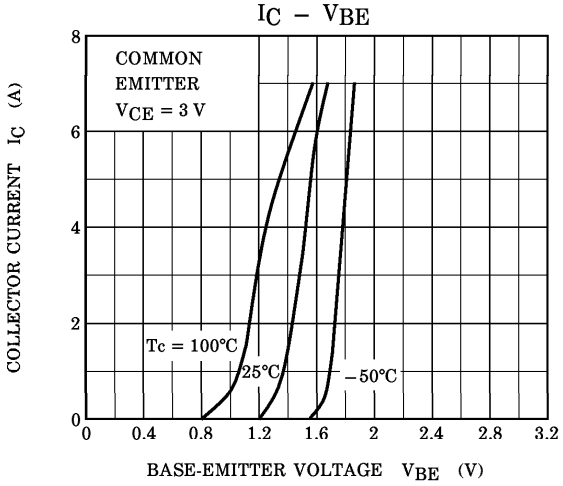
$V_{CE\,(sat)} - I_C$



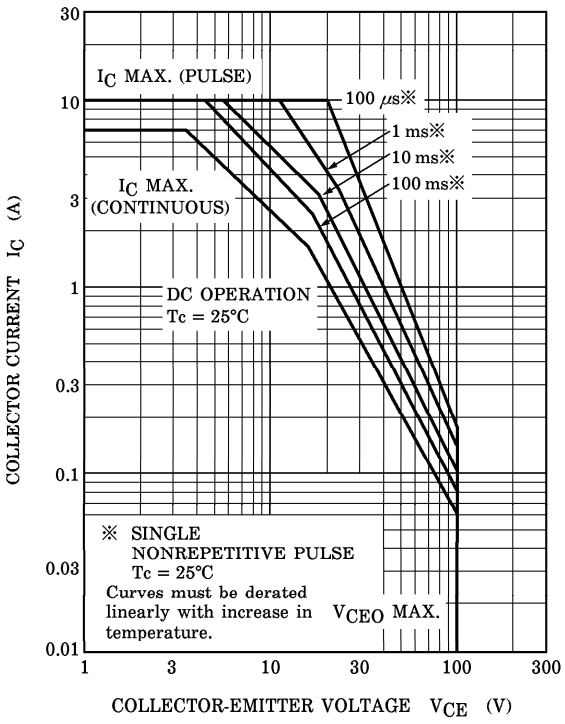
$V_{BE\,(sat)} - I_C$



I_C – V_{BE}



SAFE OPERATING AREA



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