TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE (DARLINGTON POWER)

2SB1020A

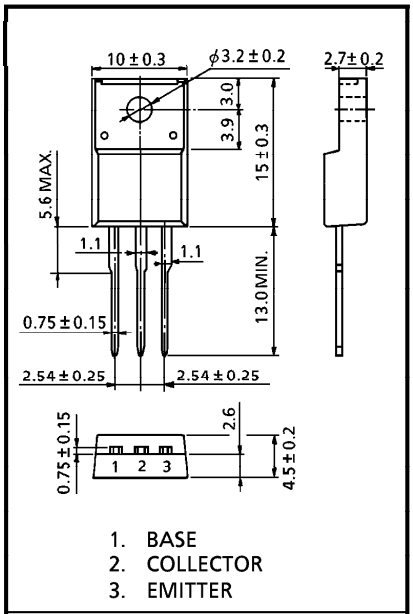
HIGH POWER SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

INDUSTRIAL APPLICATIONS

- High DC Current Gain
  : h_{FE} = 2000 (Min.) (at V_{CE} = −3V, I_C = −3A)
- Low Saturation Voltage
  : $V_{CE\ (sat)}$ = −1.5V (Max.) (at I_C = −3A)
- Complementary to 2SD1415A

Unit in mm



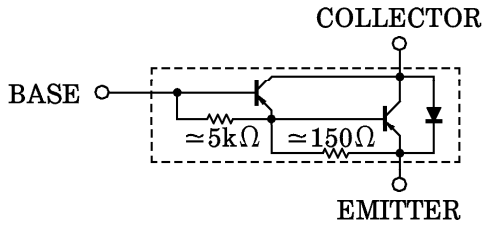
1. BASE
2. COLLECTOR
3. EMITTER

JEDEC	—
EIAJ	—
TOSHIBA	2-10R1A

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	−100	V
Collector-Emitter Voltage		V_{CEO}	−100	V
Emitter-Base Voltage		V_{EBO}	−5	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		30	
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

EQUIVALENT CIRCUIT



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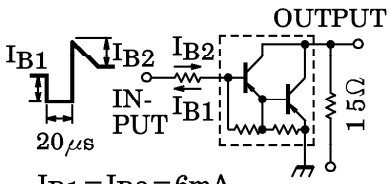
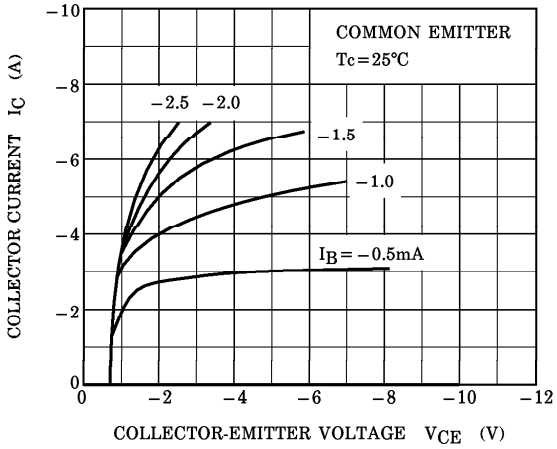
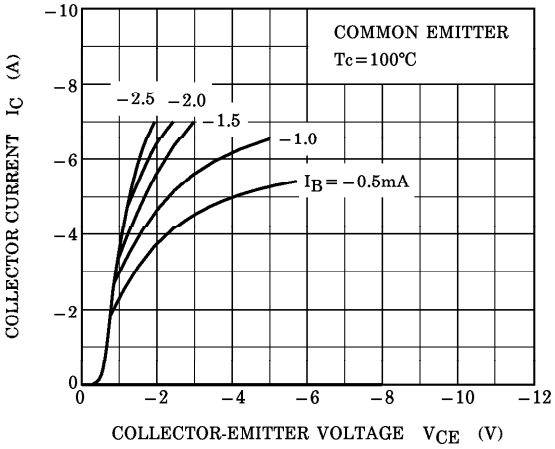
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	$V_{CB} = -100V$, $I_E = 0$	—	—	−100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = -5V$, $I_C = 0$	—	—	−4.0	mA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = -50mA$, $I_B = 0$	−100	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = -3V$, $I_C = -3A$	2000	—	15000	
		$h_{FE(2)}$	$V_{CE} = -3V$, $I_C = -7A$	1000	—	—	
Collector-Emitter Saturation Voltage		$V_{CE(sat)(1)}$	$I_C = -3A$, $I_B = -6mA$	—	−0.95	−1.5	V
		$V_{CE(sat)(2)}$	$I_C = -7A$, $I_B = -14mA$	—	−1.3	−2.0	
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	$I_C = -3A$, $I_B = -6mA$	—	−1.55	−2.5	V
Switching Time	Turn-on Time	t_{on}	 $-I_{B1} = I_{B2} = 6mA$, DUTY CYCLE ≦ 1% $V_{CC} \fallingdotseq -45V$	—	0.8	—	μs
	Storage Time	t_{stg}		—	2.0	—	
	Fall Time	t_f		—	2.5	—	

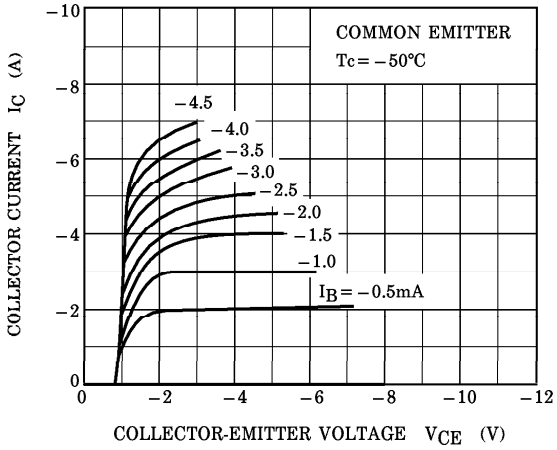
I_C – V_{CE}



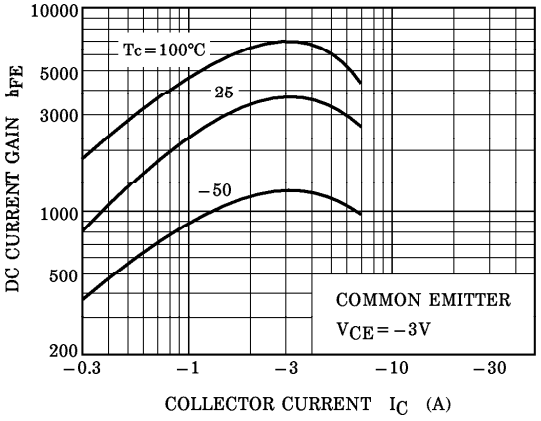
I_C – V_{CE}



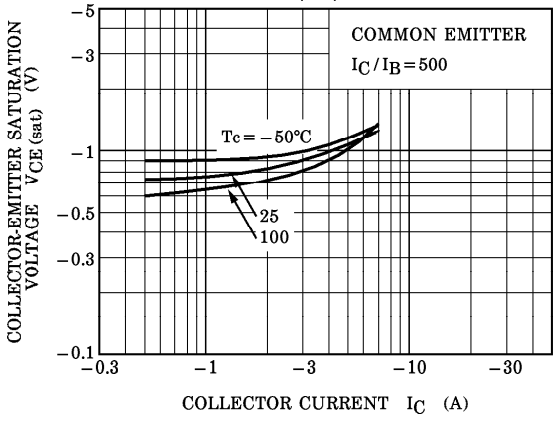
I_C – V_{CE}



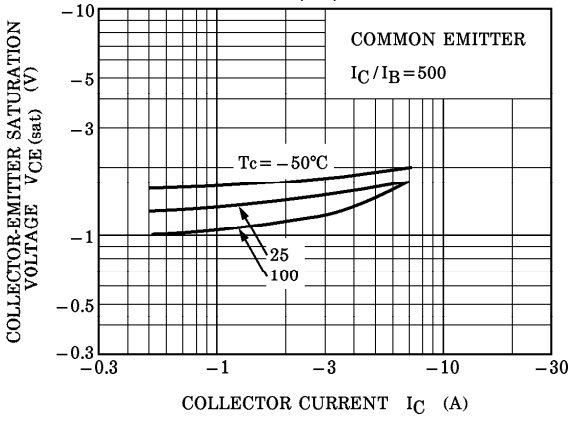
h_{FE} – I_C



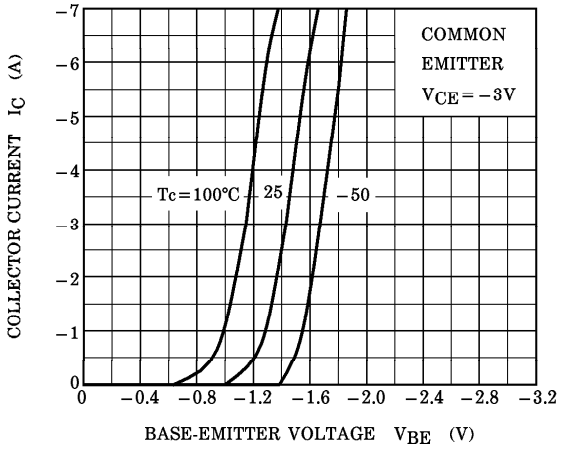
$V_{CE\,(sat)}$ – I_C



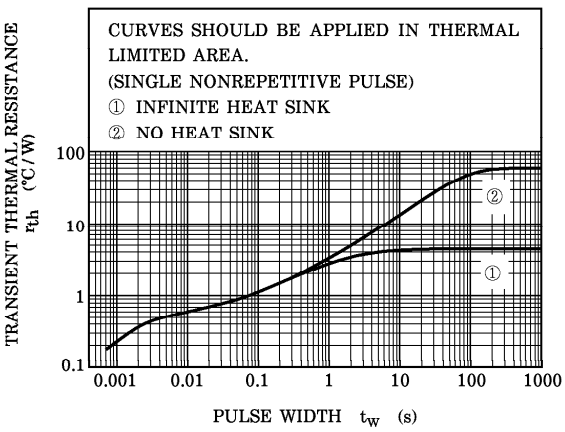
$V_{BE\,(sat)}$ – I_C



$I_C - V_{BE}$



$r_{th} - t_w$



SAFE OPERATING AREA