

TOSHIBA TRANSISTOR SILICON PNP TRIPLE DIFFUSED TYPE

# 2SB1411

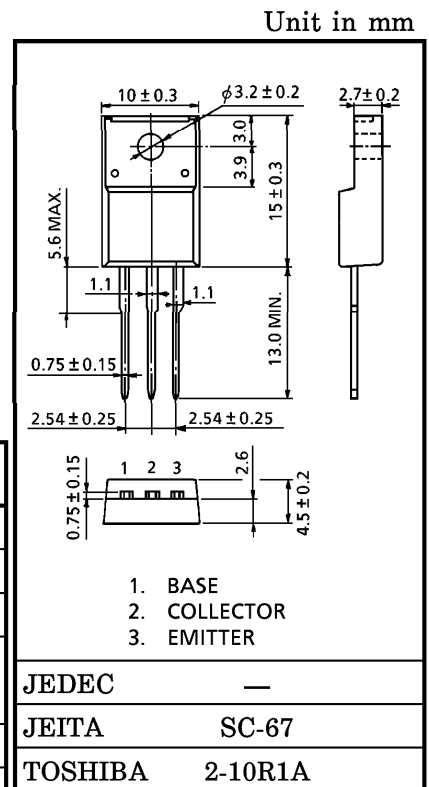
SWITCHING APPLICATIONS

HAMMER DRIVE, PULSE MOTOR DRIVE APPLICATIONS

- High DC Current Gain :  $h_{FE} = 1500$  (Min.)  
( $V_{CE} = -3V, I_C = -1A$ )
- Low Saturation Voltage:  $V_{CE(sat)} = -1.5V$  (Max.) ( $I_C = -1A$ )

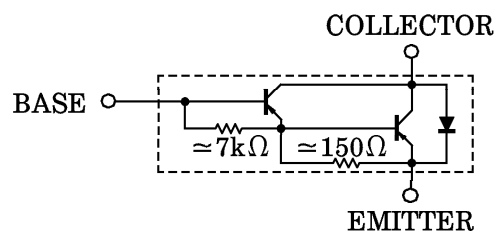
MAXIMUM RATINGS ( $T_c = 25^\circ C$ )

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		$V_{CBO}$	-100	V
Collector-Emitter Voltage		$V_{CEO}$	-100	V
Emitter-Base Voltage		$V_{EBO}$	-7	V
Collector Current	DC	$I_C$	-2	A
	Peak	$I_{CP}$	-3	
Base Current		$I_B$	-0.5	A
Collector Power Dissipation	$T_a = 25^\circ C$	$P_C$	2.0	W
	$T_c = 25^\circ C$		20	
Junction Temperature		$T_j$	150	$^\circ C$
Storage Temperature Range		$T_{stg}$	-55~150	$^\circ C$

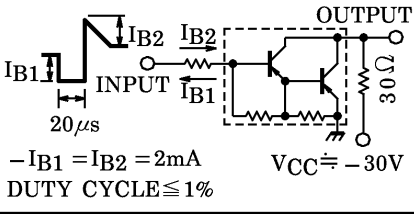


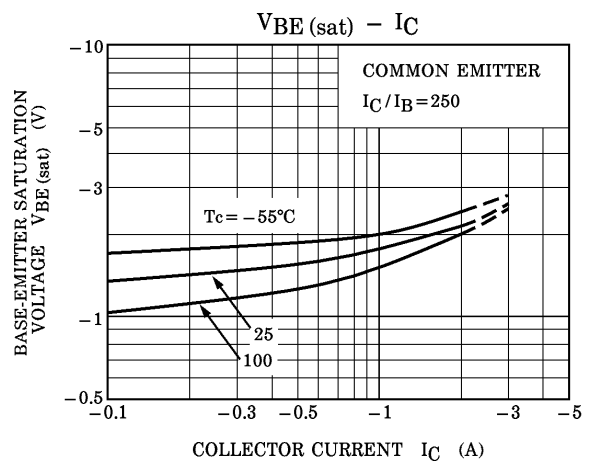
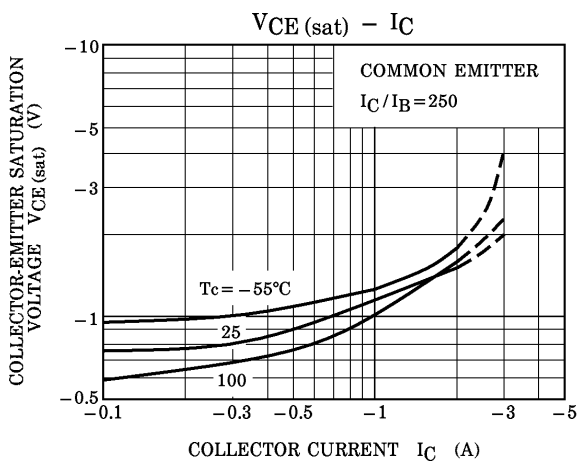
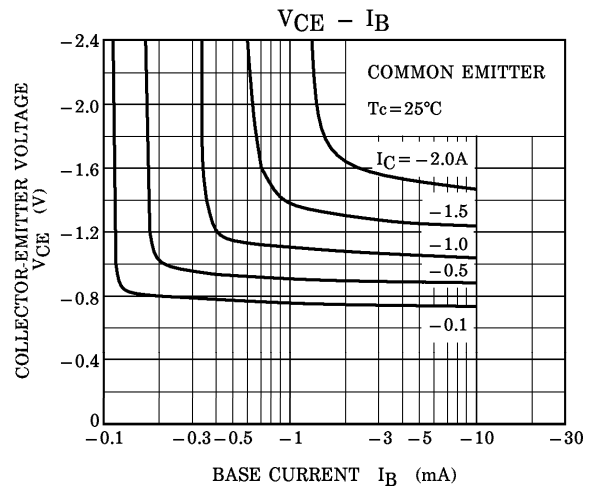
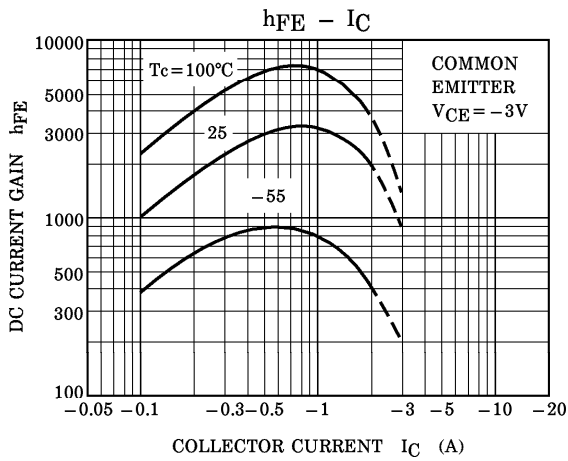
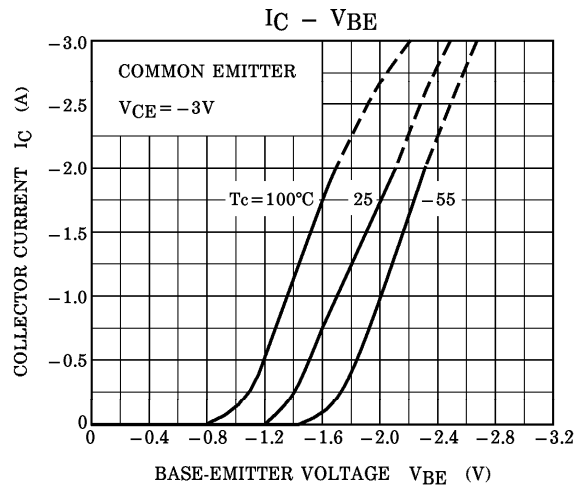
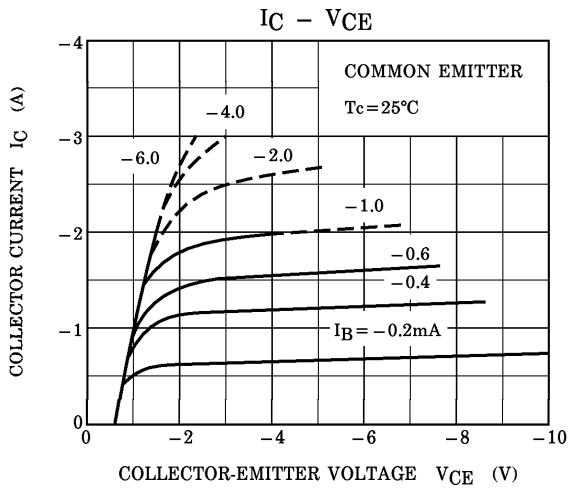
Weight : 1.7g (Typ.)

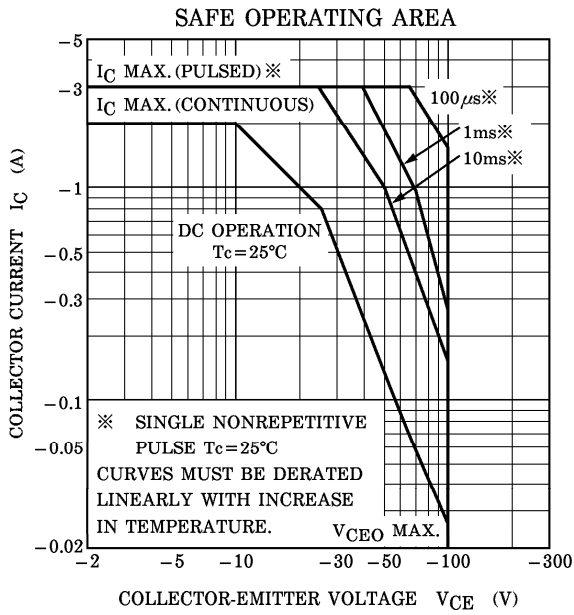
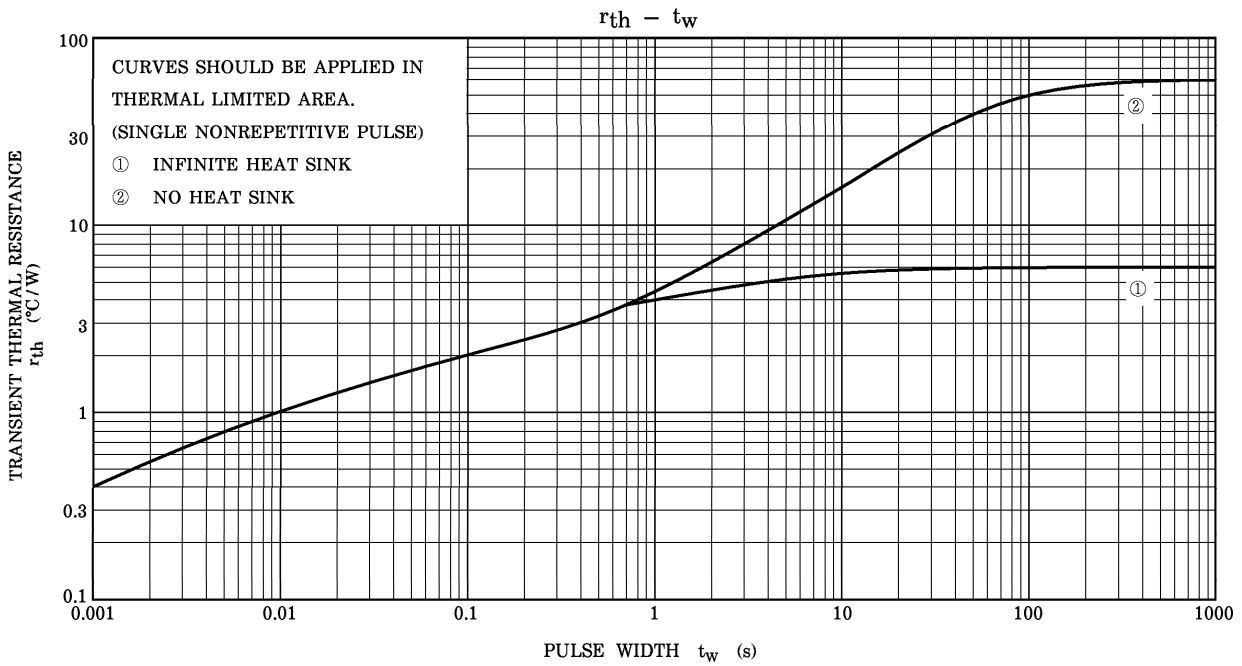
EQUIVALENT CIRCUIT



ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		ICBO	V <sub>CB</sub> = -100V, I <sub>E</sub> = 0	—	—	-100	μA
Emitter Cut-off Current		IEBO	V <sub>EB</sub> = -6V, I <sub>C</sub> = 0	—	—	-2.5	mA
Collector-Emitter Breakdown Voltage		V (BR) CEO	I <sub>C</sub> = -30mA, I <sub>B</sub> = 0	-100	—	—	V
DC Current Gain		h <sub>FE</sub> (1)	V <sub>CE</sub> = -3V, I <sub>C</sub> = -1A	1500	—	15000	
		h <sub>FE</sub> (2)	V <sub>CE</sub> = -3V, I <sub>C</sub> = -2A	1000	—	—	
Collector-Emitter Saturation Voltage		V <sub>CE</sub> (sat) (1)	I <sub>C</sub> = -1A, I <sub>B</sub> = -2mA	—	—	-1.5	V
		V <sub>CE</sub> (sat) (2)	I <sub>C</sub> = -2A, I <sub>B</sub> = -8mA	—	—	-2.5	
Base-Emitter Saturation Voltage		V <sub>BE</sub> (sat)	I <sub>C</sub> = -1A, I <sub>B</sub> = -2mA	—	—	-2.2	V
Switching Time	Turn-on Time	t <sub>on</sub>	 <p> <math>-I_{B1} = I_{B2} = 2\text{mA}</math>                      DUTY CYCLE <math>\leq 1\%</math>  <math>V_{CC} = -30\text{V}</math> </p>	—	1.0	—	μs
	Storage Time	t <sub>stg</sub>		—	3.0	—	
	Fall Time	t <sub>f</sub>		—	—	2.0	





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