

TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD2440

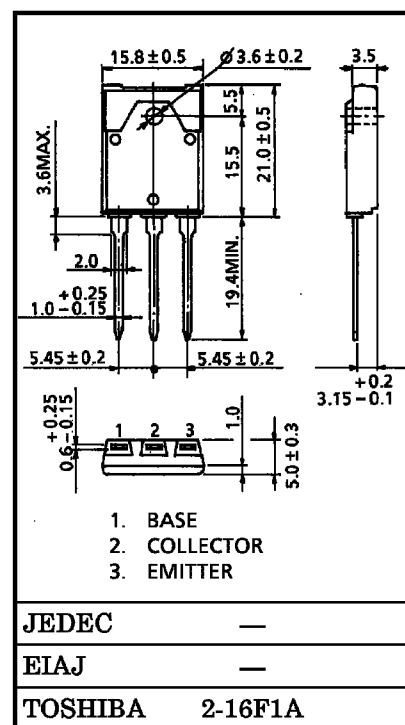
SWITCHING APPLICATION

- High Breakdown Voltage : $V_{CB0} = 100 \text{ V (MIN.)}$
: $V_{EB0} = 18 \text{ V (MIN.)}$
- Low Saturation Voltage : $V_{CE(sat)} = 1.2 \text{ V (MAX.)}$
($I_C = 5 \text{ A}$, $I_B = 1 \text{ A}$)
- High Speed : $t_f = 1 \mu\text{s (TYP.)}$ ($I_C = 5 \text{ A}$, $I_B = \pm 0.5 \text{ A}$)
- High DC Current Gain
: $h_{FE} = 200 \text{ (MIN.)}$ ($V_{CE} = 5 \text{ V}$, $I_C = 0.5 \text{ A}$)

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

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CB0}	100	V
Collector-Emitter Voltage	V_{CEO}	60	V
Emitter-Base Voltage	V_{EB0}	18	V
Collector Current	DC I_C	6	A
	Pulse I_{CP}	12	A
Base Current	I_B	2	A
Collector Power Dissipation ($T_c = 25^\circ\text{C}$)	P_C	40	W
Junction Temperature	T_j	150	$^\circ\text{C}$
Storage Temperature Range	T_{stg}	-55~150	$^\circ\text{C}$

Unit in mm

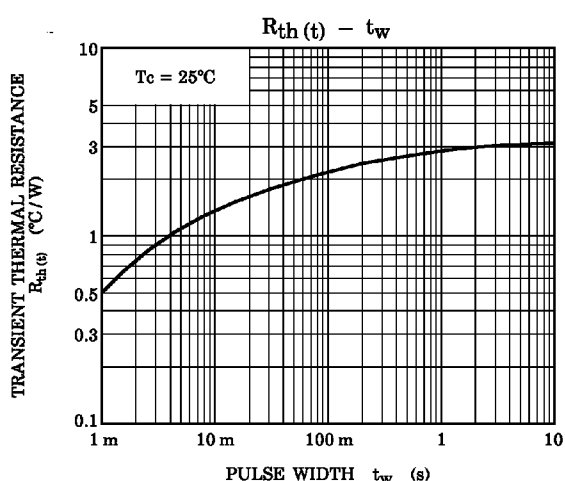
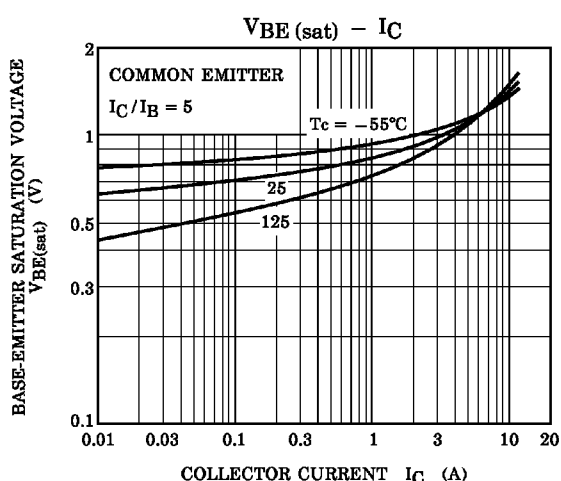
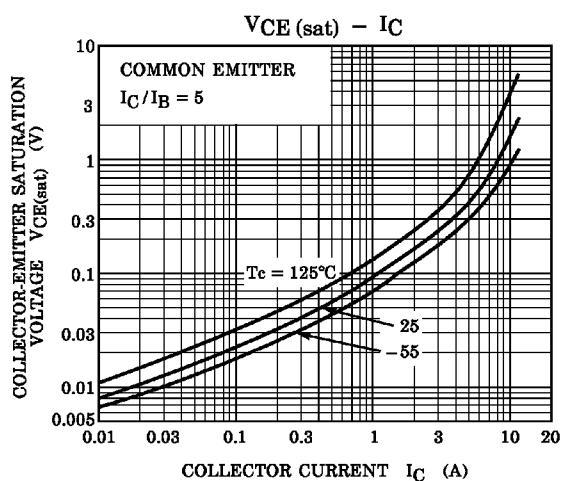
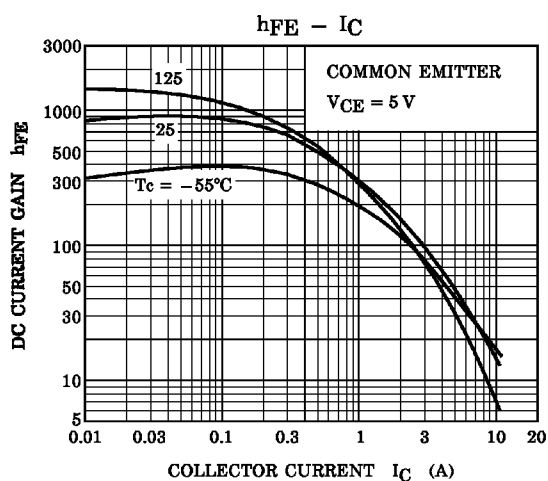
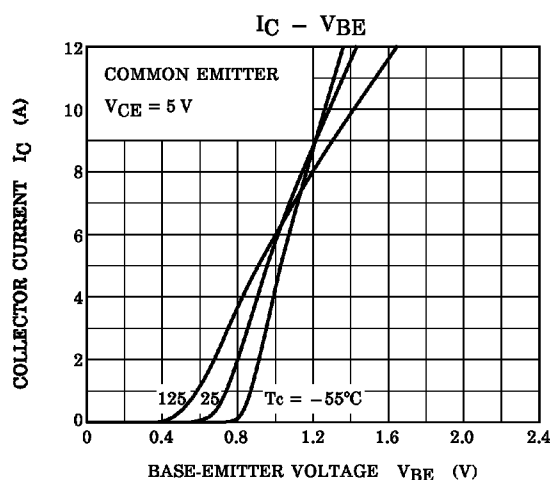
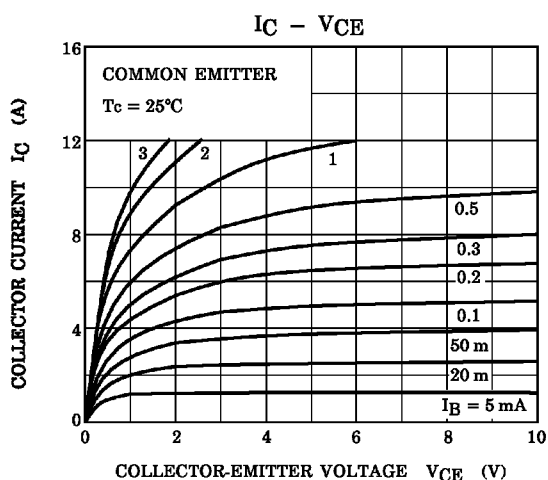
ELECTRICAL CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	$V_{CB} = 100 \text{ V}$, $I_E = 0$	—	—	10	μA
Collector Cut-off Current	I_{CER}	$V_{CE} = 80 \text{ V}$, $R_{BE} = 50 \Omega$	—	—	5	mA
Emitter Cut-off Current	I_{EBO}	$V_{EB} = 15 \text{ V}$, $I_C = 0$	—	—	2	μA
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C = 50 \text{ mA}$, $I_B = 0$	60	—	—	V
DC Current Gain	$h_{FE(1)}$ (Note)	$V_{CE} = 5 \text{ V}$, $I_C = 0.5 \text{ A}$	200	—	900	
	$h_{FE(2)}$	$V_{CE} = 5 \text{ V}$, $I_C = 5 \text{ A}$	20	—	100	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5 \text{ A}$, $I_B = 1 \text{ A}$	—	—	1.2	V
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 5 \text{ A}$, $I_B = 1 \text{ A}$	—	—	2.5	V
Transition Frequency	f_T	$V_{CE} = 10 \text{ V}$, $I_C = 0.5 \text{ A}$	—	5	—	MHz
Collector Output Capacitance	C_{ob}	$V_{CB} = 10 \text{ V}$, $I_E = 0$, $f = 1 \text{ MHz}$	—	71	—	pF
Switching Time	Turn-On Time	t_{on}	—	1	2	μs
	Storage Time	t_{stg}	—	2	4	
	Fall Time	t_f	—	1	3	

(Note) : $h_{FE(1)}$ Classification GR : 200~400, BL : 300~600, V : 450~900

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