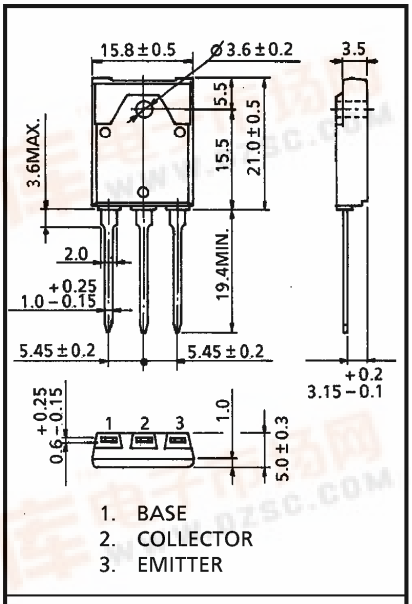
TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

2SD2440

SWITCHING APPLICATION

- High Breakdown Voltage : V_{CBO} = 100 V (MIN.)
  : V_{EBO} = 18 V (MIN.)
- Low Saturation Voltage : $V_{CE(sat)}$ = 1.2 V (MAX.)
  (I_C = 5 A, I_B = 1 A)
- High Speed : t_f = 1 μs (TYP.) (I_C = 5 A, I_B = ±0.5 A)
- High DC Current Gain
  : h_{FE} = 200 (MIN.) (V_{CE} = 5 V, I_C = 0.5 A)

Unit in mm



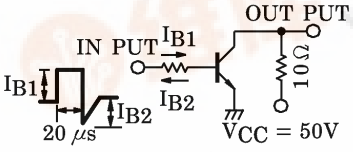
JEDEC	—
EIAJ	—
TOSHIBA	2-16F1A

Weight : 5.8 g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	60	V
Emitter-Base Voltage		V_{EBO}	18	V
Collector Current	DC	I_C	6	A
	Pulse	I_{CP}	12	A
Base Current		I_B	2	A
Collector Power Dissipation (Tc = 25°C)		P_C	40	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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

$I_{B1} = -I_{B2}$ = 0.5 A
DUTY CYCLE ≦ 1%

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

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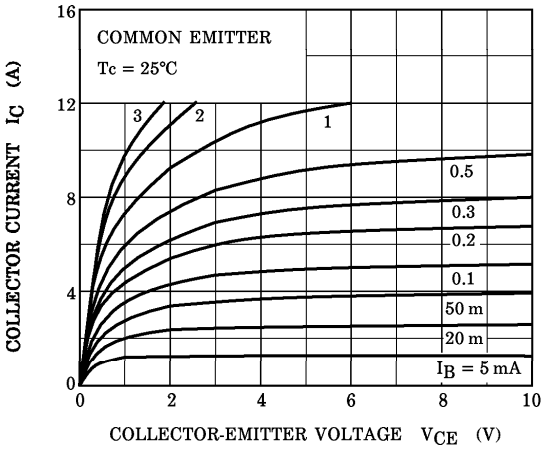
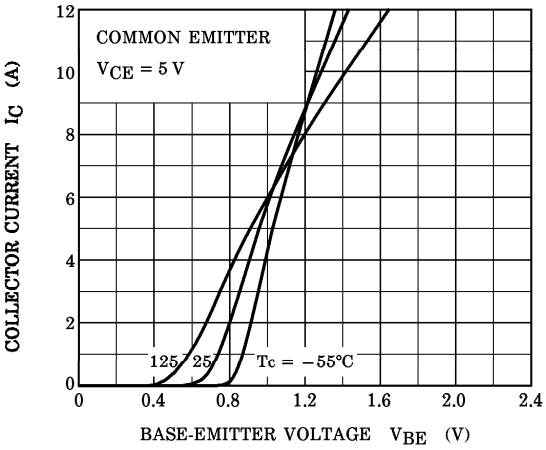
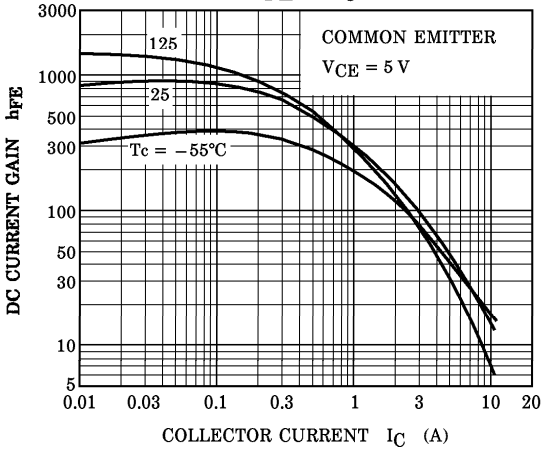
I_C – V_{CE}



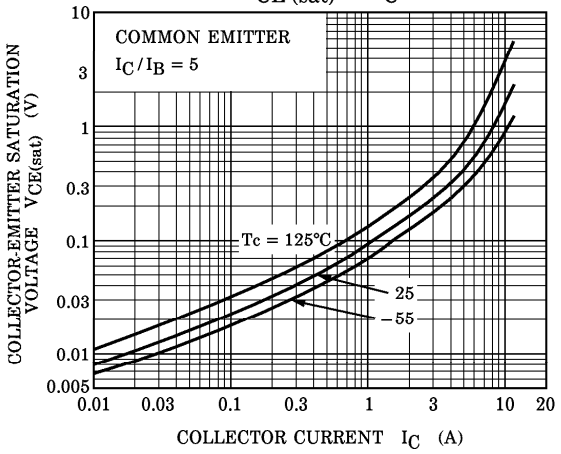
I_C – V_{BE}



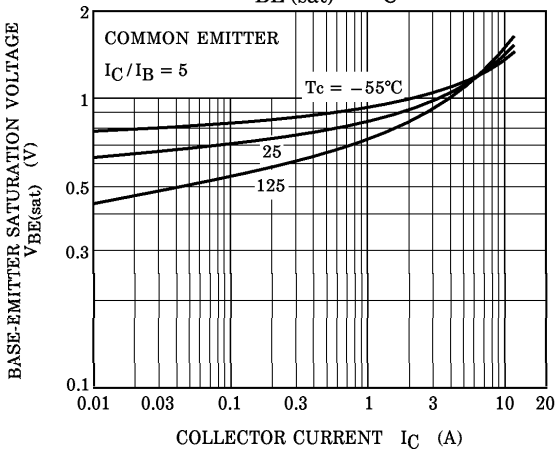
h_{FE} – I_C



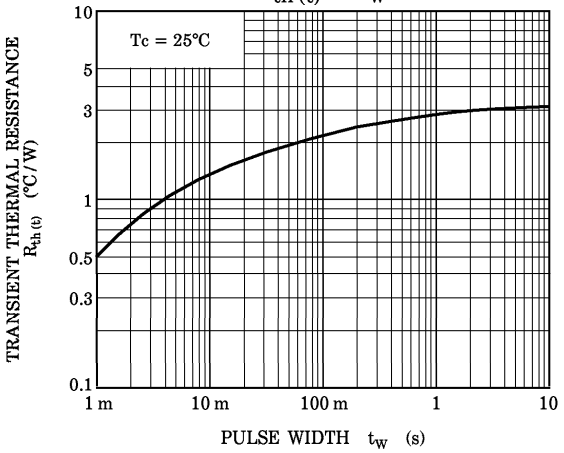
$V_{CE\,(sat)}$ – I_C



$V_{BE\,(sat)}$ – I_C



$R_{th\,(t)}$ – t_w



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SAFE OPERATING AREA