TOSHIBA Transistor Silicon NPN Triple Diffused Type

2SD2440

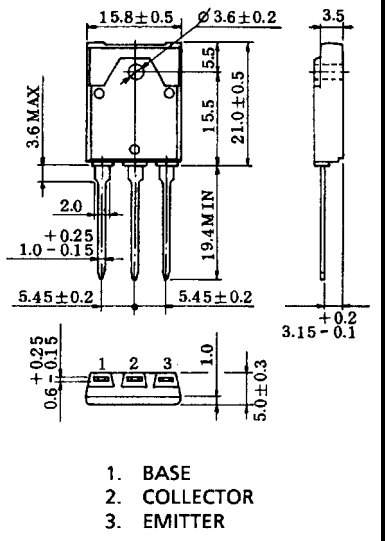
Switching Application

- High breakdown voltage: V_{CBO} = 100 V
  : V_{EBO} = 18 V
- 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)

Maximum Ratings (Ta = 25°C)

Characteristics		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	
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 to 150	°C

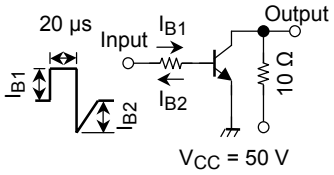
Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-16F1A

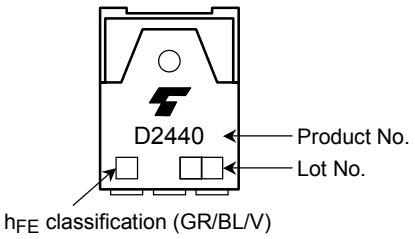
Weight: 5.8 g (typ.)

Electrical Characteristics (Ta = 25°C)

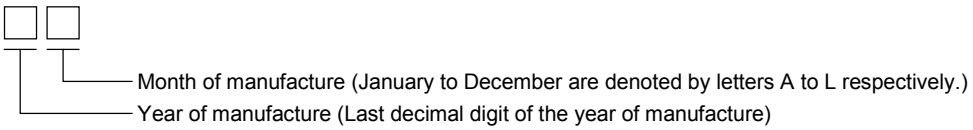
Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current		I_{CBO}	V_{CB} = 100 V, I_E = 0	—	—	10	μA
Collector cut-off current		I_{CER}	V_{CE} = 80 V, R_{BE} = 50 Ω	—	—	5	mA
Emitter cut-off current		I_{EBO}	V_{EB} = 15 V, I_C = 0	—	—	2	μA
Collector-emitter breakdown voltage		$V_{(BR)\ CEO}$	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 = 1 MHz	—	71	—	pF
Switching time	Turn-on time	t_{on}	 $I_{B1} = -I_{B2}$ = 0.5 A, duty cycle ≤ 1%	—	1	2	μs
	Storage time	t_{stg}		—	2	4	
	Fall time	t_f		—	1	3	

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

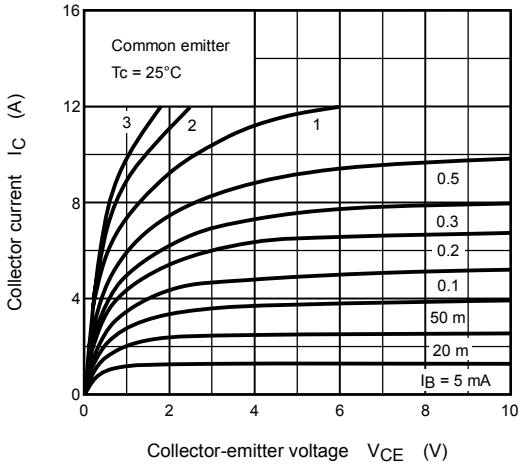
Marking



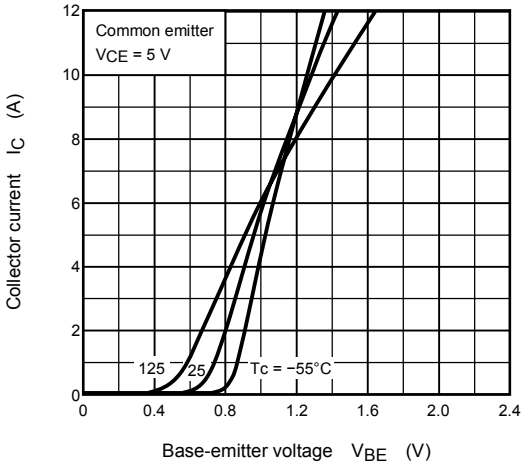
Explanation of Lot No.



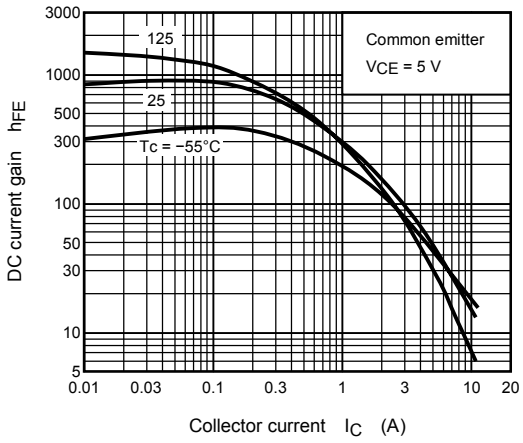
$I_C - V_{CE}$



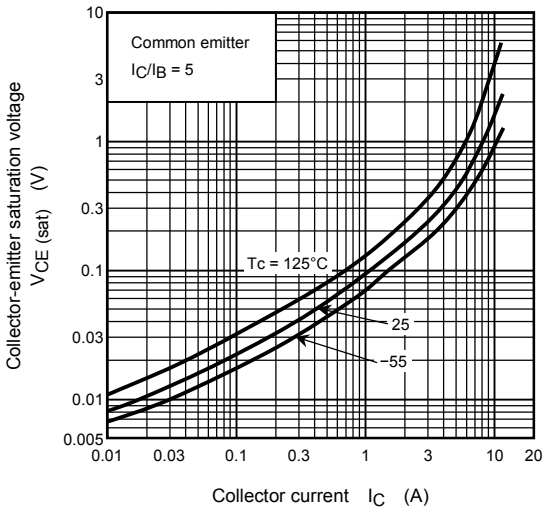
$I_C - V_{BE}$



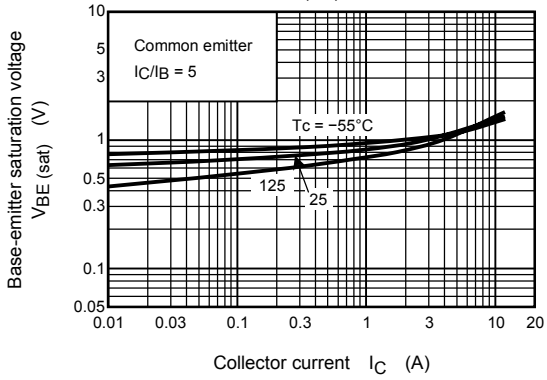
$h_{FE} - I_C$



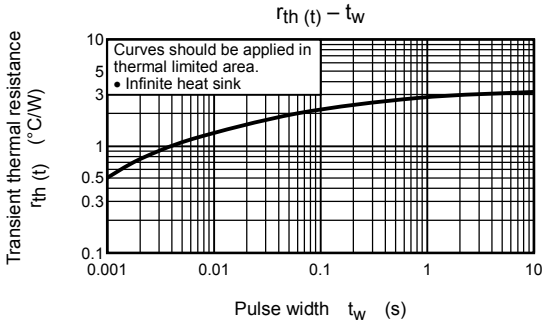
$V_{CE\ (sat)} - I_C$



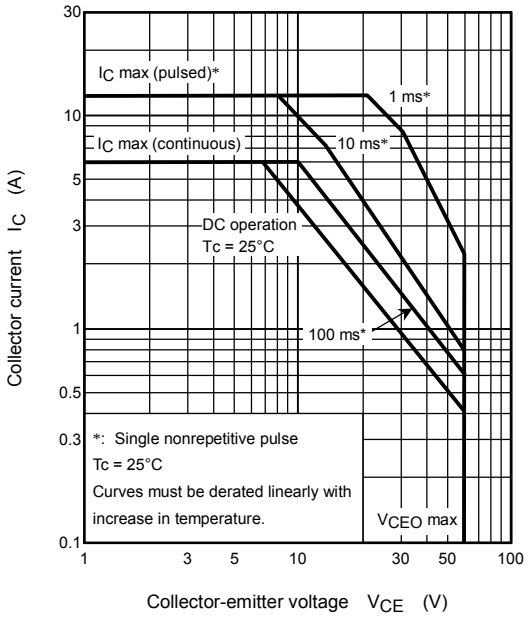
$V_{BE\ (sat)} - I_C$



$r_{th\ (t)} - t_w$



Safe Operating Area



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