TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

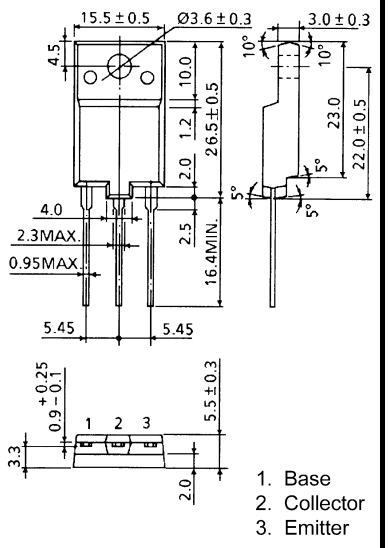
2SC5339

HORIZONTAL DEFLECTION OUTPUT FOR MEDIUM RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage : V_{CBO} = 1500 V
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 5 V (Max.)
- High Speed : t_f = 0.2 μs (Typ.)
- Bult−in Damper Type
- Collector Metal (Fin) is Fully Covered with Mold Resin.

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-16E3A

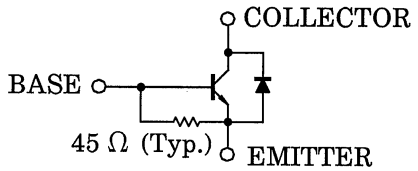
Weight: 5.5 g (typ.)

ABSOLUTE MAXIMUM RATINGS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector−Base Voltage		V_{CBO}	1500	V
Collector−Emitter Voltage		V_{CEO}	600	V
Emitter−Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	7	A
	Pulse	I_{CP}	14	
Base Current		I_B	3.5	A
Collector Power Dissipation		P_C	50	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook (“Handling Precautions”/Derating Concept and Methods) and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

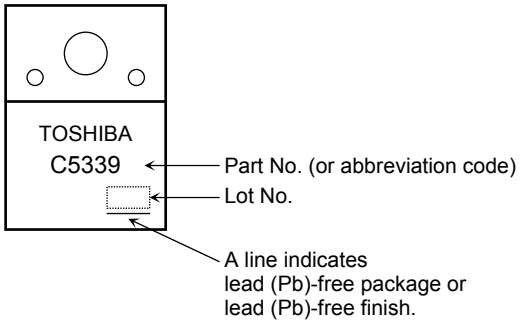
EQUIVALENT CIRCUIT

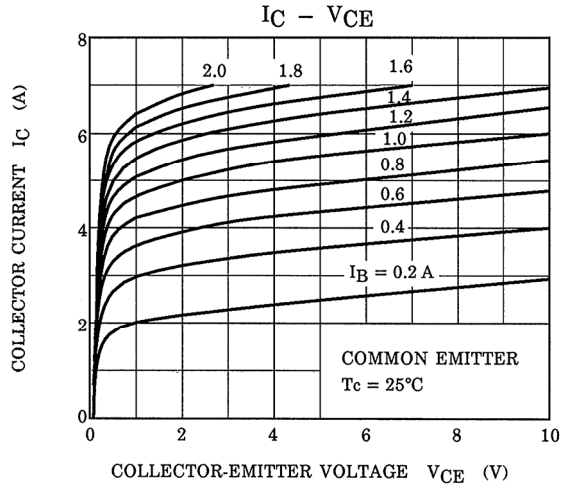


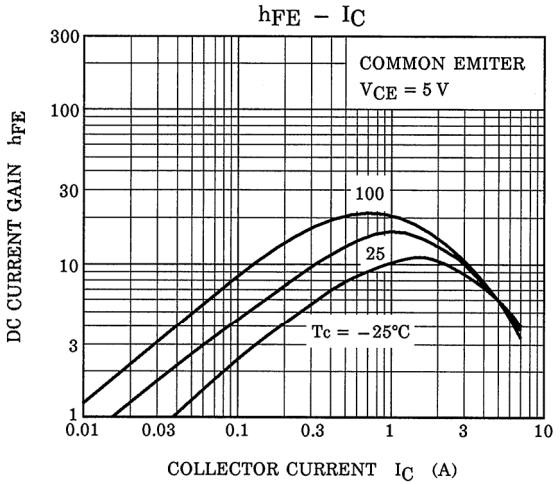
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

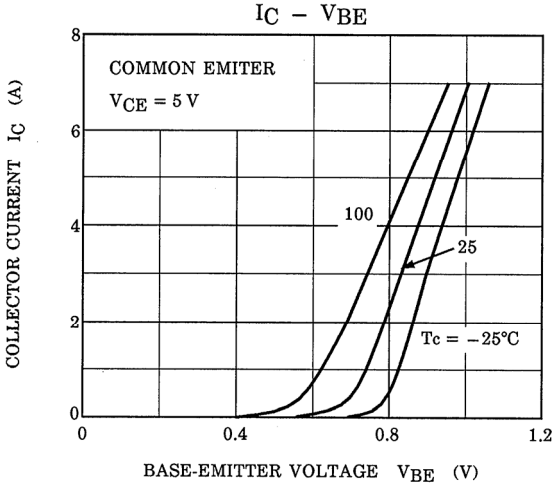
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN	TYP.	MAX	UNIT
Collector Cut−off Current		I_{CBO}	V_{CB} = 1500 V, I_E = 0	—	—	1	mA
Emitter Cut−off Current		I_{EBO}	V_{EB} = 5 V, I_C = 0	71	—	250	mA
Emitter−Base Breakdown Voltage		$V_{(BR)\ EBO}$	I_E = 400 mA, I_C = 0	5	—	—	V
DC Current Gain		$h_{FE\ (1)}$	V_{CE} = 5 V, I_C = 1 A	10	—	30	—
		$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 5 A	4	—	8	
Collector−Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C = 5 A, I_B = 1.25 A	—	—	5	V
Base−Emitter Saturation Voltage		$V_{BE\ (sat)}$	I_C = 5 A, I_B = 1.25 A	—	1.0	1.3	V
Forward Voltage (Damper Diode)		V_F	I_F = 5 A	—	1.35	1.8	V
Transition Frequency		f_T	V_{CE} = 10 V, I_C = 0.1 A	—	2.4	—	MHz
Collector Output Capacitance		Cob	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	82	—	pF
Switching Time	Storage Time	t_{stg}	I_{CP} = 5 A, I_{B1} (end) = 1.1 A f_H = 31.5 kHz	—	4	6	μs
	Fall Time	t_f		—	0.2	0.5	

Marking

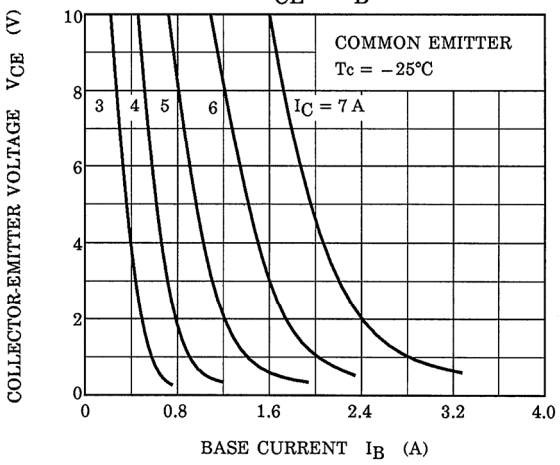



I_C – V_{CE}
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
I_B = 0.2 A
COMMON EMITTER
Tc = 25°C
0
2
4
6
8
10

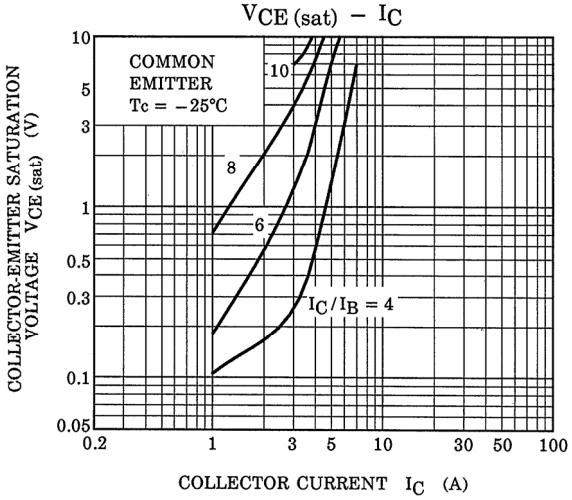

h_{FE} – I_C
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (A)
COMMON EMITER
V_{CE} = 5 V
100
25
Tc = −25°C
300
100
30
10
3
1
0.01
0.03
0.1
0.3
1
3
10


I_C – V_{BE}
COLLECTOR CURRENT I_C (A)
BASE-EMITTER VOLTAGE V_{BE} (V)
COMMON EMITER
V_{CE} = 5 V
100
25
Tc = −25°C
8
6
4
2
0
0
0.4
0.8
1.2

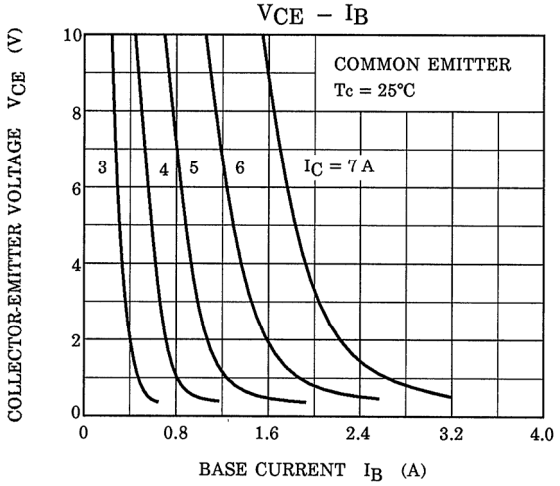
V_{CE} – I_B



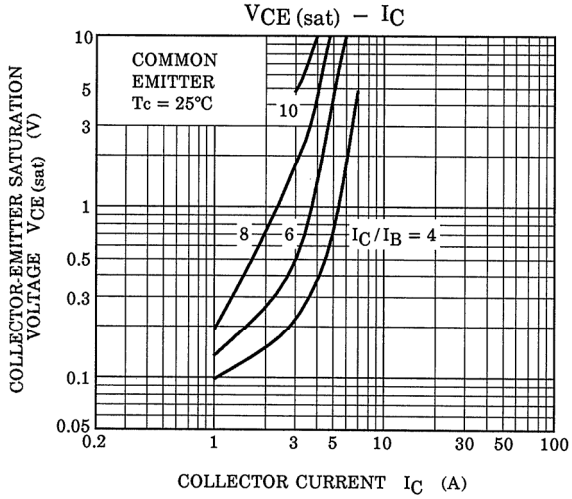
$V_{CE\,(sat)}$ – I_C



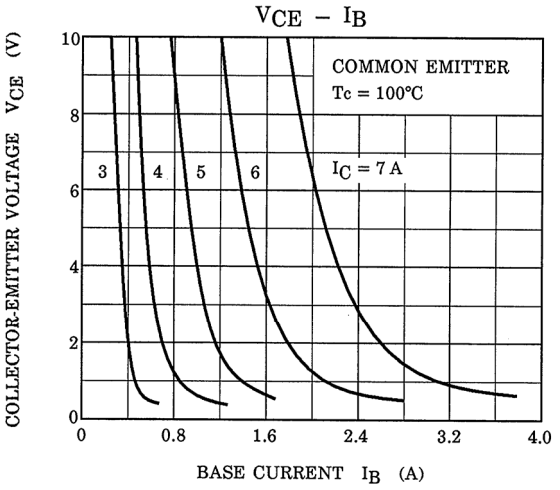
V_{CE} – I_B



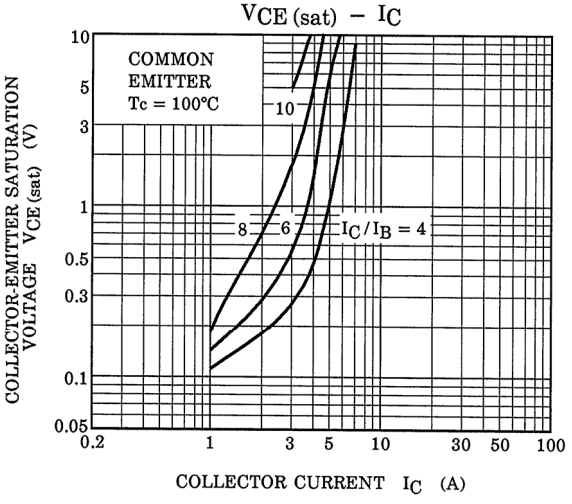
$V_{CE\,(sat)}$ – I_C



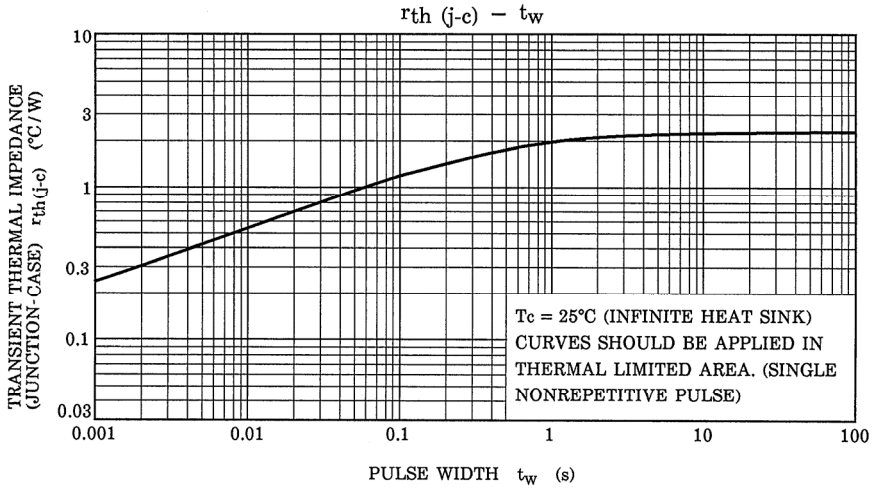
V_{CE} – I_B



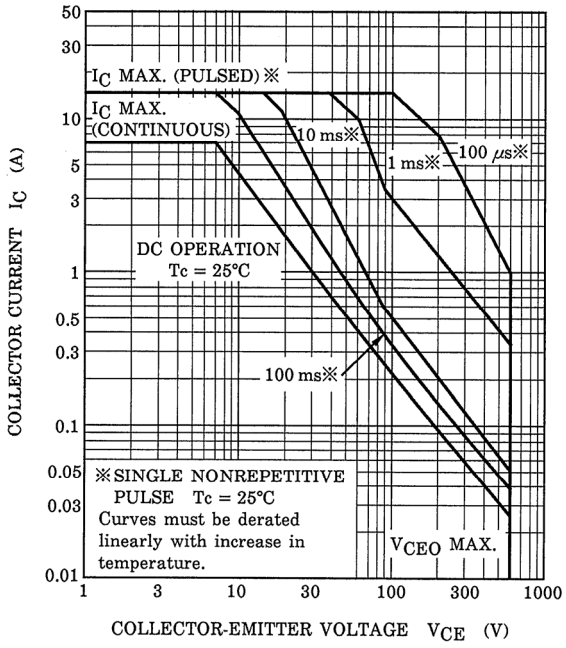
$V_{CE\,(sat)}$ – I_C



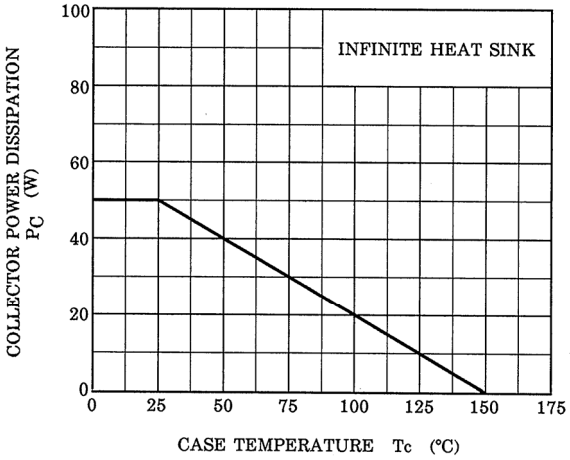
r_{th} (j-c) – t_w



SAFE OPERATING AREA



P_C – Tc



RESTRICTIONS ON PRODUCT USE

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