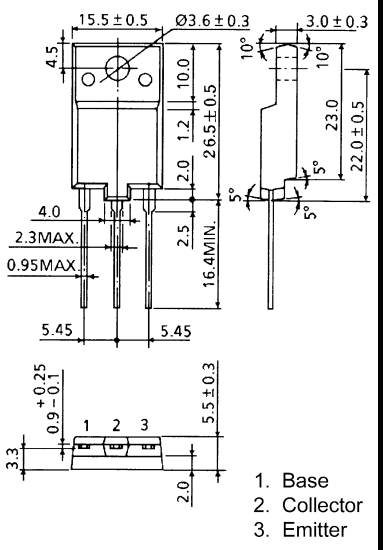
TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

2SC5857

HORIZONTAL DEFLECTION OUTPUT FOR
HDTV, DIGITAL TV, PROJECTION TV

- High Voltage : V_{CBO} = 1700 V
- Low Saturation Voltage : $V_{CE\ (sat)}$ = 1.5 V (max)
- High Speed : $t_{f(2)}$ = 0.1 μs (typ.)

Unit: mm



JEDEC	—
JEITA	—
TOSHIBA	2-16E3A

Weight: 5.5 g (typ.)

ABSOLUTE MAXIMUM RATINGS (Tc = 25°C)

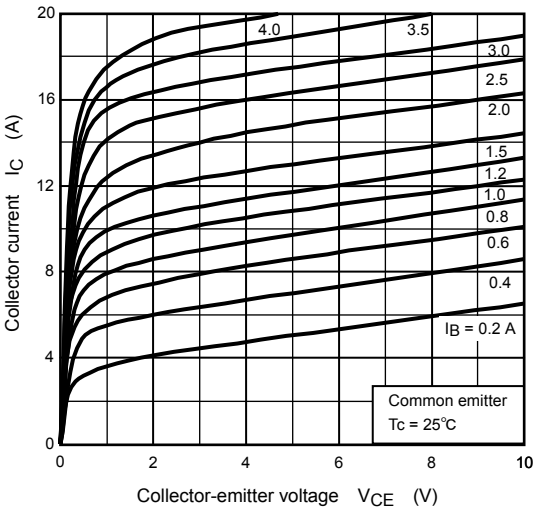
CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector−Base Voltage		V_{CBO}	1700	V
Collector−Emitter Voltage		V_{CEO}	750	V
Emitter−Base Voltage		V_{EBO}	5	V
Collector Current	DC	I_C	21	A
	Pulse	I_{CP}	42	
Base Current		I_B	10.5	A
Collector Power Dissipation		P_C	75	W
Junction Temperature		T_j	150	°C
Storage 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).

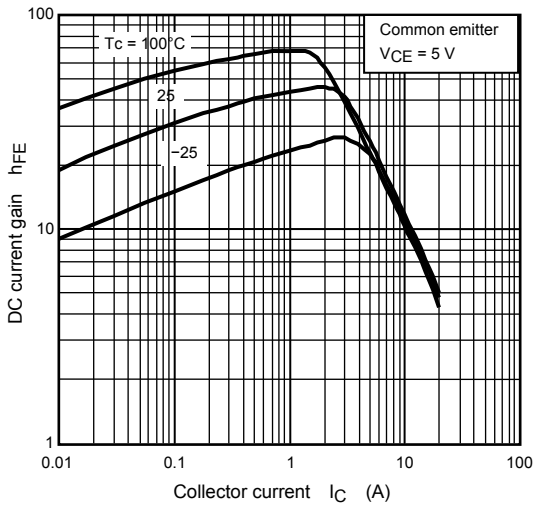
ELECTRICAL CHARACTERISTICS (Tc = 25°C)

CHARACTERISTIC		SYMBOL	TEST CONDITION	Min	Typ.	Max	UNIT
Collector Cut−off Current		I_{CBO}	V_{CB} = 1700 V, I_E = 0	—	—	1	mA
Emitter Cut−off Current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	100	μA
Collector − Emitter Breakdown Voltage		$V_{(BR)\ CEO}$	I_C = 10 mA, I_B = 0	750	—	—	V
DC Current Gain		$h_{FE\ (1)}$	V_{CE} = 5 V, I_C = 2 A	30	—	60	—
		$h_{FE\ (2)}$	V_{CE} = 5 V, I_C = 8 A	11	—	19	
		$h_{FE\ (3)}$	V_{CE} = 5 V, I_C = 17 A	5	—	7.5	
Collector−Emitter Saturation Voltage		$V_{CE\ (sat)}$	I_C = 17 A, I_B = 4.25 A	—	—	1.5	V
Base−Emitter Saturation Voltage		$V_{BE\ (sat)}$	I_C = 17 A, I_B = 4.25 A	—	1.0	1.5	V
Transition Frequency		f_T	V_{CE} = 10 V, I_C = 0.1 A	—	2	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	280	—	pF
Switching Time	Storage Time	$t_{stg(1)}$	I_{CP} = 9 A , I_{B1} (end) = 1.4 A f_H = 32 kHz	—	4.5	—	μs
	Fall Time	$t_{f(1)}$		—	0.1	—	
	Storage Time	$t_{stg(2)}$	I_{CP} = 8 A, I_{B1} (end) = 1.2 A f_H = 45 kHz	—	3.5	—	μs
	Fall Time	$t_{f(2)}$		—	0.1	—	

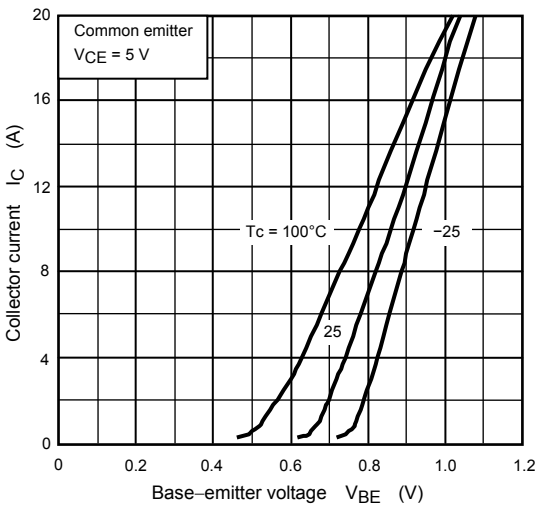
$I_C - V_{CE}$



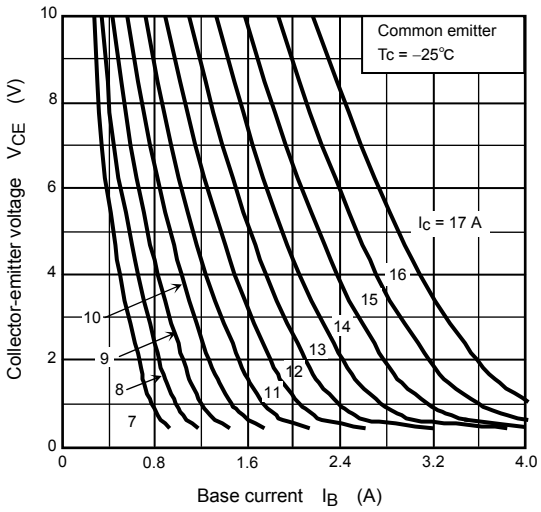
$h_{FE} - I_C$



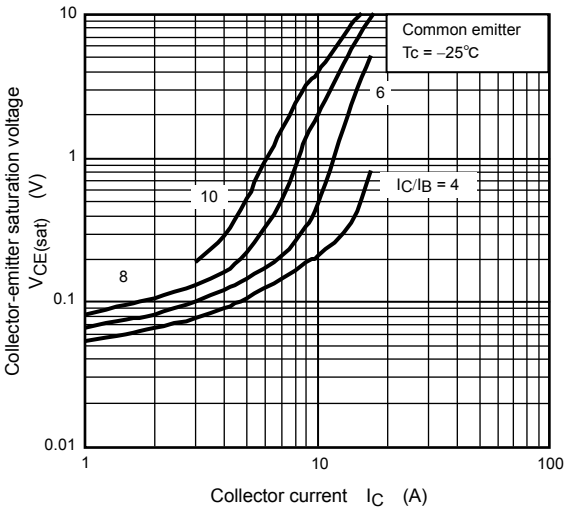
$I_C - V_{BE}$



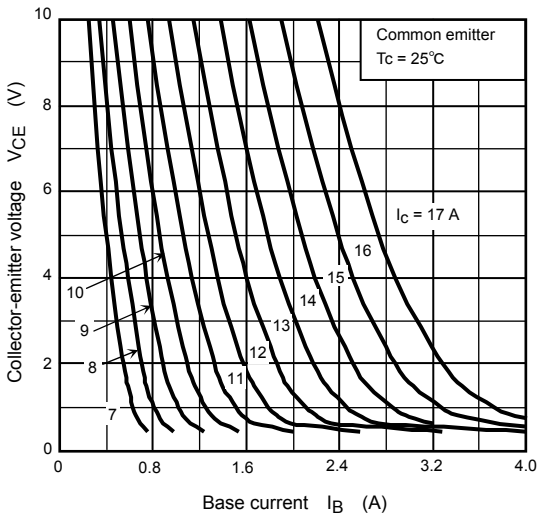
V_{CE} – I_B



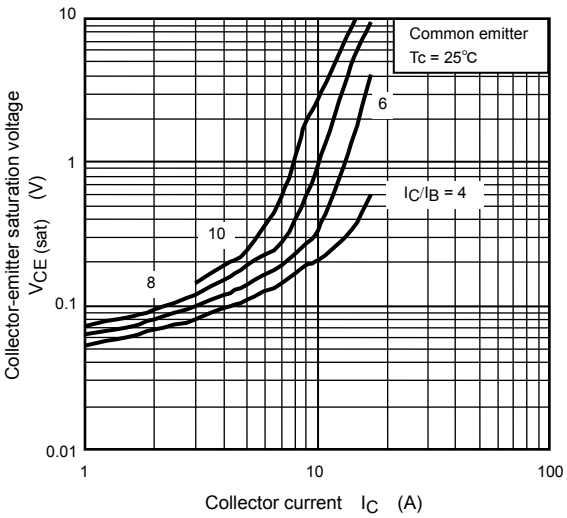
$V_{CE(sat)}$ – I_C



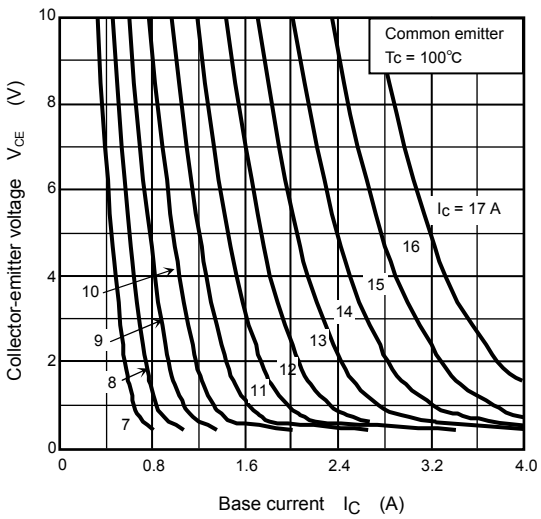
V_{CE} – I_B



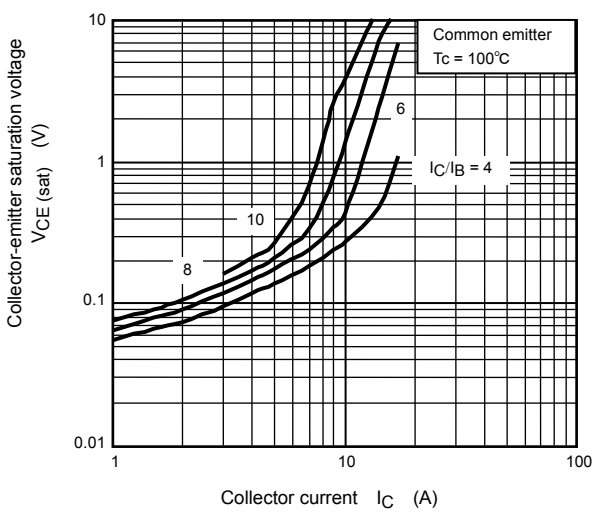
$V_{CE\ (sat)}$ – I_C



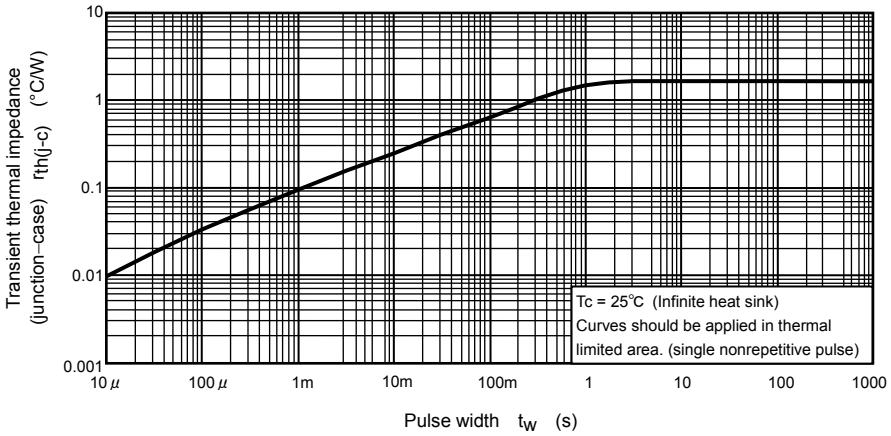
V_{CE} – I_B



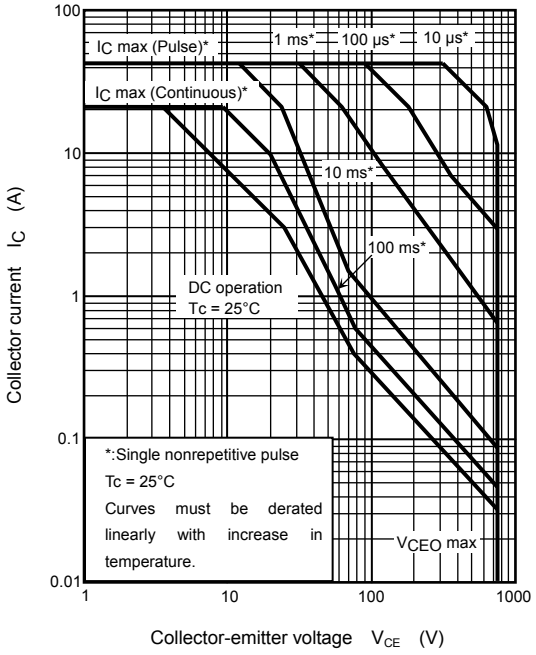
$V_{CE\ (sat)}$ – I_C



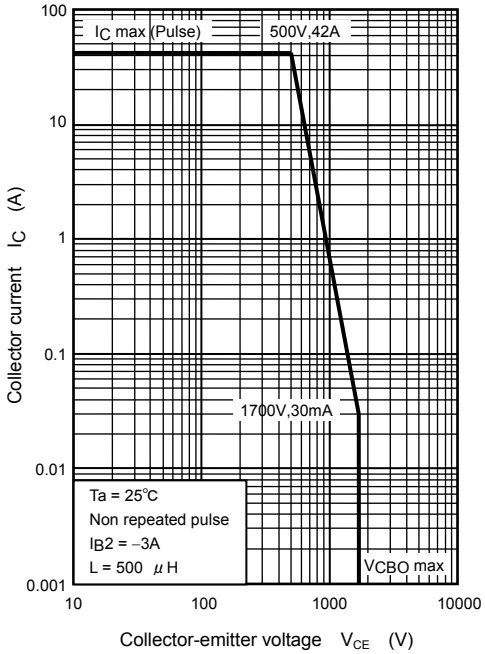
$r_{th(j-c)} - t_w$



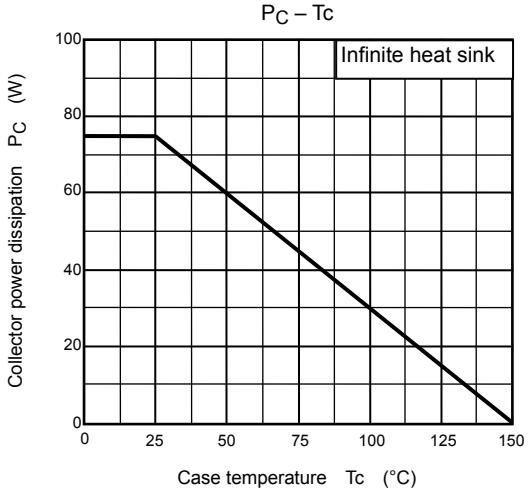
Safe Operating Area



Reverse Bias – Safe Operating Area



$P_C - Tc$



RESTRICTIONS ON PRODUCT USE

20070701-EN

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- TOSHIBA is continually working to improve the quality and reliability of its products. Nevertheless, semiconductor devices in general can malfunction or fail due to their inherent electrical sensitivity and vulnerability to physical stress. It is the responsibility of the buyer, when utilizing TOSHIBA products, to comply with the standards of safety in making a safe design for the entire system, and to avoid situations in which a malfunction or failure of such TOSHIBA products could cause loss of human life, bodily injury or damage to property.
  In developing your designs, please ensure that TOSHIBA products are used within specified operating ranges as set forth in the most recent TOSHIBA products specifications. Also, please keep in mind the precautions and conditions set forth in the “Handling Guide for Semiconductor Devices,” or “TOSHIBA Semiconductor Reliability Handbook” etc.
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