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TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED MESA TYPE

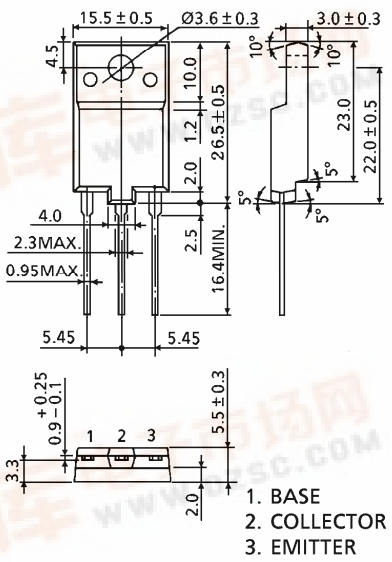
2SC5387

HORIZONTAL DEFLECTION OUTPUT FOR HIGH RESOLUTION DISPLAY, COLOR TV

HIGH SPEED SWITCHING APPLICATIONS

- High Voltage : V_{CBO} = 1500 V
- Low Saturation Voltage : $V_{CE\,(sat)}$ = 3 V (Max.)
- High Speed : t_f = 0.15 μs (Typ.)
- Collector Metal (Fin) is Fully Covered with Mold Resin.

Unit in mm



JEDEC	—
EIAJ	—
TOSHIBA	2-16E3A

Weight : 5.5 g (Typ.)

MAXIMUM RATINGS (Ta = 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	10	A
	Pulse	I_{CP}	20	
Base Current		I_B	5	A
Collector Power Dissipation (Tc = 25°C)		P_C	50	W
Junction Temperature		T_j	150	°C
Storage Temperature Range		T_{stg}	−55~150	°C

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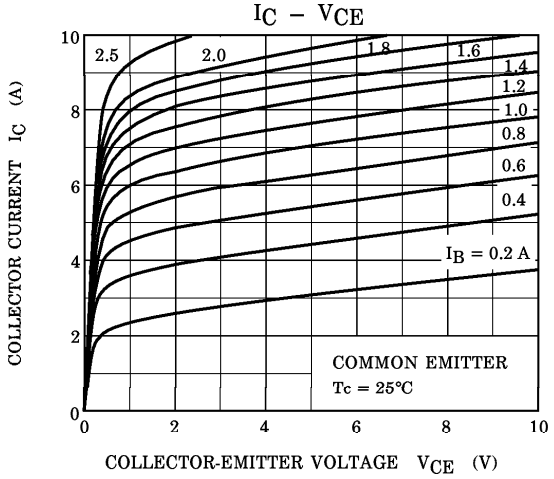
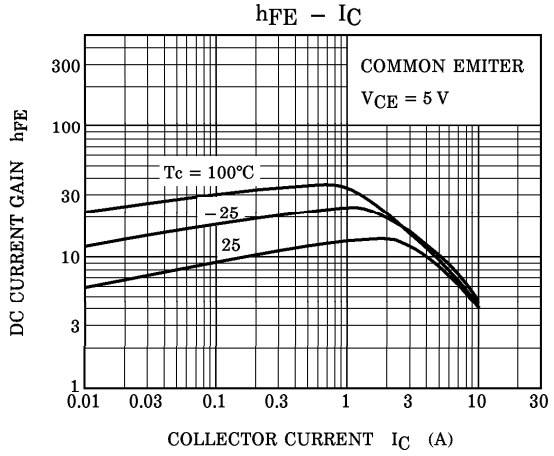
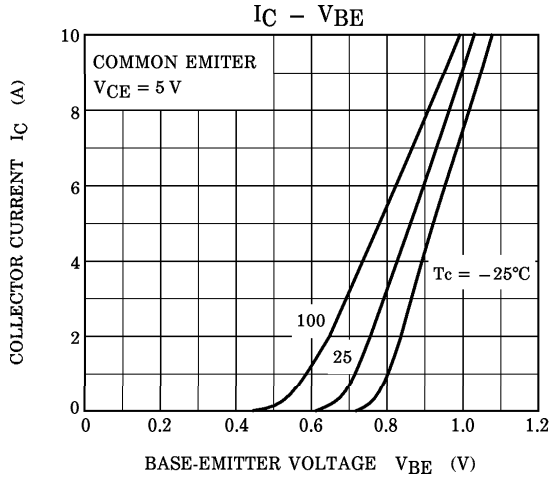
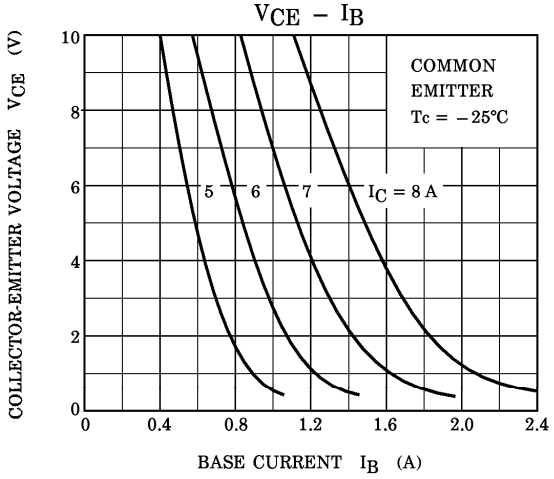
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

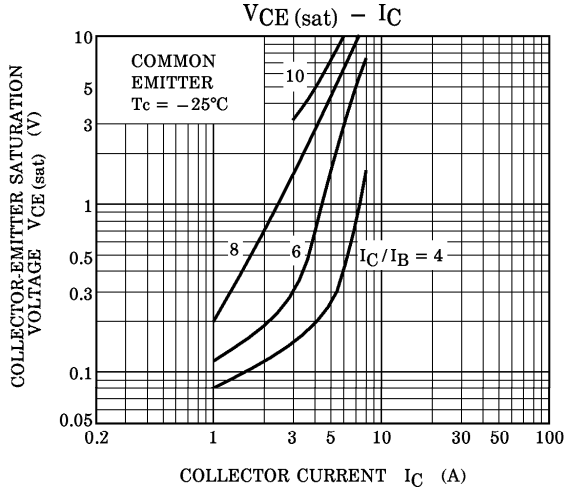
CHARACTERISTIC		SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current		I_{CBO}	V_{CB} = 1500 V, I_E = 0	—	—	1	mA
Emitter Cut-off Current		I_{EBO}	V_{EB} = 5 V, I_C = 0	—	—	10	μA
Emitter-Base Breakdown Voltage		$V_{(BR)CEO}$	I_C = 10 mA, I_B = 0	600	—	—	V
DC Current Gain		$h_{FE(1)}$	V_{CE} = 5 V, I_C = 1 A	15	—	35	
		$h_{FE(2)}$	V_{CE} = 5 V, I_C = 8 A	4.3	—	7.8	
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	I_C = 8 A, I_B = 2 A	—	—	3	V
Base-Emitter Saturation Voltage		$V_{BE(sat)}$	I_C = 8 A, I_B = 2 A	—	—	1.5	V
Transition Frequency		f_T	V_{CE} = 10 V, I_C = 0.1 A	—	1.7	—	MHz
Collector Output Capacitance		C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz	—	130	—	pF
Switching Time	Storage Time	t_{stg}	I_{CP} = 6 A, I_{B1} (end) = 1.2 A	—	2.5	3.5	μs
	Fall Time	t_f	f_H = 64 kHz	—	0.15	0.3	

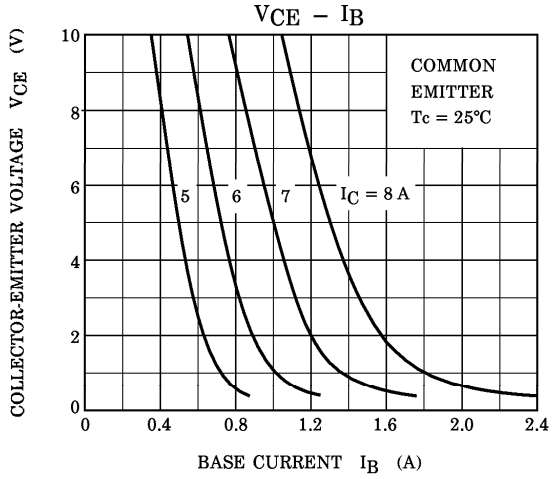

IC – VCE
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)
2.5
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
IB = 0.2 A
COMMON EMITTER
Tc = 25°C
0
2
4
6
8
10

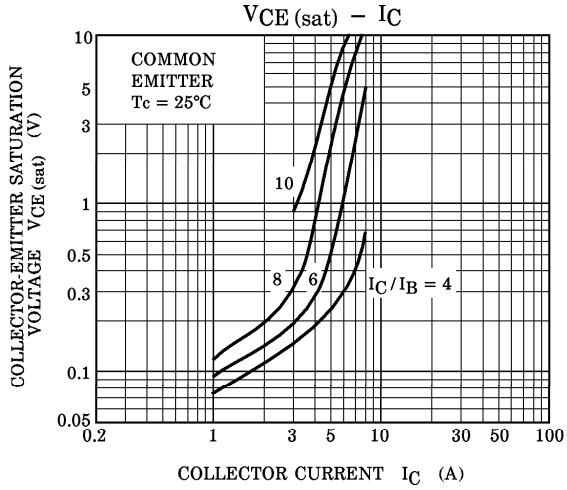

hFE – IC
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (A)
COMMON EMITER
VCE = 5 V
Tc = 100°C
−25
25
300
100
30
10
3
1
0.01
0.03
0.1
0.3
1
3
10
30

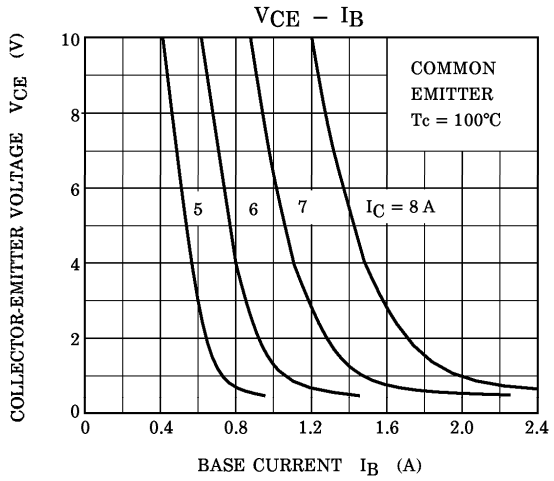

IC – VBE
COLLECTOR CURRENT IC (A)
BASE-EMITTER VOLTAGE VBE (V)
COMMON EMITER
VCE = 5 V
Tc = −25°C
100
25
0
0.2
0.4
0.6
0.8
1.0
1.2

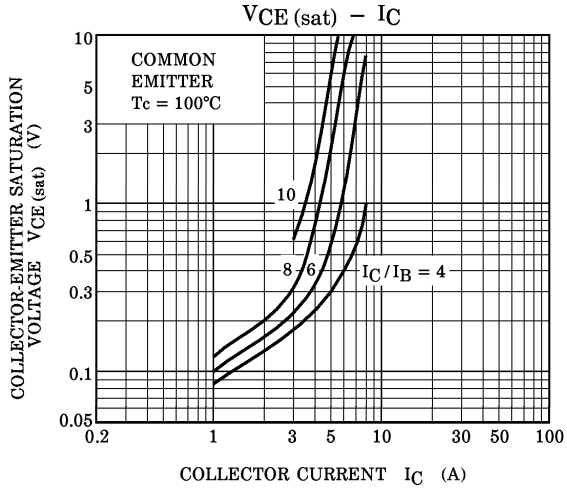

VCE – IB
COMMON
EMITTER
Tc = –25°C
5
6
7
IC = 8 A
COLLECTOR-EMITTER VOLTAGE VCE (V)
BASE CURRENT IB (A)

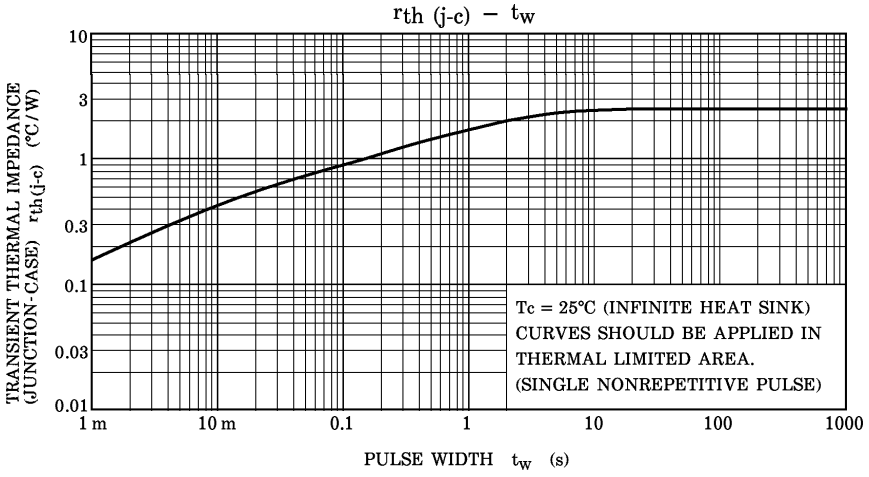

VCE (sat) – IC
COMMON
EMITTER
Tc = –25°C
10
8
6
IC / IB = 4
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COLLECTOR CURRENT IC (A)

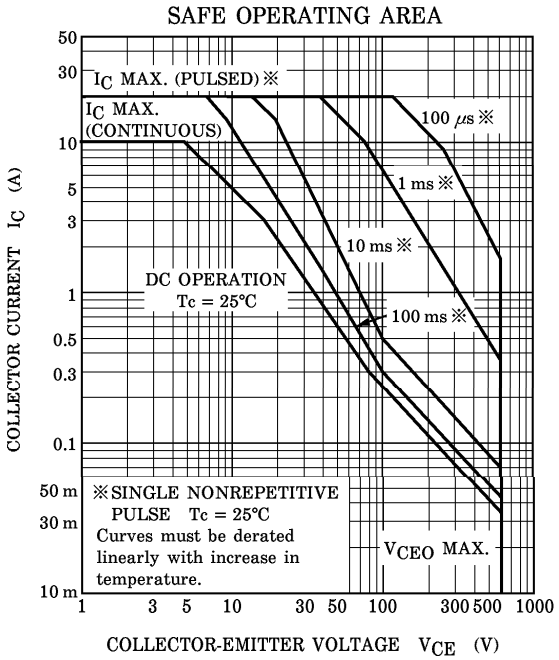

VCE – IB
COMMON
EMITTER
Tc = 25°C
5
6
7
IC = 8 A
COLLECTOR-EMITTER VOLTAGE VCE (V)
BASE CURRENT IB (A)

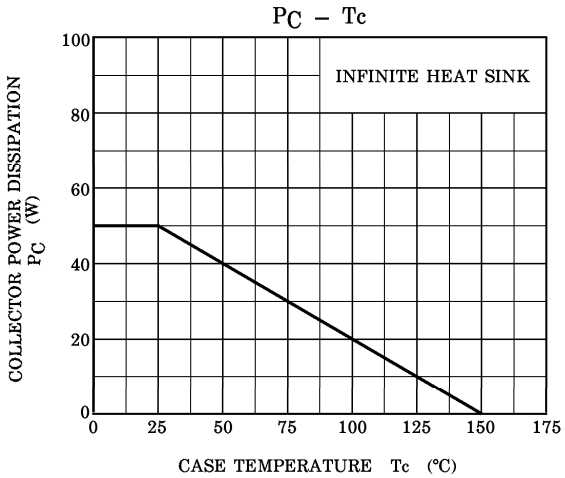

VCE (sat) – IC
COMMON
EMITTER
Tc = 25°C
10
8
6
IC / IB = 4
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COLLECTOR CURRENT IC (A)


VCE – IB
COMMON
EMITTER
Tc = 100°C
5
6
7
IC = 8 A
COLLECTOR-EMITTER VOLTAGE VCE (V)
BASE CURRENT IB (A)


VCE (sat) – IC
COMMON
EMITTER
Tc = 100°C
10
8
6
IC / IB = 4
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COLLECTOR CURRENT IC (A)


rth (j-c) – tw
TRANSIENT THERMAL IMPEDANCE (JUNCTION-CASE) rth(j-c) (°C/W)
10
3
1
0.3
0.1
0.03
0.01
1 m
10 m
0.1
1
10
100
1000
PULSE WIDTH tw (s)
Tc = 25°C (INFINITE HEAT SINK)
CURVES SHOULD BE APPLIED IN
THERMAL LIMITED AREA.
(SINGLE NONREPETITIVE PULSE)


SAFE OPERATING AREA
COLLECTOR CURRENT IC (A)
50
30
10
5
3
1
0.5
0.3
0.1
50 m
30 m
10 m
IC MAX. (PULSED) ※
IC MAX.
(CONTINUOUS)
100 μs ※
1 ms ※
10 ms ※
100 ms ※
DC OPERATION
Tc = 25°C
※SINGLE NONREPETITIVE
PULSE Tc = 25°C
Curves must be derated
linearly with increase in
temperature.
VCEO MAX.
1
3
5
10
30
50
100
300
500
1000
COLLECTOR-EMITTER VOLTAGE VCE (V)


PC – Tc
COLLECTOR POWER DISSIPATION PC (W)
100
80
60
40
20
0
INFINITE HEAT SINK
0
25
50
75
100
125
150
175
CASE TEMPERATURE Tc (°C)