TOSHIBA TRANSISTOR SILICON NPN TRIPLE DIFFUSED TYPE

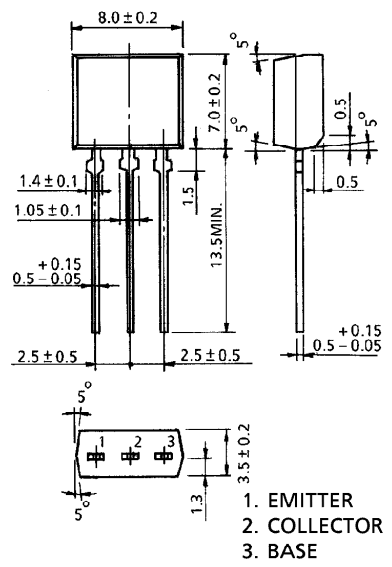
2SC5075

SWITCHING REGULATOR AND HIGH VOLTAGE SWITCHING APPLICATIONS

HIGH SPEED DC-DC CONVERTER APPLICATIONS

- High Speed Switching
  : $t_r = 1.0\mu s$ (Max.), $t_f = 1.0\mu s$ (Max.)
- High Collector Breakdown Voltage : $V_{CEO} = 400V$

Unit in mm



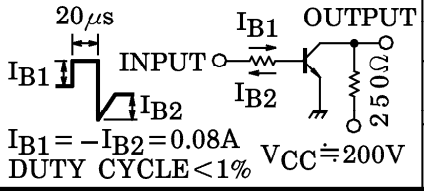
JEDEC	—
EIAJ	—
TOSHIBA	2-8M1A

Weight : 0.55g (Typ.)

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	500	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	7	V
Collector Current	I_C	2	A
Base Current	I_B	0.5	A
Collector Power Dissipation	P_C	1.3	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}	$V_{CB} = 400V$, $I_E = 0$	—	—	100	μA
Emitter Cut-off Current		I_{EBO}	$V_{EB} = 7V$, $I_C = 0$	—	—	1	mA
Collector-Base Breakdown Voltage		$V_{(BR)CBO}$	$I_C = 1mA$, $I_E = 0$	500	—	—	V
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	$I_C = 10mA$, $I_B = 0$	400	—	—	V
DC Current Gain		$h_{FE(1)}$	$V_{CE} = 5V$, $I_C = 0.1A$	20	—	—	
		$h_{FE(2)}$	$V_{CE} = 5V$, $I_C = 1A$	8	—	—	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	$I_C = 1A$, $I_B = 0.2A$	—	—	1.0	V
	Base-Emitter	$V_{BE(sat)}$	$I_C = 1A$, $I_B = 0.2A$	—	—	1.5	
Switching Time	Rise Time	t_r		—	—	1.0	μs
	Storage Time	t_{stg}		—	—	2.5	
	Fall Time	t_f		—	—	1.0	

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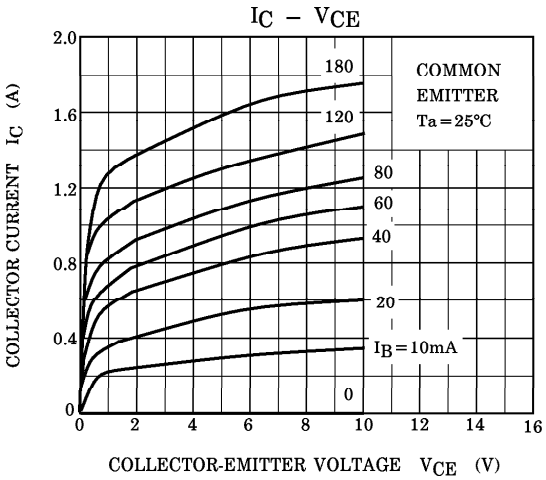
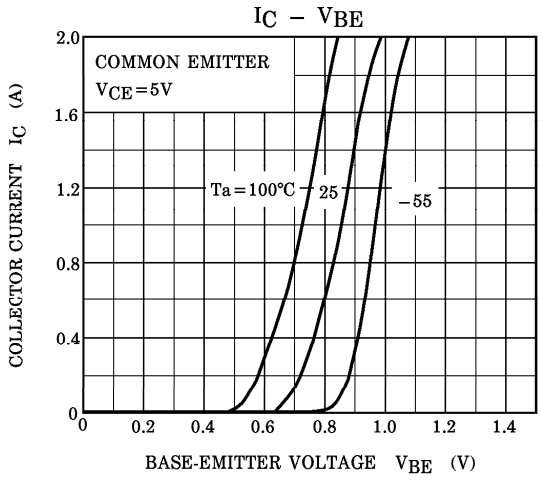
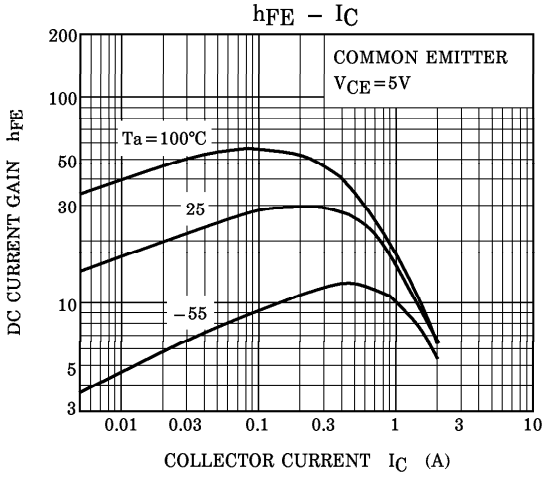
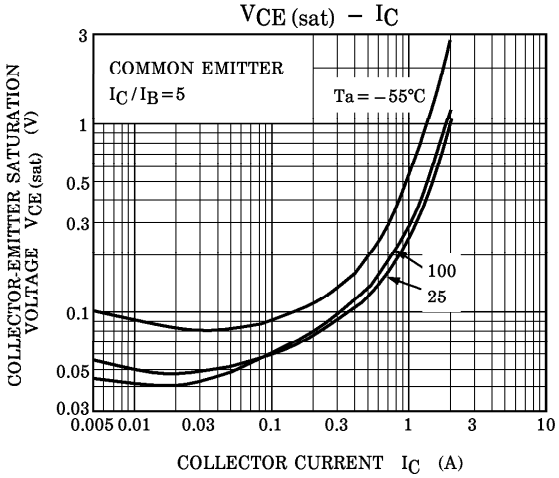
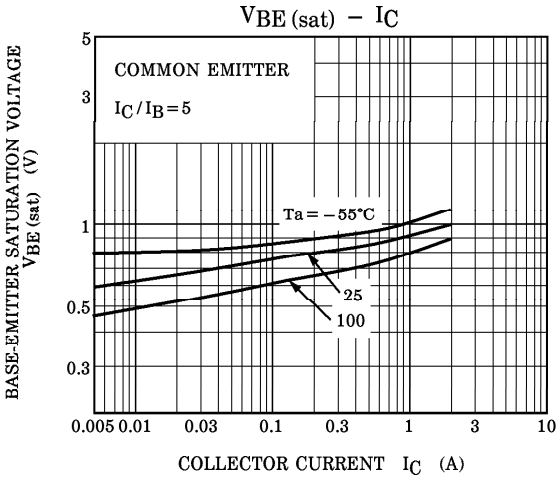
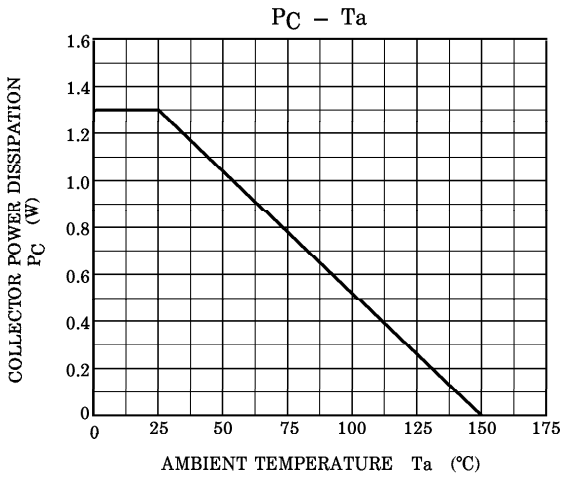

IC – VCE
COMMON EMITTER
Ta = 25°C
180
120
80
60
40
20
IB = 10mA
0
COLLECTOR CURRENT IC (A)
COLLECTOR-EMITTER VOLTAGE VCE (V)

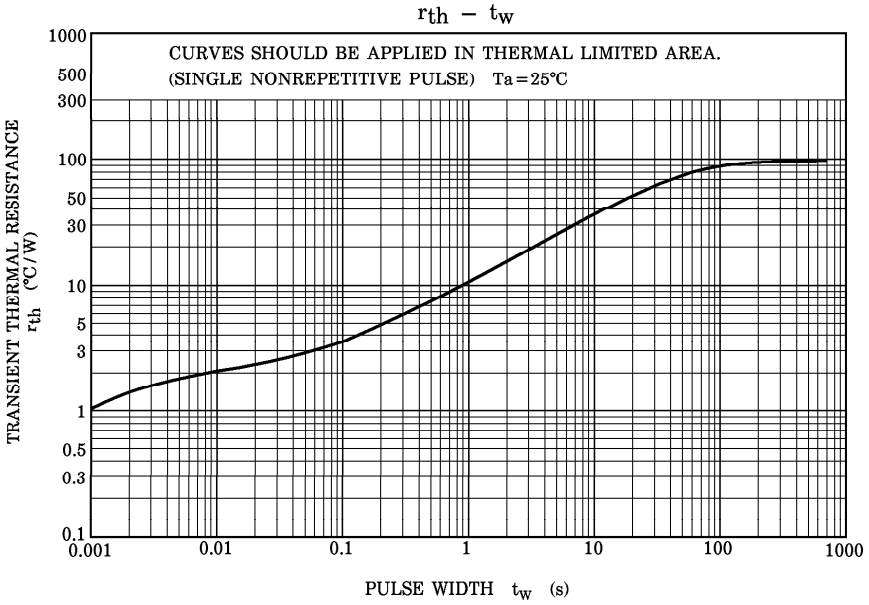

IC – VBE
COMMON EMITTER
VCE = 5V
Ta = 100°C
25
–55
COLLECTOR CURRENT IC (A)
BASE-EMITTER VOLTAGE VBE (V)

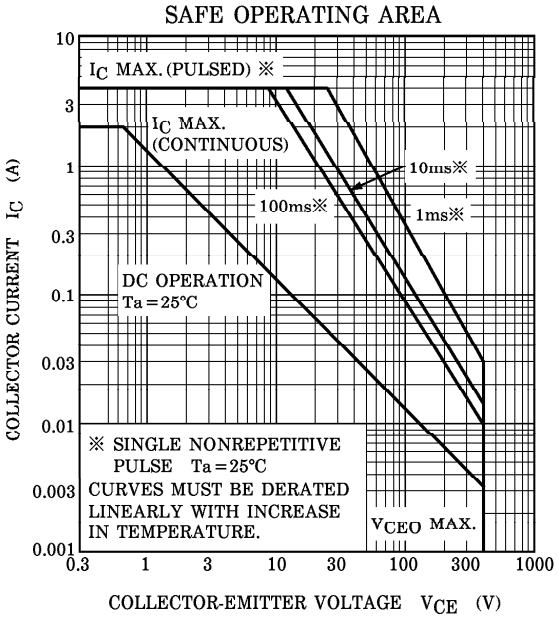

hFE – IC
COMMON EMITTER
VCE = 5V
Ta = 100°C
25
–55
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (A)


VCE (sat) – IC
COMMON EMITTER
IC / IB = 5
Ta = –55°C
100
25
COLLECTOR-EMITTER SATURATION VOLTAGE VCE (sat) (V)
COLLECTOR CURRENT IC (A)


VBE (sat) – IC
COMMON EMITTER
IC / IB = 5
Ta = –55°C
25
100
BASE-EMITTER SATURATION VOLTAGE VBE (sat) (V)
COLLECTOR CURRENT IC (A)


PC – Ta
COLLECTOR POWER DISSIPATION PC (W)
AMBIENT TEMPERATURE Ta (°C)


rth − tw
CURVES SHOULD BE APPLIED IN THERMAL LIMITED AREA.
(SINGLE NONREPETITIVE PULSE) Ta = 25°C
TRANSIENT THERMAL RESISTANCE rth (°C/W)
1000
500
300
100
50
30
10
5
3
1
0.5
0.3
0.1
0.001
0.01
0.1
1
10
100
1000
PULSE WIDTH tw (s)


SAFE OPERATING AREA
IC MAX. (PULSED) ※
IC MAX. (CONTINUOUS)
10ms※
100ms※
1ms※
DC OPERATION
Ta = 25°C
※ SINGLE NONREPETITIVE PULSE Ta = 25°C
CURVES MUST BE DERATED LINEARLY WITH INCREASE IN TEMPERATURE.
VCEO MAX.
COLLECTOR CURRENT IC (A)
10
3
1
0.3
0.1
0.03
0.01
0.003
0.001
0.3
1
3
10
30
100
300
1000
COLLECTOR-EMITTER VOLTAGE VCE (V)