2SC3308

SILICON NPN EPITAXIAL TYPE (PCT PROCESS)

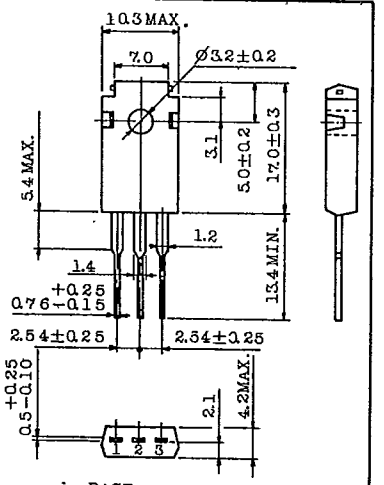
HIGH CURRENT SWITCHING APPLICATIONS.

INDUSTRIAL APPLICATIONS

FEATURES:

- Low Collector Saturation Voltage
  : $V_{CE(sat)}$=0.4V(Max.) at I_C=3A
- High Speed Switching Time : t_{stg}=1.0μs(Typ.)
- Complementary to 2SA1308.

Unit in mm



1. BASE
2. COLLECTOR (HEAT SINK)
3. EMITTER

JEDEC	—
EIAJ	—
TOSHIBA	2-10K1A

Weight : 2.0g

MAXIMUM RATINGS (Ta=25°C)

CHARACTERISTIC		SYMBOL	RATING	UNIT
Collector-Base Voltage		V_{CBO}	100	V
Collector-Emitter Voltage		V_{CEO}	80	V
Emitter-Base Voltage		V_{EBO}	7	V
Collector Current	DC	I_C	5	A
	Pulse	I_{CP}	8	
Collector Power Dissipation (Tc=25°C)		P_C	30	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}=100V, I_E=0	-	-	1	μA
Emitter Cut-off Current		I_{EBO}	V_{EB}=7V, I_C=0	-	-	1	μA
Collector-Emitter Breakdown Voltage		$V_{(BR)CEO}$	I_C=10mA, I_B=0	80	-	-	V
DC Current Gain		$h_{FE(1)}$ (Note)	V_{CE}=1V, I_C=1A	70	-	240	
		$h_{FE(2)}$	V_{CE}=1V, I_C=3A	40	-	-	
Saturation Voltage	Collector-Emitter	$V_{CE(sat)}$	I_C=3A, I_B=0.15A	-	0.2	0.4	V
	Base-Emitter	$V_{BE(sat)}$	I_C=3A, I_B=0.15A	-	0.9	1.2	
Transition Frequency		f_T	V_{CE}=4V, I_C=1A	-	120	-	MHz
Collector Output Capacitance		C_{ob}	V_{CB}=10V, I_E=0, f=1MHz	-	80	-	pF
Switching Time	Turn-on Time	t_{on}	20μs, I_{B1}, INPUT, I_{B2}, OUTPUT, V_{CC}≒30V, I_{B1}=−I_{B2}=0.15A, DUTY CYCLE≦1%	-	0.2	-	μs
	Storage Time	t_{stg}		-	1.0	-	
	Fall Time	t_f		-	0.1	-	

Note : $h_{FE(1)}$ Classification O : 70～140, Y : 120～240

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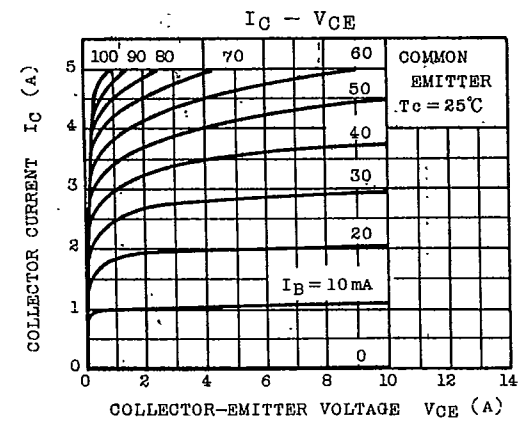
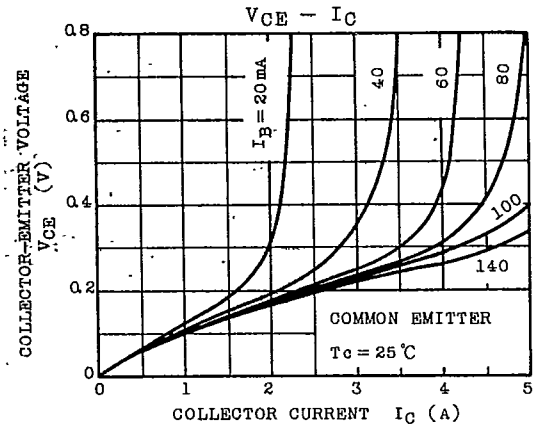
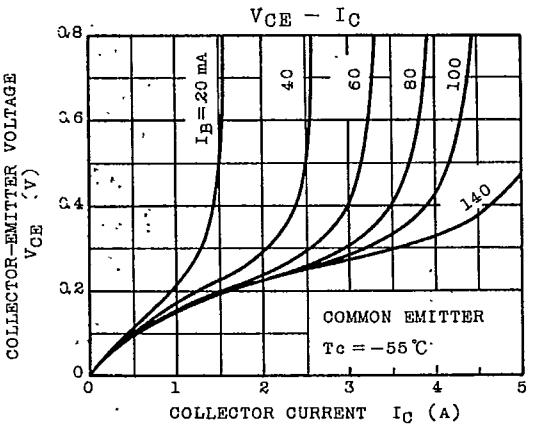
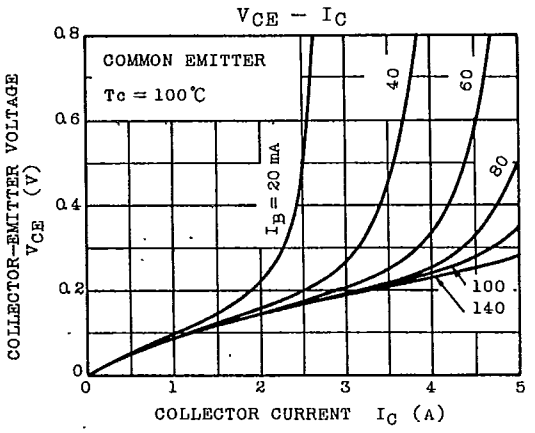
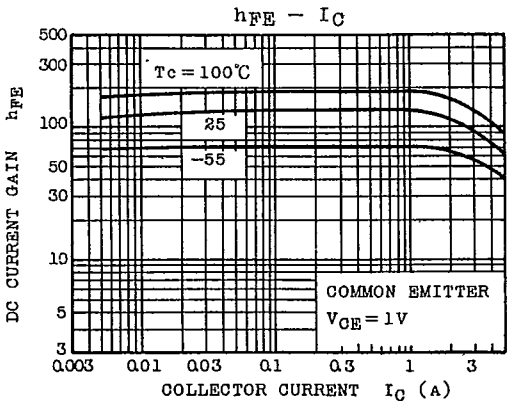
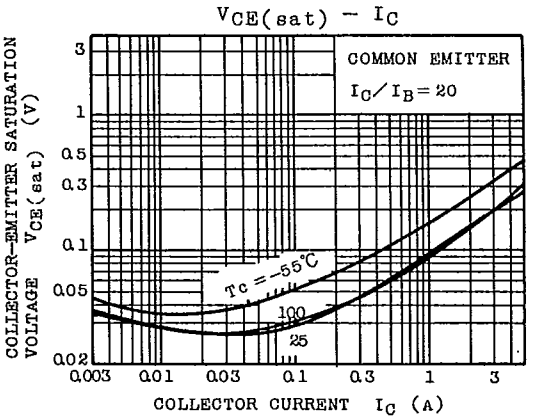

$I_C - V_{CE}$
COMMON EMITTER
Tc = 25℃
I_B = 10 mA
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (A)


$V_{CE} - I_C$
COMMON EMITTER
Tc = 25℃
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
COLLECTOR CURRENT I_C (A)


$V_{CE} - I_C$
COMMON EMITTER
Tc = −55℃
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
COLLECTOR CURRENT I_C (A)


$V_{CE} - I_C$
COMMON EMITTER
Tc = 100℃
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)
COLLECTOR CURRENT I_C (A)


$h_{FE} - I_C$
Tc = 100℃
25
−55
COMMON EMITTER
V_{CE} = 1V
DC CURRENT GAIN h_{FE}
COLLECTOR CURRENT I_C (A)


$V_{CE(sat)} - I_C$
COMMON EMITTER
I_C/I_B = 20
Tc = −55℃
100
25
COLLECTOR-EMITTER SATURATION VOLTAGE $V_{CE(sat)}$ (V)
COLLECTOR CURRENT I_C (A)

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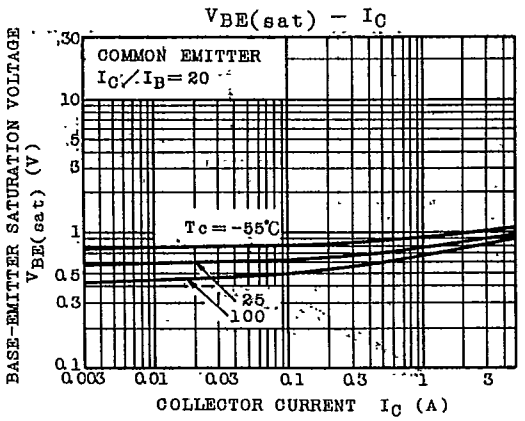
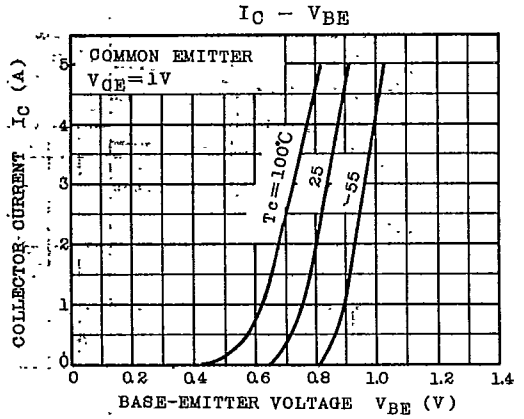
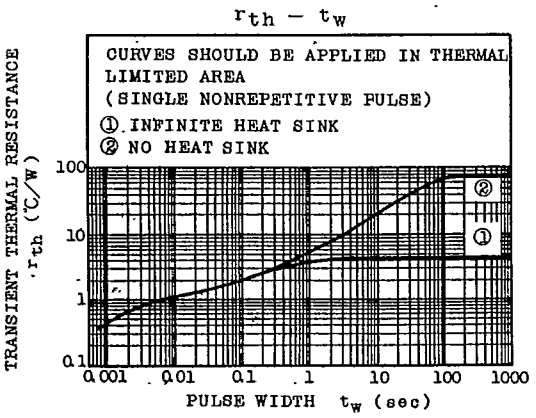
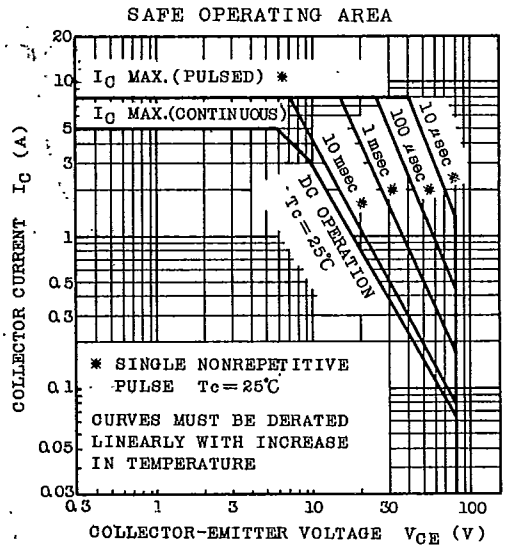

$V_{BE(sat)}$ – I_C
COMMON EMITTER
$I_C/I_B = 20$
Tc = -55°C
25
100
BASE-EMITTER SATURATION VOLTAGE $V_{BE(sat)}$ (V)
COLLECTOR CURRENT I_C (A)


I_C – V_{BE}
COMMON EMITTER
V_{CE} = 1V
Tc = 100°C
25
-55
COLLECTOR CURRENT I_C (A)
BASE-EMITTER VOLTAGE V_{BE} (V)


r_{th} – t_w
CURVES SHOULD BE APPLIED IN THERMAL LIMITED AREA
(SINGLE NONREPETITIVE PULSE)
① INFINITE HEAT SINK
② NO HEAT SINK
TRANSIENT THERMAL RESISTANCE r_{th} (°C/W)
PULSE WIDTH t_w (sec)


SAFE OPERATING AREA
I_C MAX. (PULSED) *
I_C MAX. (CONTINUOUS)
10 μsec *
100 μsec *
1 msec *
10 msec *
DC OPERATION
Tc = 25°C
* SINGLE NONREPETITIVE PULSE Tc = 25°C
CURVES MUST BE DERATED LINEARLY WITH INCREASE IN TEMPERATURE
COLLECTOR CURRENT I_C (A)
COLLECTOR-EMITTER VOLTAGE V_{CE} (V)