



# 2SC3456

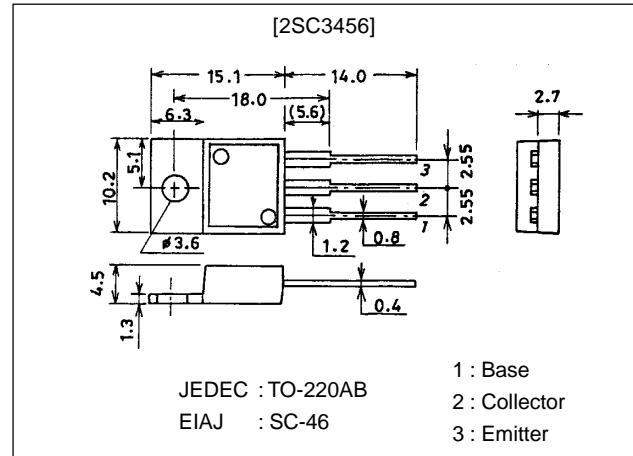
## 800V/1.5A Switching Regulator Applications

### Features

- High breakdown voltage and high reliability.
- Fast switching speed ( $t_f$  : 0.1 $\mu$ s typ).
- Wide ASO.
- Adoption of MBIT process.

### Package Dimensions

unit:mm  
2010C



### Specifications

#### Absolute Maximum Ratings at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		1100	V
Collector-to-Emitter Voltage	$V_{CEO}$		800	V
Emitter-to-Base Voltage	$V_{EBO}$		7	V
Collector Current	$I_C$		1.5	A
Collector Current (Pulse)	$I_{CP}$	$PW \leq 300\mu\text{s}$ , Duty Cycle $\leq 10\%$	5	A
Base Current	$I_B$		0.8	A
Collector Dissipation	$P_C$	$T_c = 25^\circ\text{C}$	40	W
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

#### Electrical Characteristics at $T_a = 25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB} = 800\text{V}$ , $I_E = 0$			10	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 5\text{V}$ , $I_C = 0$			10	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$V_{CE} = 5\text{V}$ , $I_C = 0.1\text{A}$	10*		40*	
	$h_{FE2}$	$V_{CE} = 5\text{V}$ , $I_C = 0.5\text{A}$	8			
Gain-Bandwidth Product	$f_T$	$V_{CE} = 10\text{V}$ , $I_C = 0.1\text{A}$		15		MHz
Output Capacitance	$C_{ob}$	$V_{CB} = 10\text{V}$ , $f = 1\text{MHz}$		35		pF

\* : The  $h_{FE1}$  of the 2SC3456 is classified as follows. When specifying the  $h_{FE1}$  rank, specify two ranks or more in principle.

10	K	20	15	L	30	20	M	40
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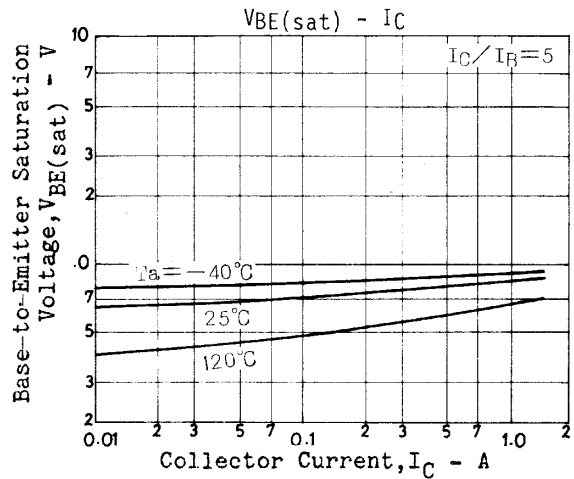
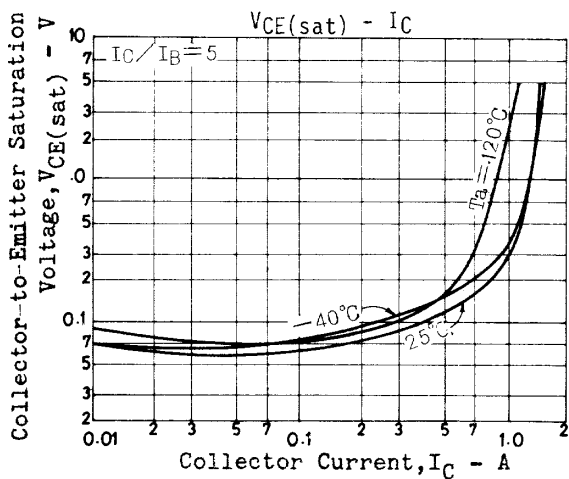
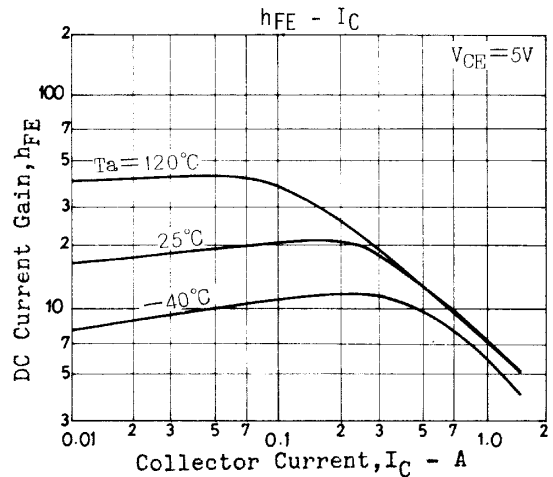
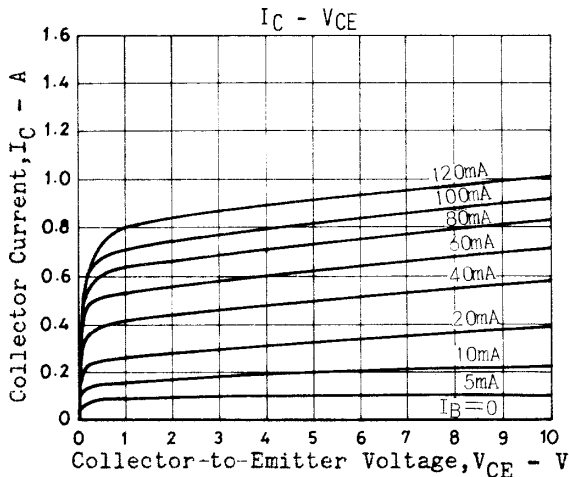
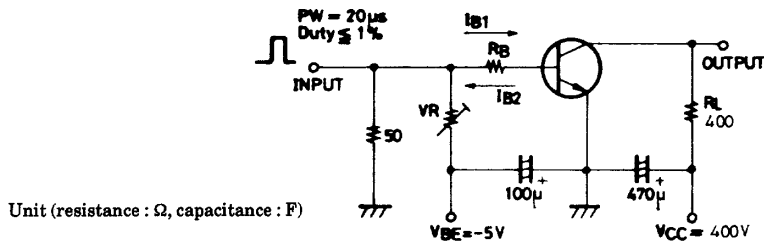
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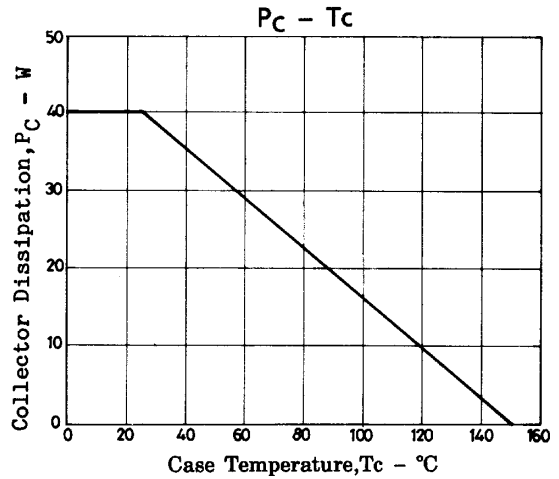
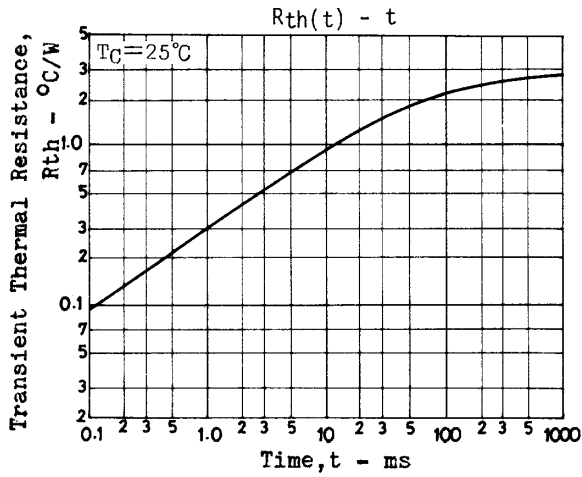
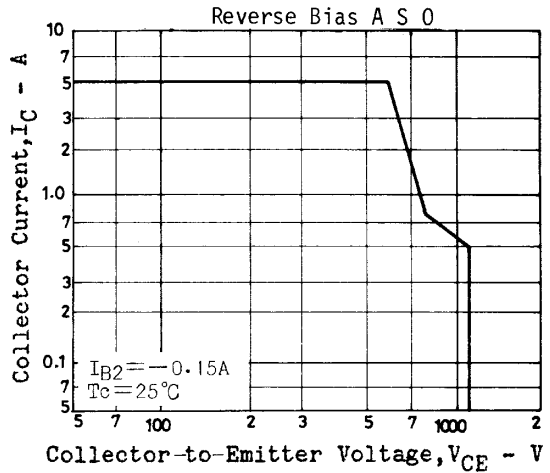
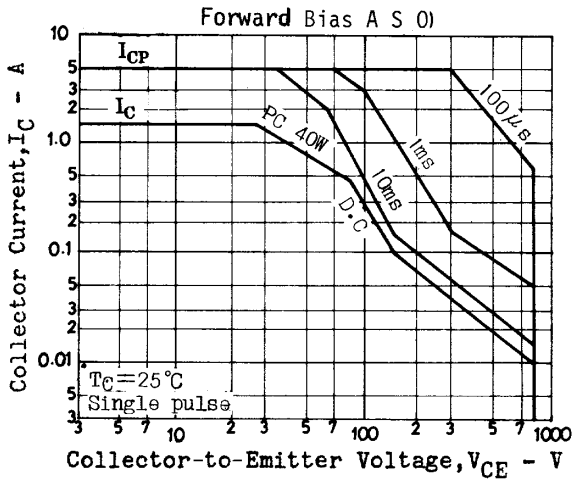
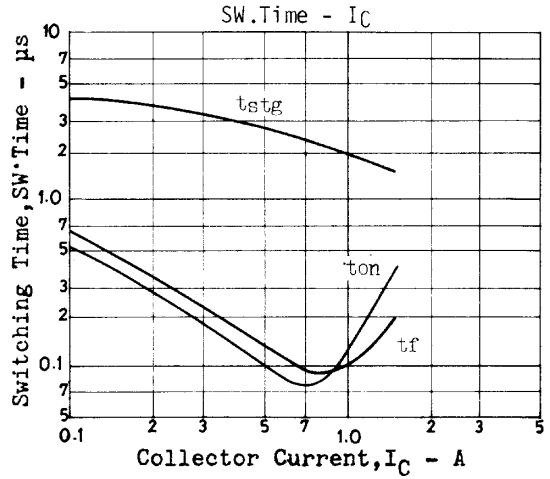
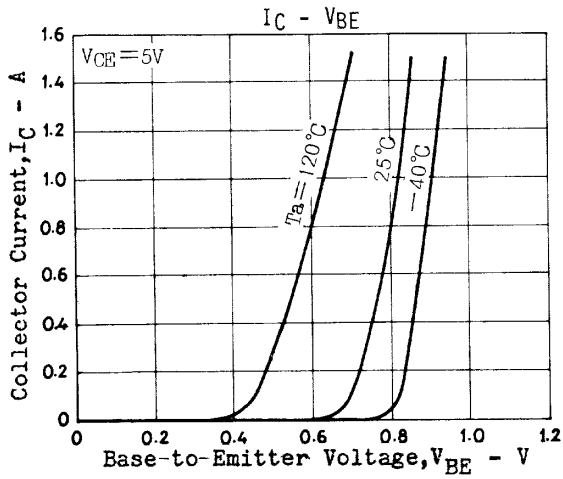
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C=0.75A, I_B=0.15A$			2.0	V
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C=0.75A, I_B=0.15A$			1.5	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=1mA, I_E=0$	1100			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=5mA, R_{BE}=\infty$	800			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=1mA, I_C=0$	7			V
Collector-to-Emitter Sustain Voltage	$V_{CEX(sus)}$	$I_C=0.75A, I_{B1}=-I_{B2}=0.15A, L=5mH, \text{clamped}$	800			V
Turn-ON Time	$t_{on}$	$V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=1A, R_L=400\Omega$			0.5	$\mu s$
Storage Time	$t_{stg}$	$V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=1A, R_L=400\Omega$			3.0	$\mu s$
Fall Time	$t_f$	$V_{CC}=400V, 5I_{B1}=-2.5I_{B2}=I_C=1A, R_L=400\Omega$			0.3	$\mu s$

## Switching Time Test Circuit



# 2SC3456



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