2SC3447



# 500V/5A Switching Regulator Applications

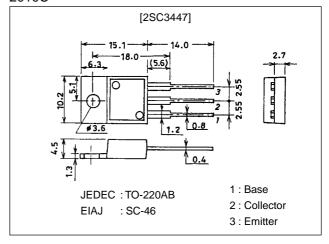
#### **Features**

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

### **Package Dimensions**

unit:mm

2010C



## **Specifications**

### Absolute Maximum Ratings at Ta = 25°C

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Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		800	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		500	V
Emitter-to-Base Voltage	V <sub>EBO</sub>		7	V
Collector Current	lC		5	Α
Collector Current (Pulse)	I <sub>CP</sub>	PW≤300μs, Duty Cycle≤10%	10	Α
Base Current	I <sub>B</sub>		2	Α
Collector Dissipation	PC	Tc=25°C	50	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
	Symbol		min	typ	max	Offic
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =500V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	I <sub>EBO</sub>	V <sub>EB</sub> =5V, I <sub>C</sub> =0			10	μA
DC Current Gain	h <sub>FE</sub> 1	V <sub>CE</sub> =5V, I <sub>C</sub> =0.6A	15*		50*	
	h <sub>FE</sub> 2	V <sub>CE</sub> =5V, I <sub>C</sub> =3A	8			
Gain-Bandwidth Product	fT	V <sub>CE</sub> =10V, I <sub>C</sub> =0.6A		18		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		80		pF

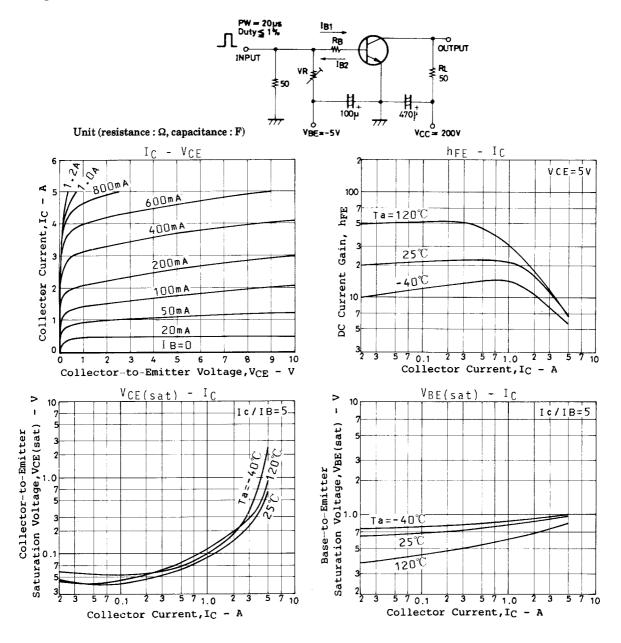
\*: The  $h_{FE}1$  of the 2SC3447 is classified as follows. When specifying the  $h_{FE}1$  rank, specify two ranks or more in principle.

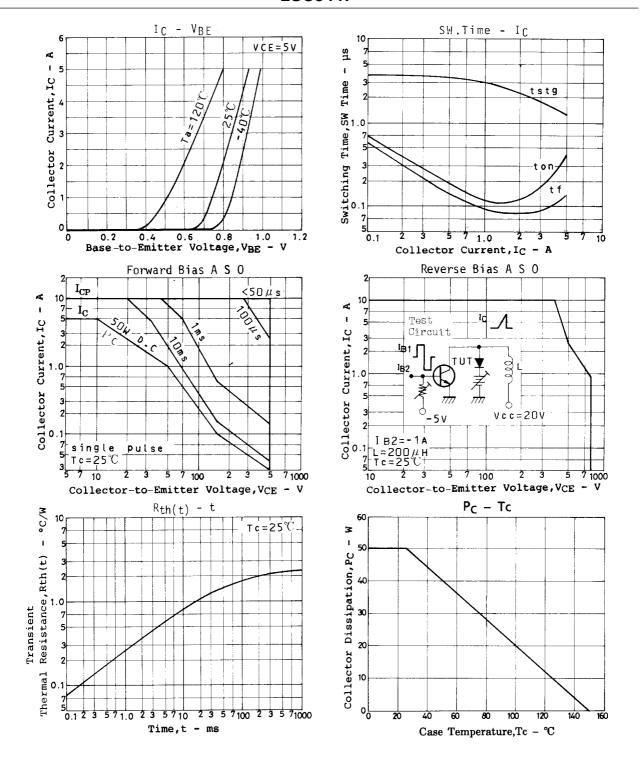
15 L 30 20 M 40 30 N 50

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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Unit
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =3A, I <sub>B</sub> =0.6A			1.0	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =3A, I <sub>B</sub> =0.6A			1.5	V
Collector-to-Base Breakdown Voltage	V(BR)CBO	I <sub>C</sub> =1mA, I <sub>E</sub> =0	800			V
Collector-to-Emitter Breakdown Voltage	V(BR)CEO	I <sub>C</sub> =5mA, R <sub>BE</sub> =∞	500			V
Emitter-to-Base Breakdown Voltage	V(BR)EBO	I <sub>E</sub> =1mA, I <sub>C</sub> =0	7			V
Collector-to-Emitter Sustain Voltage	V <sub>CEX(sus)</sub>	I <sub>C</sub> =2.5A, I <sub>B1</sub> =-I <sub>B2</sub> =1A, L=1mH, clamped	500			V
Turn-ON Time	ton	$V_{CC}$ =200V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =4A, $R_{L}$ = $50\Omega$			0.5	μs
Storage Time	t <sub>stg</sub>	$V_{CC}$ =200V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =4A, $R_{L}$ = $50\Omega$			3.0	μs
Fall Time	t <sub>f</sub>	$V_{CC}$ =200V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =4A, $R_{L}$ = $50\Omega$			0.3	μs

### **Switching Time Test Circuit**





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