2SC3459



# 800V/4.5A Switching Regulator Applications

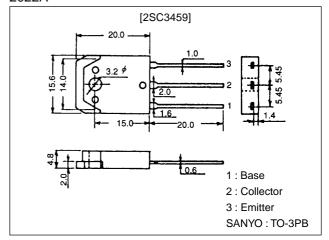
#### **Features**

- · 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

2022A



## **Specifications**

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CBO</sub>		1100	V
Collector-to-Emitter Voltage	VCEO		800	V
Emitter-to-Base Voltage	VEBO		7	V
Collector Current	IC		4.5	Α
Collector Current (Pulse)	I <sub>CP</sub>	PW≤300μs, Duty Cycle≤10%	15	Α
Base Current	IB		2	Α
Collector Dissipation	PC	Tc=25°C	90	W
Junction Temperature	Tj		150	°C
Storage Temperature	Tstg		-55 to +150	°C

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

Parameter	Symbol	Conditions		Ratings		
	Symbol		min	typ	max	Unit
Collector Cutoff Current	I <sub>CBO</sub>	V <sub>CB</sub> =800V, I <sub>E</sub> =0			10	μA
Emitter Cutoff Current	IEBO	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> =0.3A	10*		40*	
	h <sub>FE</sub> 2	V <sub>CE</sub> =5V, I <sub>C</sub> =1.5A	8			
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =10V, I <sub>C</sub> =0.3A		15		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		90		pF

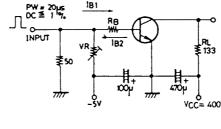
 $\overline{*}$ : The  $h_{FE}1$  of the 2SC3459 is classified as follows. When specifying the  $h_{FE}1$  rank, specify two ranks or more in principle.

10 K 20 15 L 30 20 M 40

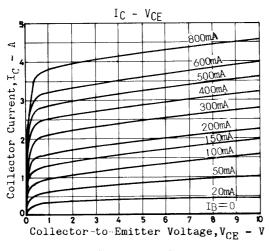
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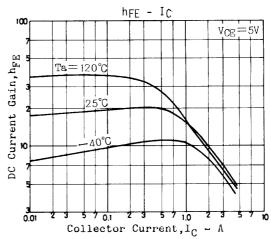
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	Oill
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =2A, I <sub>B</sub> =0.4A			2.0	V
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =2A, I <sub>B</sub> =0.4A			1.5	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)</sub> CBO	I <sub>C</sub> =1mA, I <sub>E</sub> =0	1100			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)</sub> CEO	I <sub>C</sub> =5mA, R <sub>BE</sub> =∞	800			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	VCEX(sus)	I <sub>C</sub> =2A, I <sub>B1</sub> =-I <sub>B2</sub> =0.4A, L=2mH, clamped	800			V
Turn-ON Time	ton	$V_{CC}$ =400V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =3A, $R_{L}$ =133 $\Omega$			0.5	μs
Storage Time	t <sub>stg</sub>	$V_{CC}$ =400V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =3A, $R_{L}$ =133 $\Omega$			3.0	μs
Fall Time	t <sub>f</sub>	$V_{CC}$ =400V, $5I_{B1}$ =-2. $5I_{B2}$ = $I_{C}$ =3A, $R_{L}$ =133 $\Omega$			0.3	μs

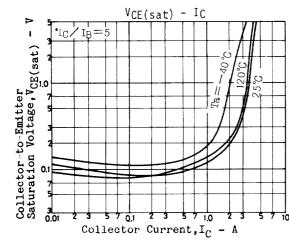
### **Switching Time Test Circuit**

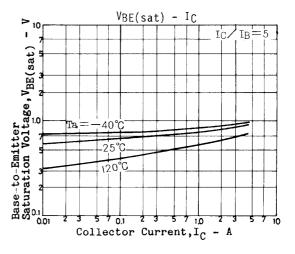


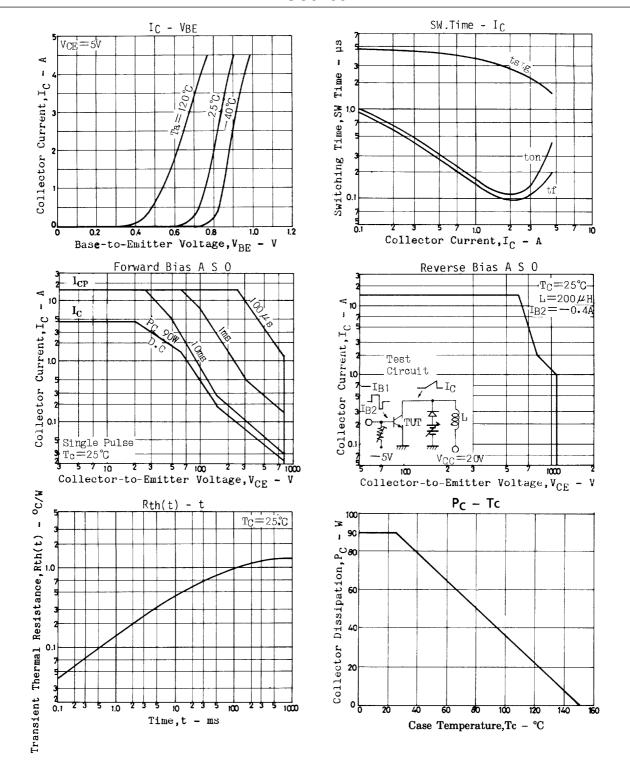
 $Unit \ (resistance: \Omega, capacitance: F)$ 











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