



2SD439

Low Frequency Power Amp,
Medium Speed Switching Applications

3372E

Features

- Large allowable collector dissipation and wide ASO.
- Low saturation voltage and good linearity of h_{FE} .
- Suited for use in output stage of low-voltage high-output ($P_o=2W/V_{CC}=4.5V$) AF amp.

():2SB559

Absolute Maximum Ratings at $T_a=25^\circ C$

Collector to Base Voltage	V_{CBO}	(-)20	V
Collector to Emitter Voltage	V_{CEO}	(-)18	V
Emitter to Base Voltage	V_{EBO}	(-)5	V
Collector Current	I_C	(-)1.2	A
Peak Collector Current	i_{cp}	(-)2.0	A
Collector Dissipation	P_C	1	W
		8	W
		150	$^\circ C$
Junction Temperature	T_j		$^\circ C$
Storage Temperature	T_{stg}	-55 to +150	$^\circ C$

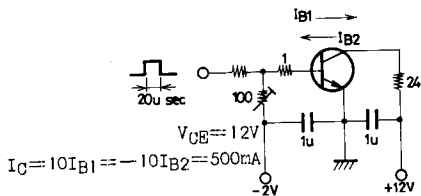
 $T_c=25^\circ C$ Electrical Characteristics at $T_a=25^\circ C$

		min	typ	max	unit
C-B Breakdown Voltage	$V_{(BR)CBO}$	$I_C=(-)10\mu A, I_E=0$	(-)20		V
C-E Breakdown Voltage	$V_{(BR)CEO}$	$I_C=(-)1mA, R_{BE}=\infty$	(-)18		V
E-B Breakdown Voltage	$V_{(BR)EBO}$	$I_E=(-)10\mu A, I_C=0$	(-)5		V
Collector Cutoff Current	I_{CBO}	$V_{CB}=(-)15V, I_E=0$		(-)1	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB}=(-)4V, I_C=0$		(-)1	μA
DC Current Gain	$h_{FE}(1)$	$V_{CE}=(-)2V, I_C=(-)500mA$	60*	320*	
	$h_{FE}(2)$	$V_{CE}=(-)2V, I_C=(-)1.5A$ (pulse)	(40)50		
Gain Bandwidth Product	f_T	$V_{CE}=(-)10V, I_C=(-)50mA$	150		MHz
Collector Capacitance	c_{ob}	$V_{CB}=(-)10V, f=1MHz$	(30)20		pF
C-E Saturation Voltage	$V_{CE(sat)}$	$I_C=(-)1A, I_B=(-)50mA$	(-0.35)(-0.7)		V
			0.25 0.5		V
B-E Saturation Voltage	$V_{BE(sat)}$	$I_C=(-)500mA, I_B=(-)50mA$	(-)0.85(-)1.2		V
Turn-ON Time	t_{on}	See specified Test Circuit.	50		ns
Storage Time	t_{stg}	"	(60)70		ns
Fall Time	t_f	"	200		ns

* The 2SB559/2SD439 are classified by h_{FE} at 500mA.

60	D	120	100	E	200	160	F	320
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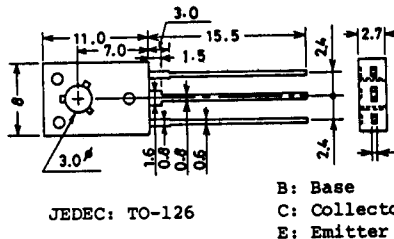
Switching Time Test Circuit



(For PNP, the polarity is reversed.)

Case Outline 2009A

(unit:mm)



JEDEC: TO-126

B: Base
C: Collector
E: Emitter

For details, refer to the description of the 2SD439.