

**12A02SS**

## Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low-frequency Amplifier, high-speed switching, small motor drive, muting circuit.

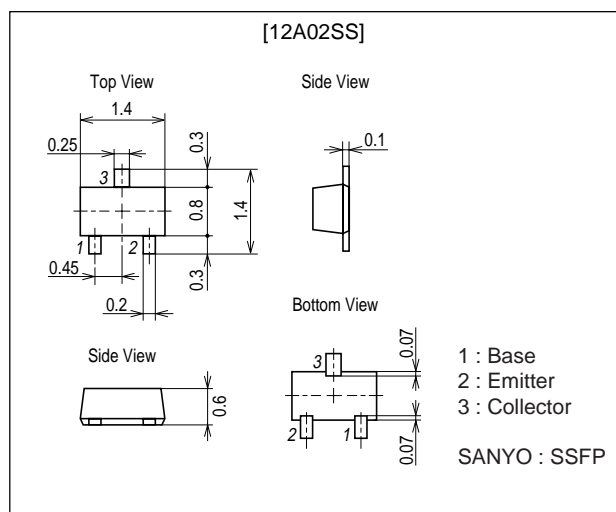
### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage (resistance). RCE (sat) typ.=285mΩ [IC=1A, IB=50mA].
- Ultrasmall package facilitates miniaturization in end products.
- Small ON-resistance (Ron).

### Package Dimensions

unit : mm

2159A



### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		-15	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		-12	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		-5	V
Collector Current	I <sub>C</sub>		-0.8	A
Collector Current (Pulse)	I <sub>CP</sub>		-1.6	A
Collector Dissipation	P <sub>C</sub>	Mounted on a glass-epoxy board (20X30X1.6mm)	200	mW
Junction Temperature	T <sub>J</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> = -12V, I <sub>E</sub> =0			-100	nA
Emitter Cutoff Current	I <sub>EB0</sub>	V <sub>EB</sub> = -4V, I <sub>C</sub> =0			-100	nA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> = -2V, I <sub>C</sub> = -10mA	300		700	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> = -2V, I <sub>C</sub> = -50mA		450		MHz

Marking : XK

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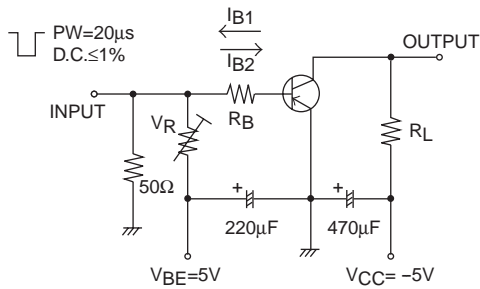
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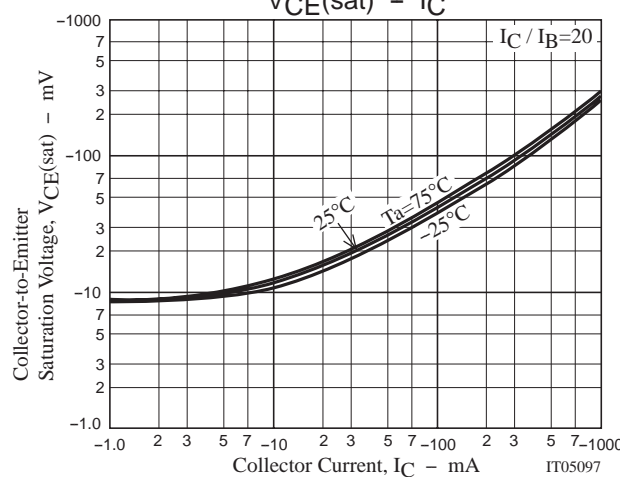
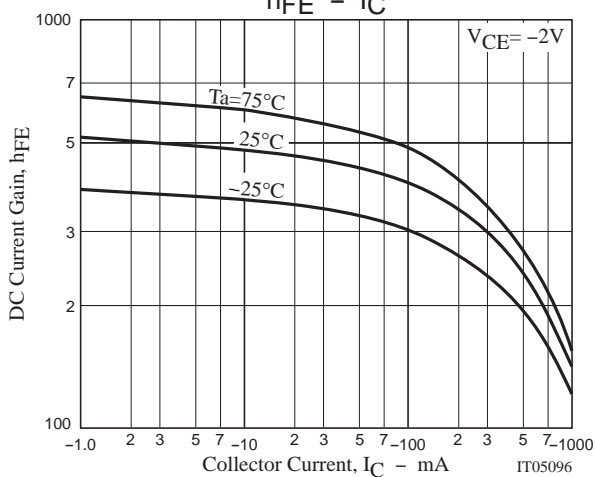
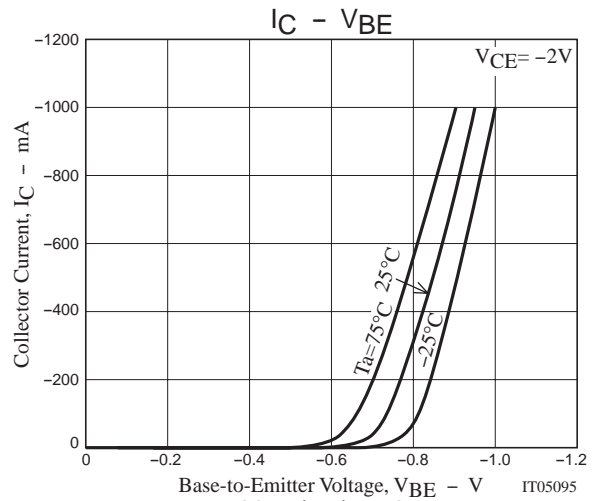
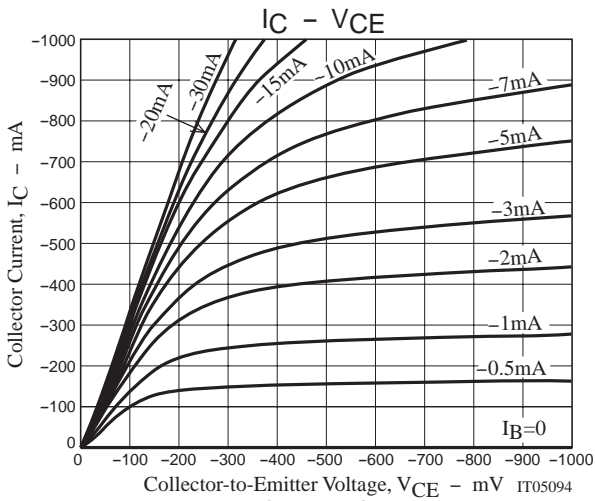
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	$C_{ob}$	$V_{CB} = -10V, f=1MHz$		6		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -400mA, I_B = -20mA$		-120	-240	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -400mA, I_B = -20mA$		-0.9	-1.2	V
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = -10\mu A, I_E = 0$	-15			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = -1mA, R_{BE} = \infty$	-12			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = -10\mu A, I_C = 0$	-5			V
Turn-ON Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		75		ns
Fall Time	$t_f$	See specified Test Circuit.		15		ns

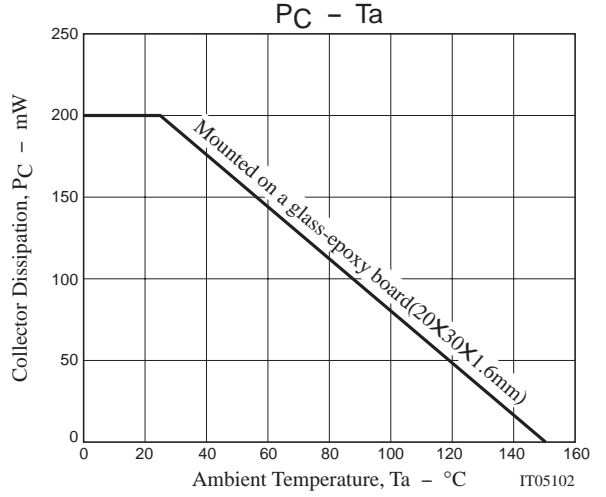
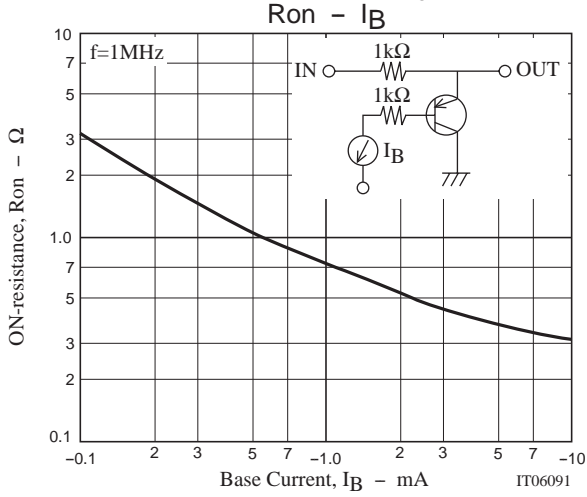
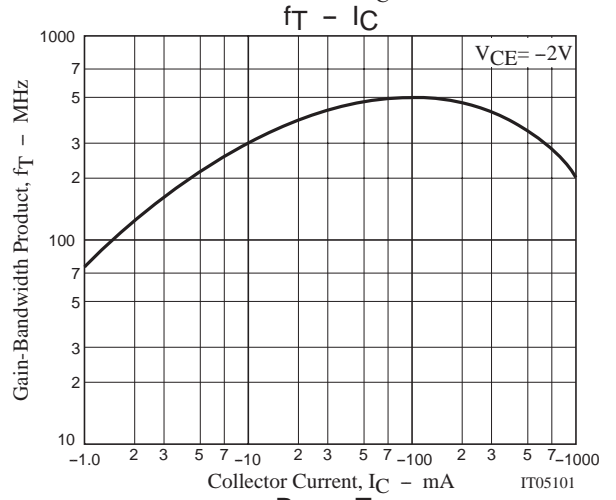
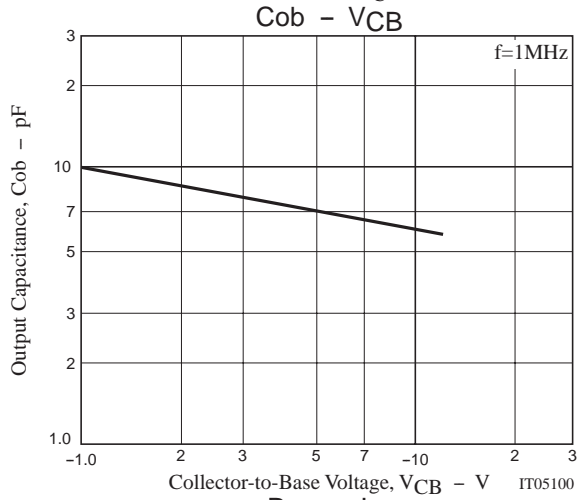
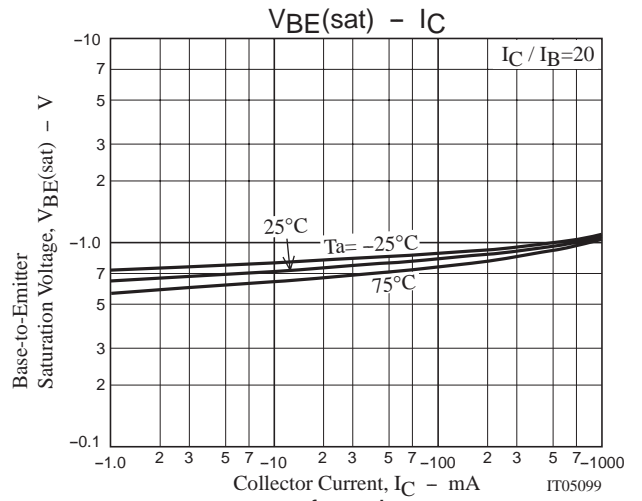
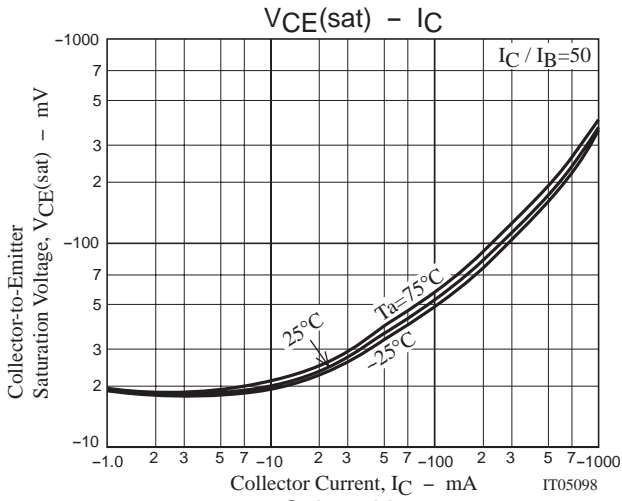
## Switching Time Test Circuit



$$I_C = 20I_{B1} = -20I_{B2} = -400mA$$



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