



# 12A01SP

## Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low-frequency Amplifier, small motor drive, muting circuit.

### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage (resistance).  
RCE (sat) typ.=0.57Ω [IC=0.5A, IB=25mA].
- Small ON-resistance (Ron).

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	VCBO		-15	V
Collector-to-Emitter Voltage	VCEO		-12	V
Emitter-to-Base Voltage	VEBO		-5	V
Collector Current	IC		-500	mA
Collector Current (Pulse)	ICP		-1.0	A
Collector Dissipation	PC		400	mW
Junction Temperature	TJ		150	°C
Storage Temperature	Tstg		-55 to +150	°C

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	ICBO	V <sub>CB</sub> =-12V, I <sub>E</sub> =0			-0.1	μA
Emitter Cutoff Current	IEBO	V <sub>EB</sub> =-4V, I <sub>C</sub> =0			-0.1	μA
DC Current Gain	hFE	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		490		MHz

Marking : XP

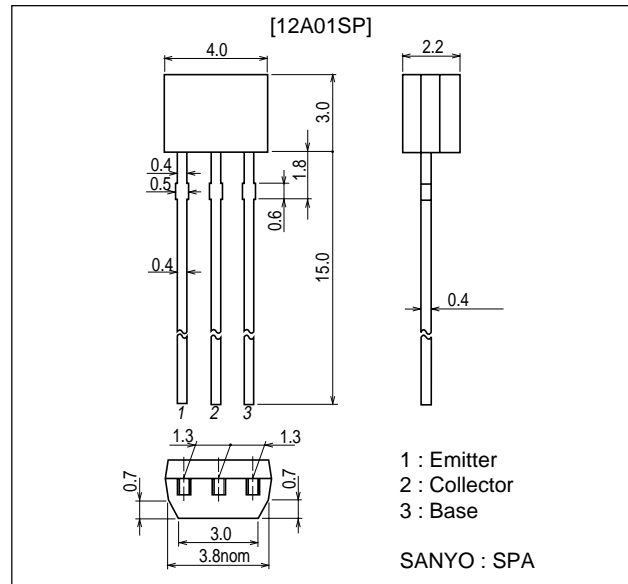
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### Package Dimensions

unit : mm  
2033A

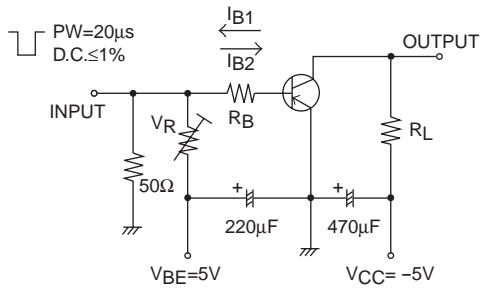


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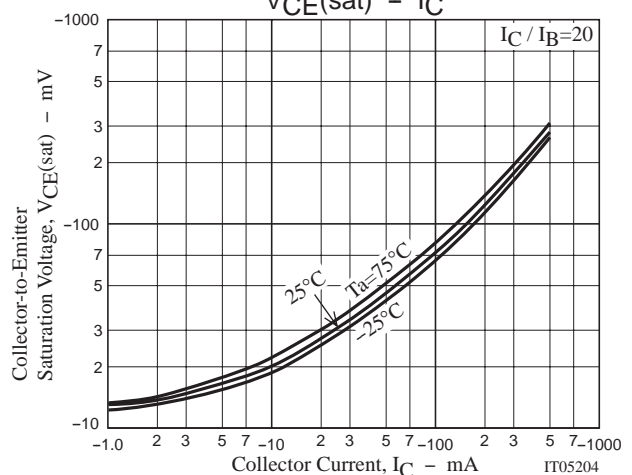
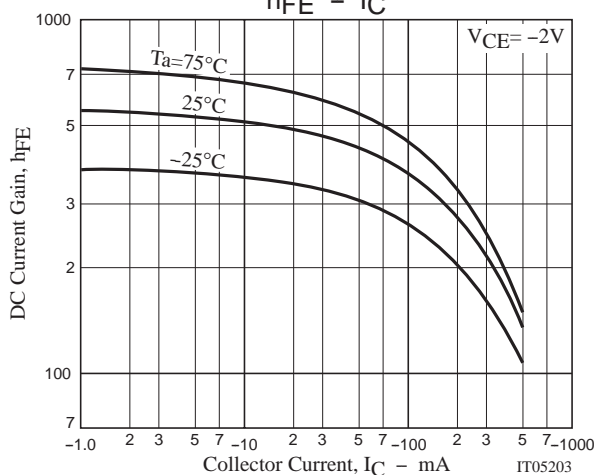
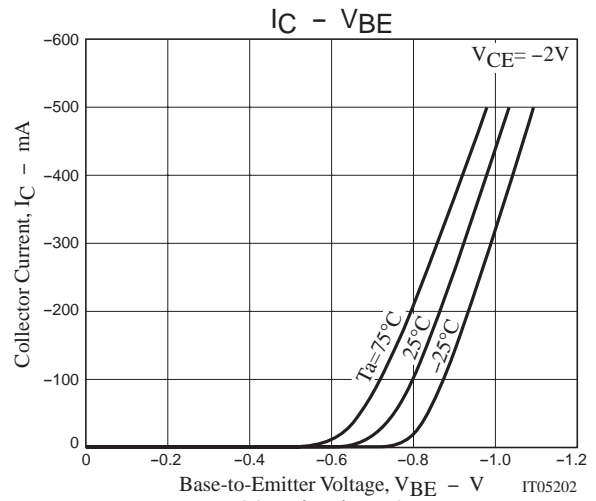
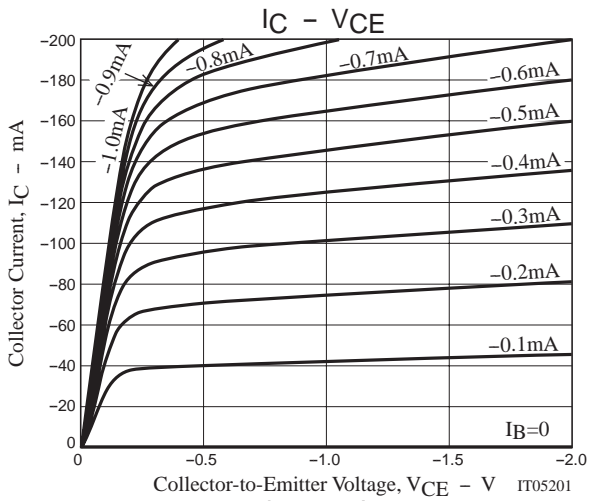
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	$C_{ob}$	$V_{CE} = -10V, f = 1MHz$		4		pF
Collector-to-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = -200mA, I_B = -10mA$		-150	-300	mV
Base-to-Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = -200mA, I_B = -10mA$		-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.		57		ns
Fall Time	$t_f$	See specified Test Circuit.		30		ns

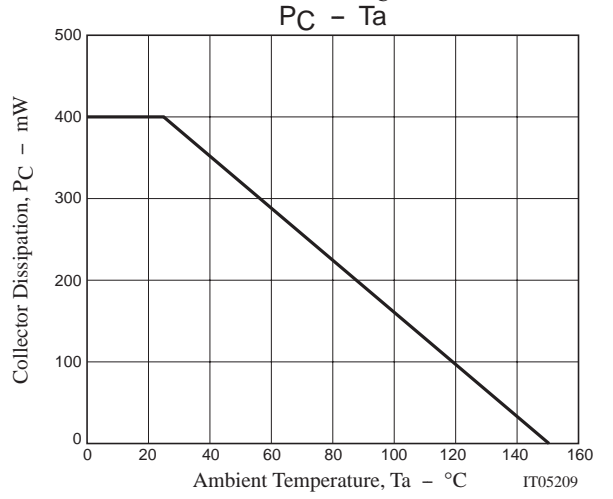
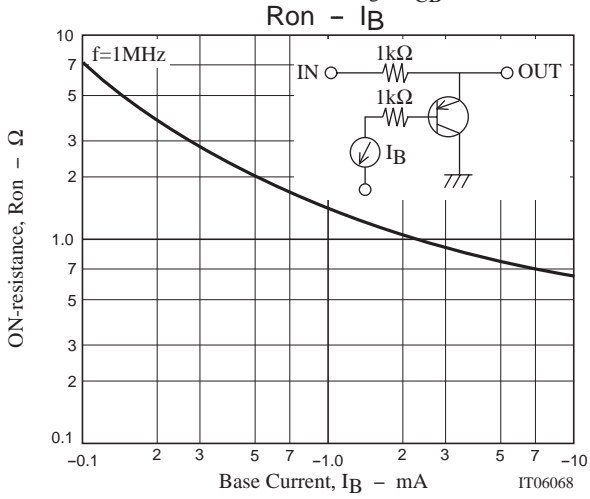
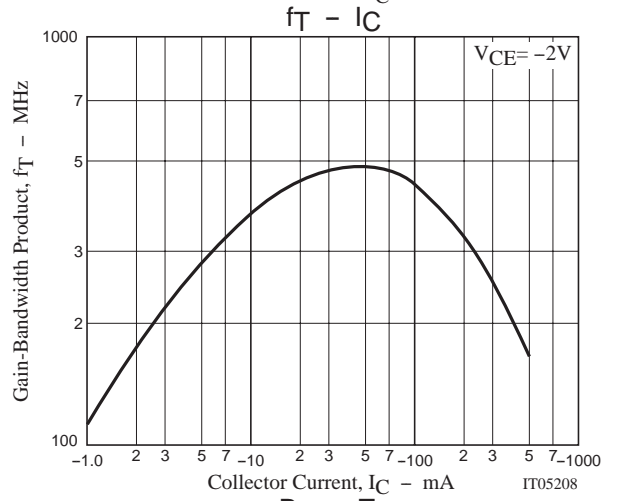
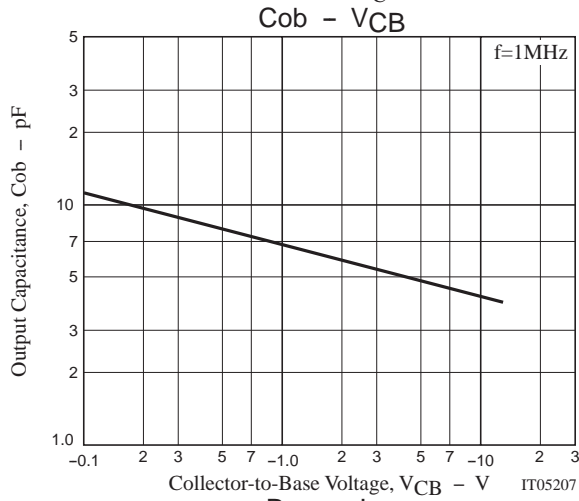
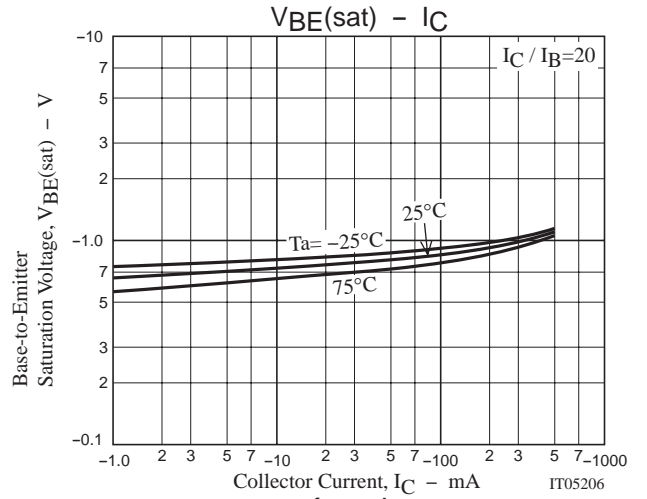
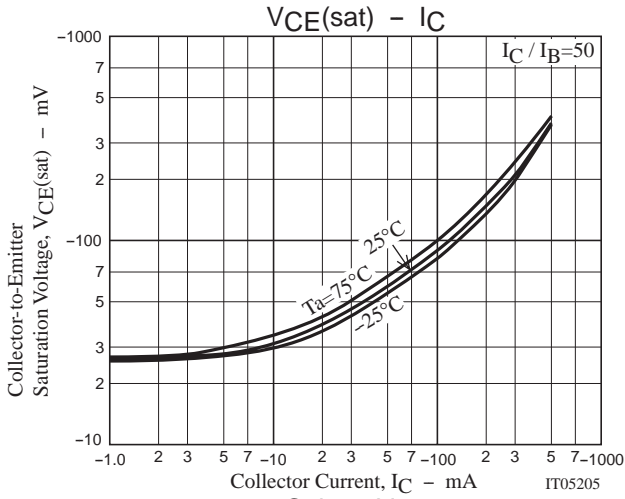
## Switching Time Test Circuit



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



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