

Ordering number : ENN7480

PNP Epitaxial Planar Silicon Transistor

**12A01SP**

## Low-Frequency General-Purpose Amplifier Applications

### Applications

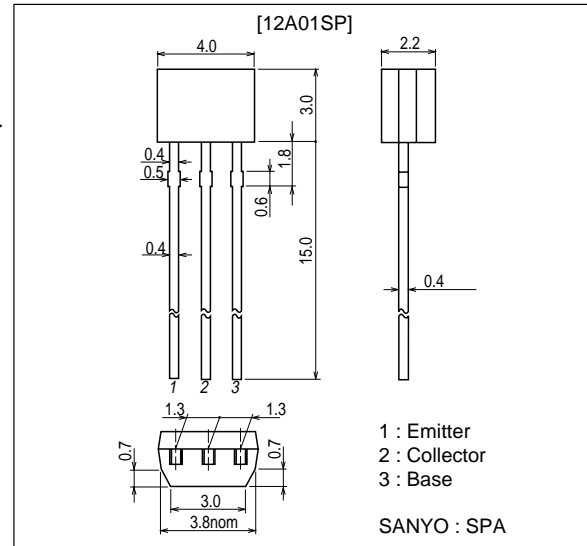
- Low-frequency Amplifier, small motor drive, muting circuit.

### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage (resistance).  
RCE (sat) typ.= $0.57\Omega$  [ $I_C=0.5A$ ,  $I_B=25mA$ ].
- Small ON-resistance (Ron).

### Package Dimensions

unit : mm  
2033A



### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CBO}$		-15	V
Collector-to-Emitter Voltage	$V_{CEO}$		-12	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-500	mA
Collector Current (Pulse)	$I_{CP}$		-1.0	A
Collector Dissipation	$P_C$		400	mW
Junction Temperature	$T_j$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=-12V$ , $I_E=0$			-0.1	$\mu\text{A}$
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4V$ , $I_C=0$			-0.1	$\mu\text{A}$
DC Current Gain	$h_{FE}$	$V_{CE}=-2V$ , $I_C=-10mA$	300		700	
Gain-Bandwidth Product	$f_T$	$V_{CE}=-2V$ , $I_C=-50mA$		490		MHz

Marking : XP

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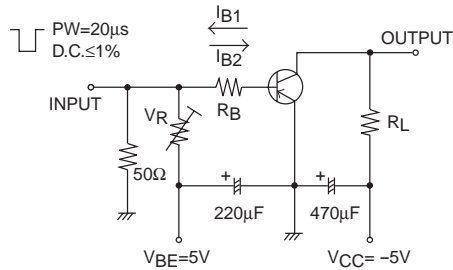
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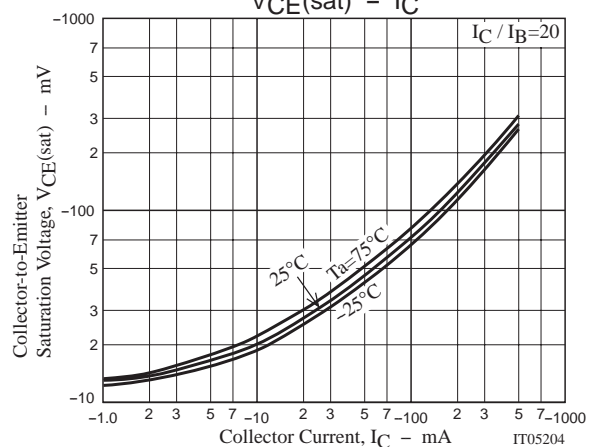
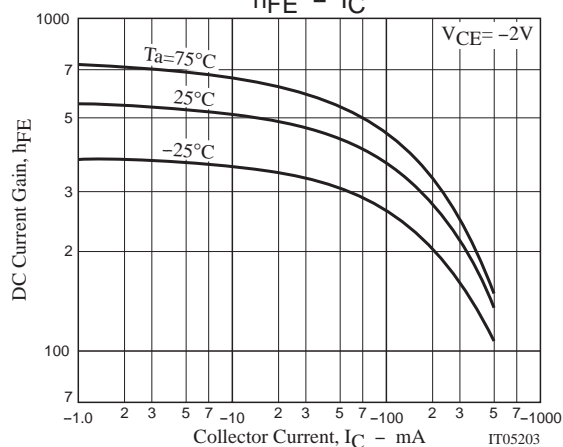
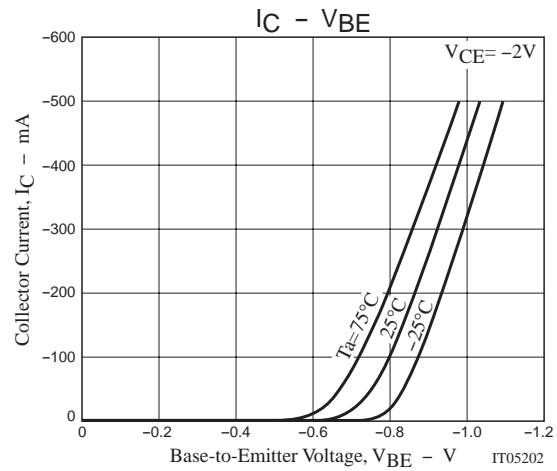
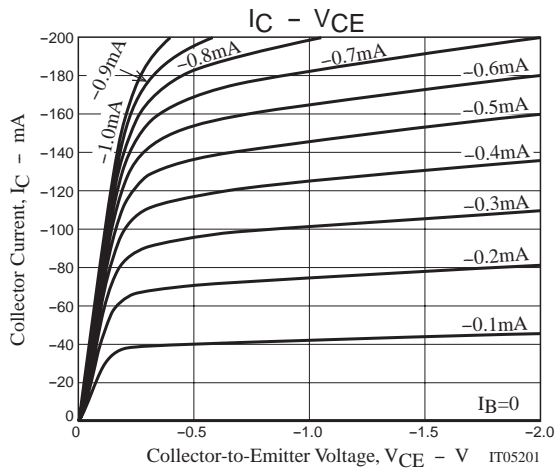
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V <sub>CB</sub> =-10V, f=1MHz		4		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA		-150	-300	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =-200mA, I <sub>B</sub> =-10mA		-0.9	-1.2	V
Collector-to-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	I <sub>C</sub> =-10μA, I <sub>E</sub> =0	-15			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =-1mA, R <sub>BE</sub> =∞	-12			V
Emitter-to-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	I <sub>E</sub> =-10μA, I <sub>C</sub> =0	-5			V
Turn-ON Time	t <sub>on</sub>	See specified Test Circuit.		30		ns
Storage Time	t <sub>stg</sub>	See specified Test Circuit.		57		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		30		ns

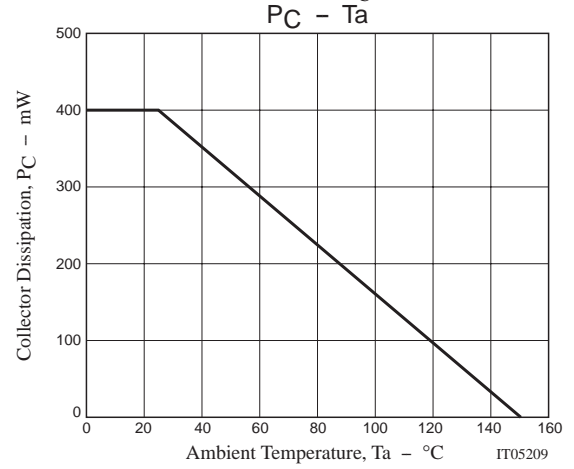
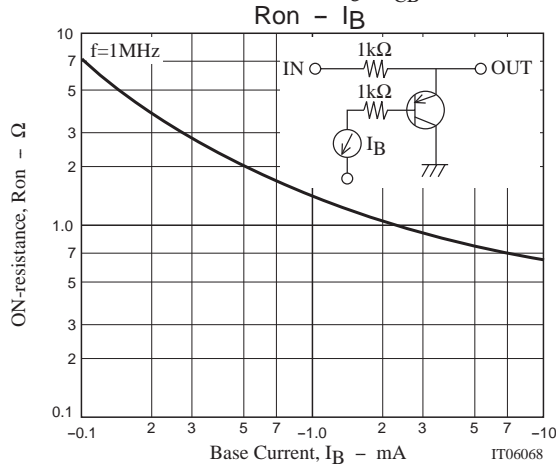
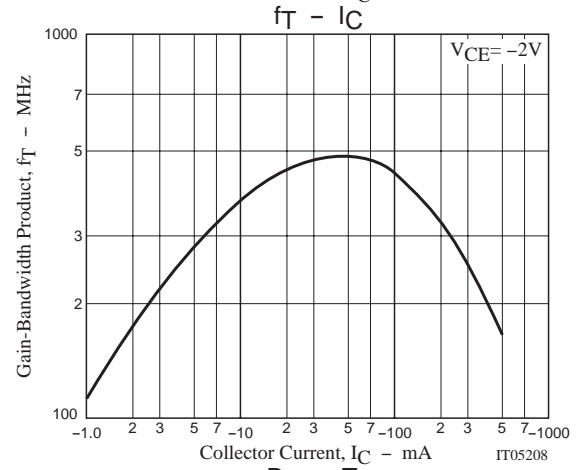
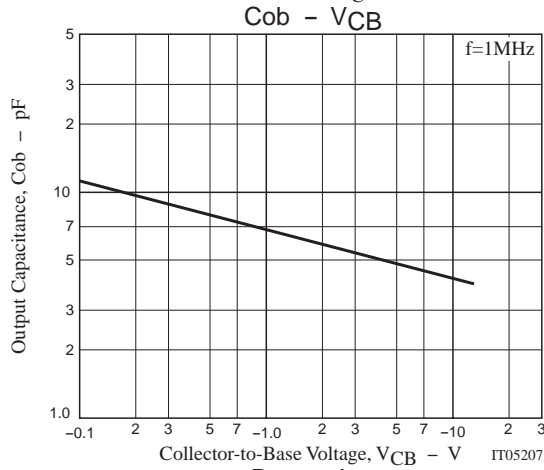
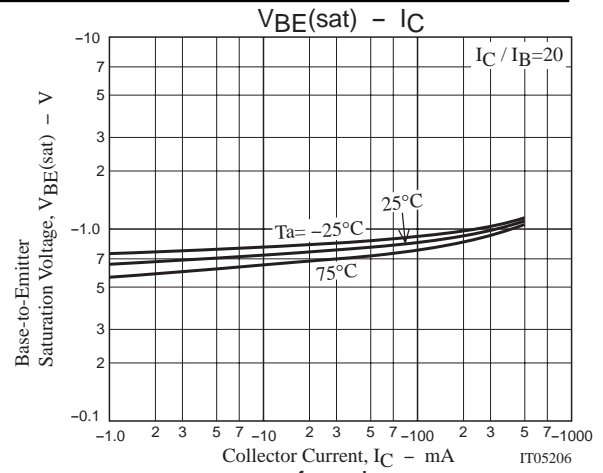
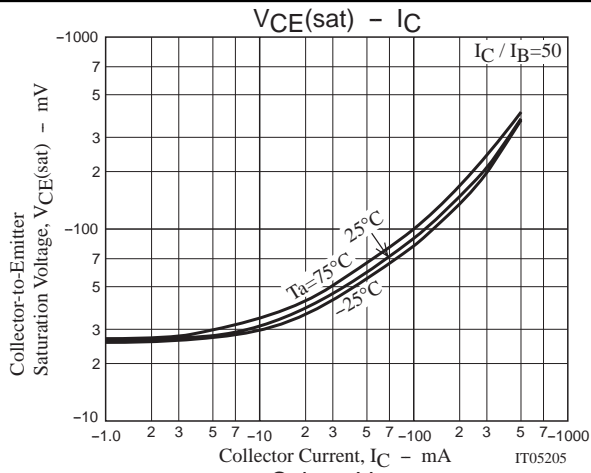
## Switching Time Test Circuit



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



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