

**50C02MH**

## Low-Frequency General-Purpose Amplifier Applications

An ON Semiconductor Company

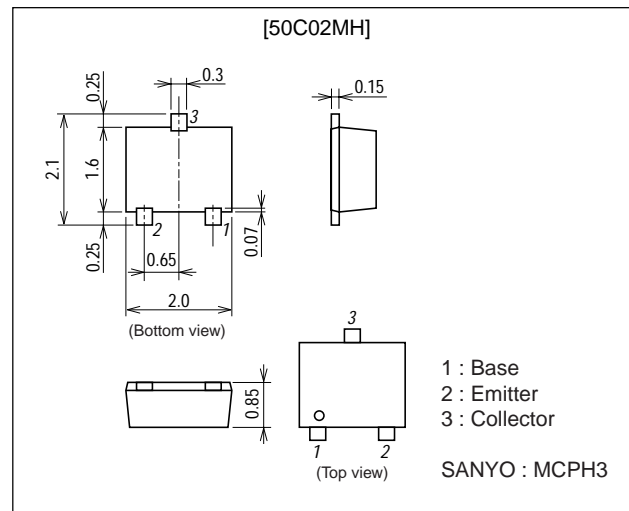
### Applications

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

### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage (resistance).  
 $R_{CE(sat)}$  typ=175m $\Omega$  [ $I_C=0.5A$ ,  $I_B=50mA$ ].
- Ultrasmall package facilitates miniaturization in end products.
- Small ON-resistance ( $R_{on}$ ).

### Package Dimensions

unit : mm  
2194A

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		60	V
Collector-to-Emitter Voltage	$V_{CEO}$		50	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	$P_C$	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm)	600	mW
Junction Temperature	$T_J$		150	$^\circ C$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ C$

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

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CBO}$	$V_{CB}=40V$ , $I_E=0$			100	nA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=4V$ , $I_C=0$			100	nA
DC Current Gain	$h_{FE}$	$V_{CE}=2V$ , $I_C=10mA$	300		800	
Gain-Bandwidth Product	$f_T$	$V_{CE}=10V$ , $I_C=50mA$		500		MHz

Marking : CM

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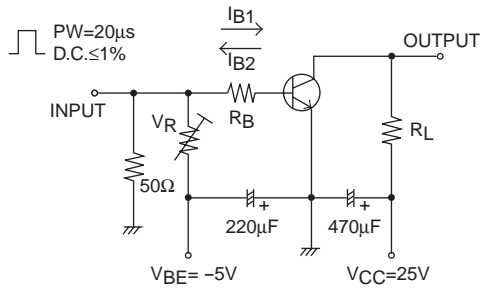
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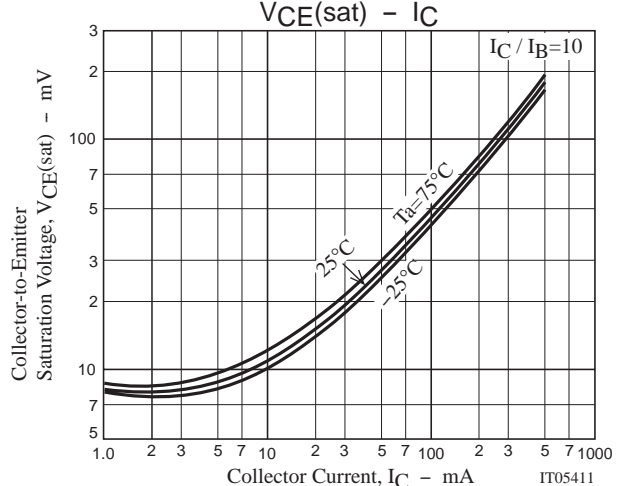
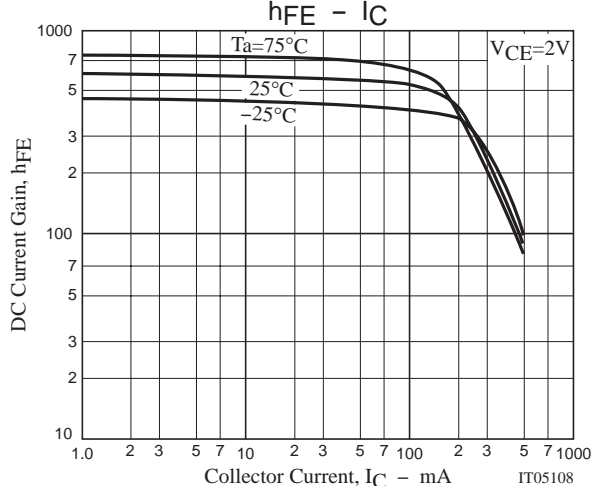
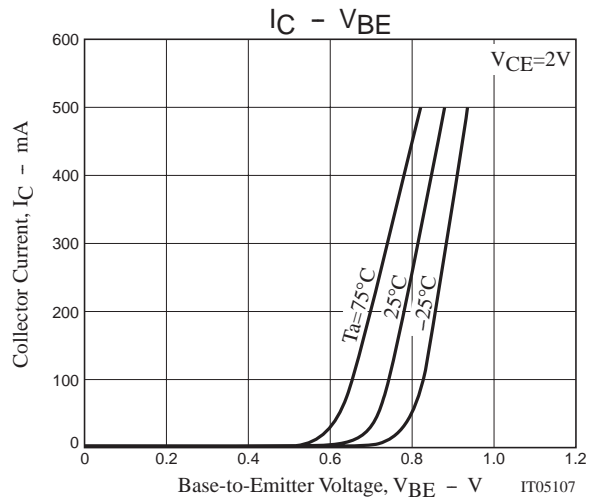
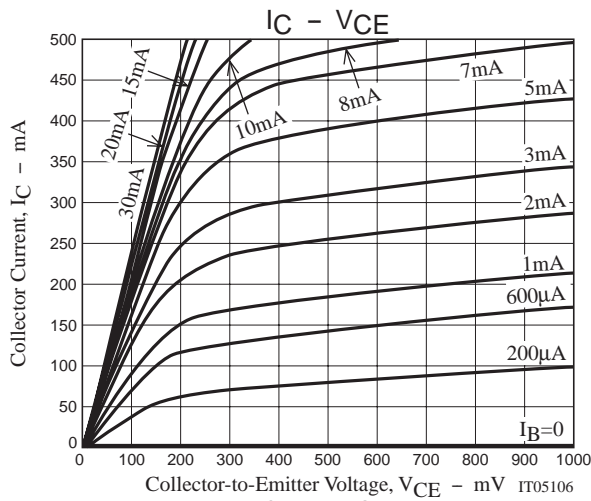
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Output Capacitance	Cob	V <sub>CE</sub> =10V, f=1MHz		2.8		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =100mA, I <sub>B</sub> =10mA		50	100	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =100mA, 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	60			V
Collector-to-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	I <sub>C</sub> =1mA, R <sub>BE</sub> =∞	50			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.		340		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		55		ns

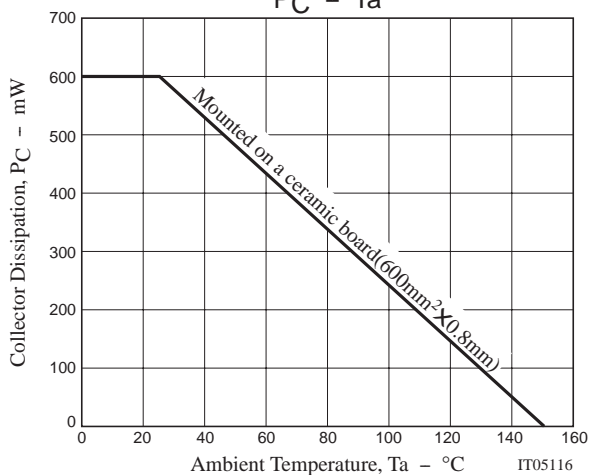
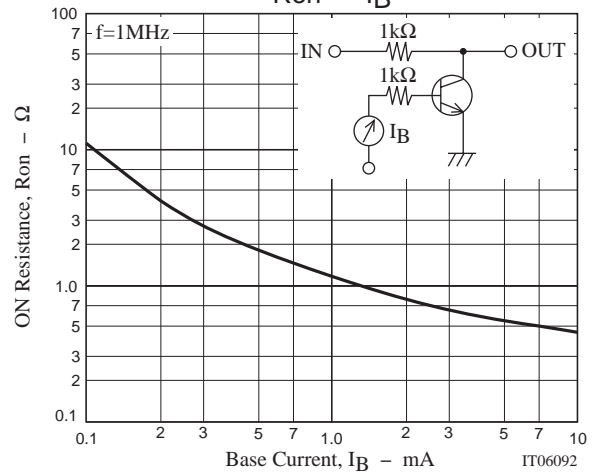
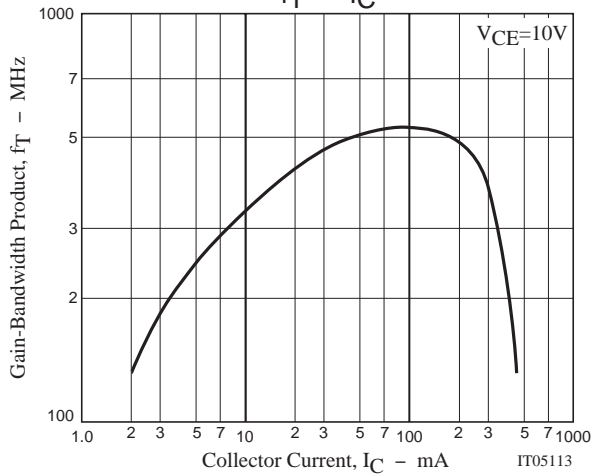
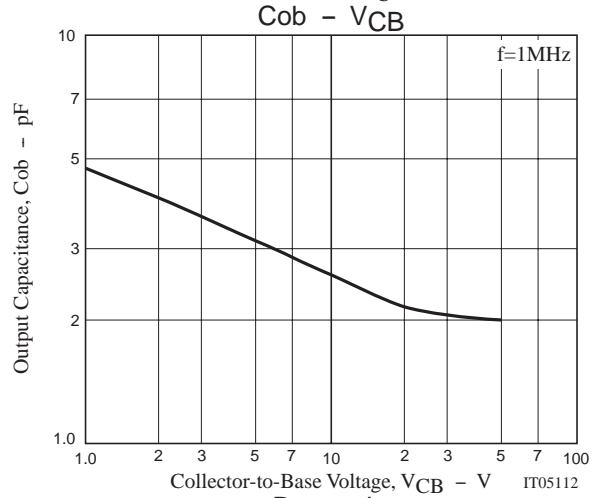
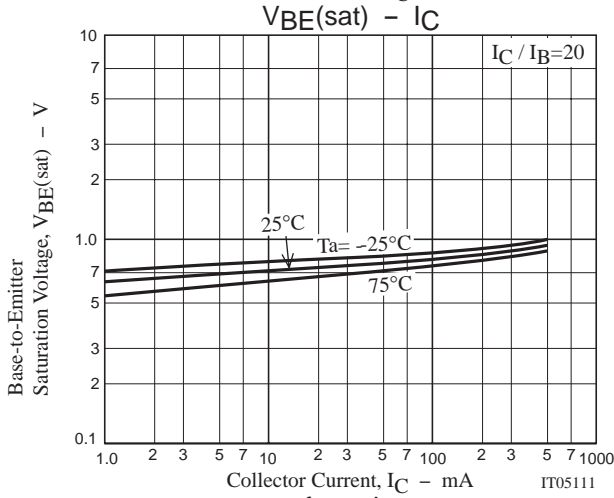
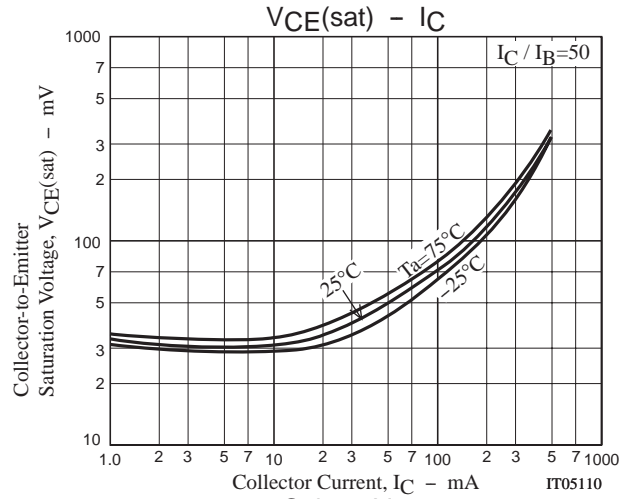
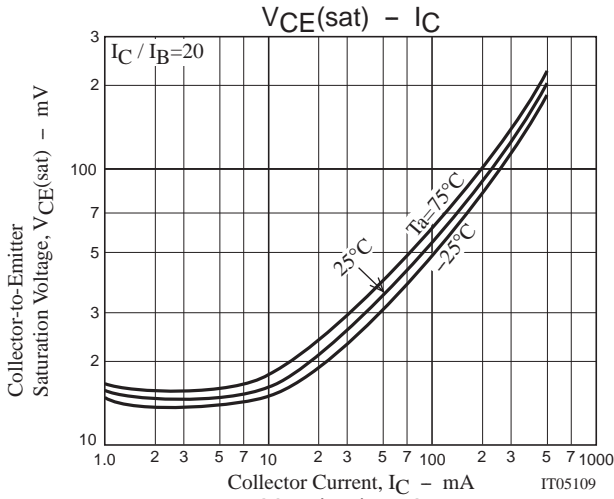
## Switching Time Test Circuit



$$I_C = 20I_{B1} = -20I_{B2} = 200\text{mA}$$



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