

**15C02MH**

## Low-Frequency General-Purpose Amplifier Applications

### Applications

- Low-frequency amplifier, high-speed switching, small motor drive.

### Features

- Large current capacitance.
- Low collector-to-emitter saturation voltage (resistance).  
R<sub>CE(sat)</sub> typ=300mΩ [I<sub>C</sub>=1A, I<sub>B</sub>=50mA].
- Ultrasmall package facilitates miniaturization in end products.
- Small ON-resistance (Ron).

### Specifications

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

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V <sub>CB0</sub>		20	V
Collector-to-Emitter Voltage	V <sub>CEO</sub>		15	V
Emitter-to-Base Voltage	V <sub>EB0</sub>		5	V
Collector Current	I <sub>C</sub>		1	A
Collector Current (Pulse)	I <sub>CP</sub>		2	A
Collector Dissipation	P <sub>C</sub>	Mounted on a ceramic board (600mm <sup>2</sup> X0.8mm)	600	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

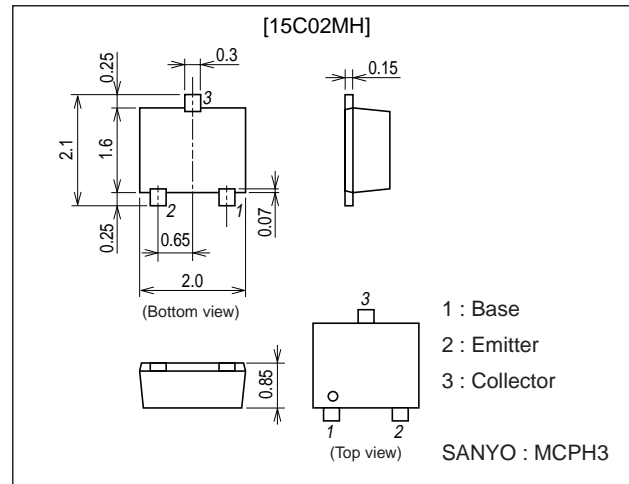
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I <sub>CB0</sub>	V <sub>CB</sub> =12V, I <sub>E</sub> =0			100	nA
Emitter Cutoff Current	I <sub>EB0</sub>	V <sub>EB</sub> =4V, I <sub>C</sub> =0			100	nA
DC Current Gain	h <sub>FE</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =50mA	300		800	
Gain-Bandwidth Product	f <sub>T</sub>	V <sub>CE</sub> =2V, I <sub>C</sub> =50mA		440		MHz
Output Capacitance	C <sub>ob</sub>	V <sub>CB</sub> =10V, f=1MHz		4		pF
Collector-to-Emitter Saturation Voltage	V <sub>CE(sat)</sub>	I <sub>C</sub> =400mA, I <sub>B</sub> =20mA		140	280	mV
Base-to-Emitter Saturation Voltage	V <sub>BE(sat)</sub>	I <sub>C</sub> =400mA, I <sub>B</sub> =20mA		0.9	1.2	V

Marking : CK

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### Package Dimensions

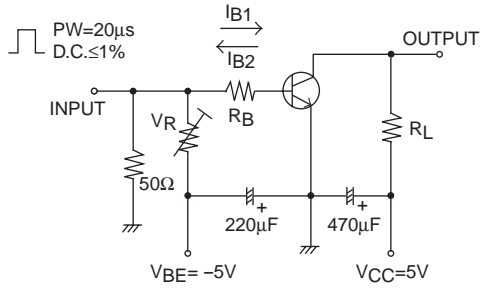
unit : mm  
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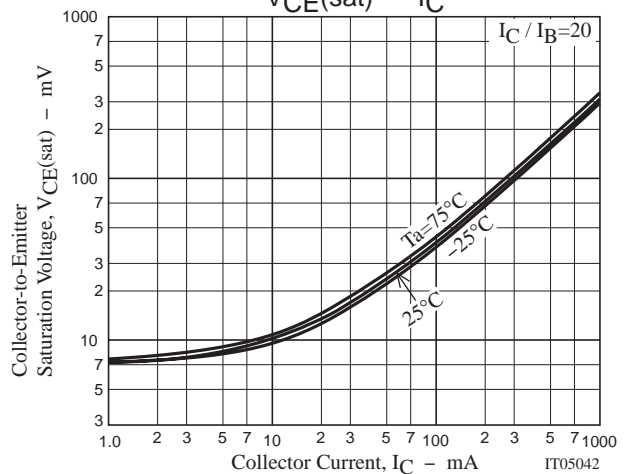
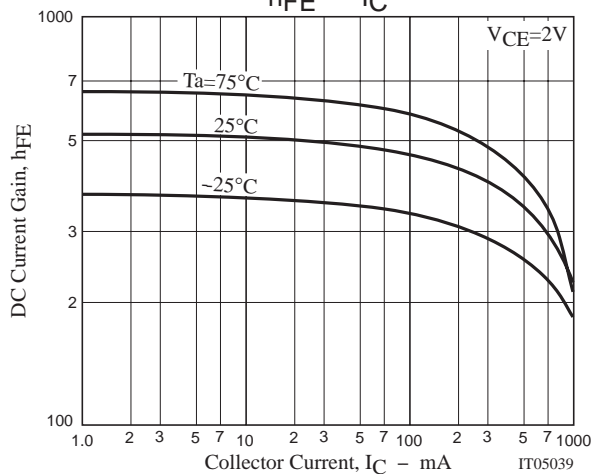
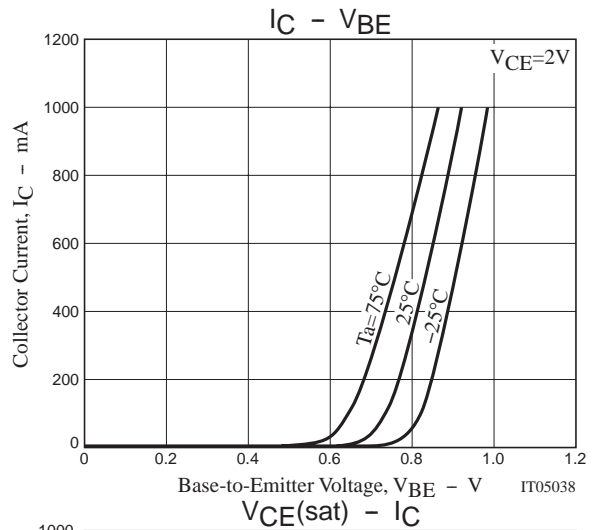
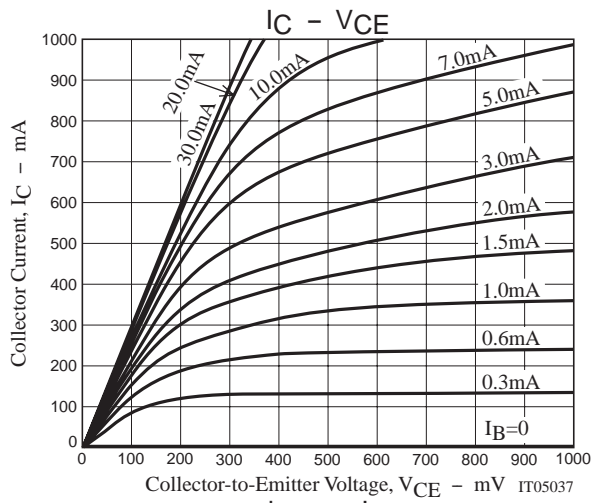
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector-to-Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C=10\mu A, I_E=0$	20			V
Collector-to-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C=1mA, R_{BE}=\infty$	15			V
Emitter-to-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E=10\mu A, I_C=0$	5			V
Turn-ON Delay Time	$t_{on}$	See specified Test Circuit.		30		ns
Storage Time	$t_{stg}$	See specified Test Circuit.		165		ns
Turn-OFF Delay Time	$t_f$	See specified Test Circuit.		25		ns

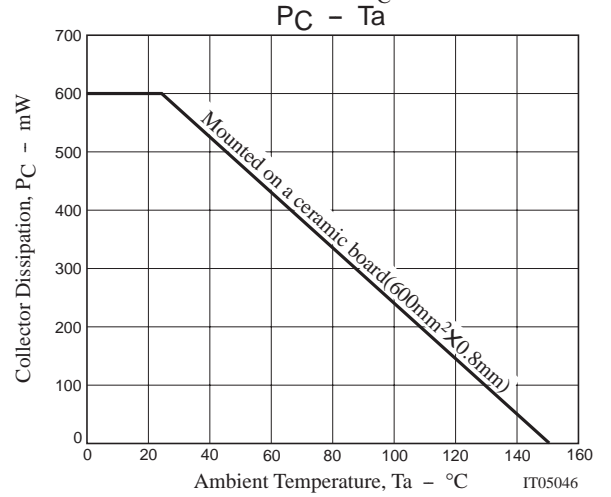
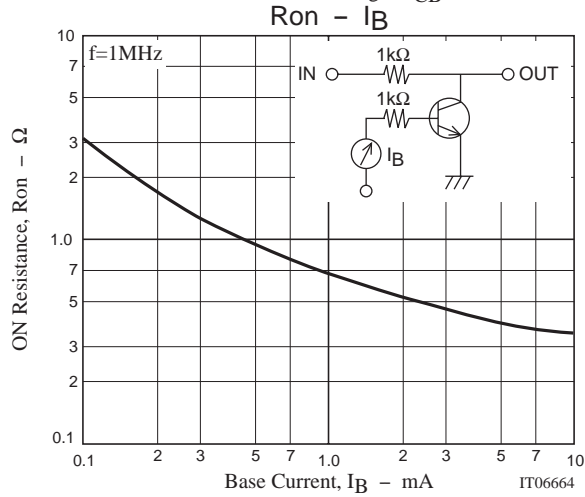
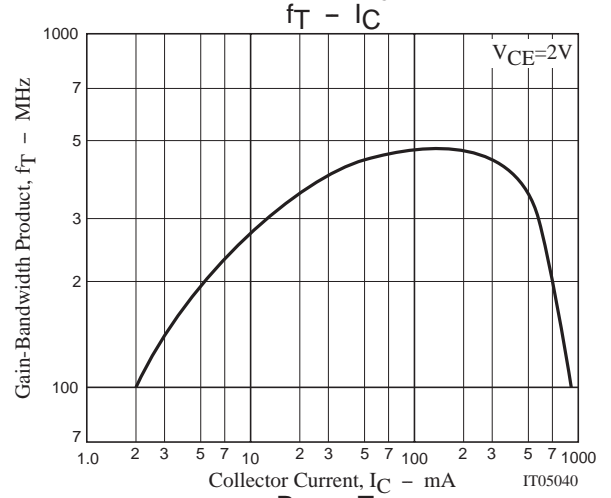
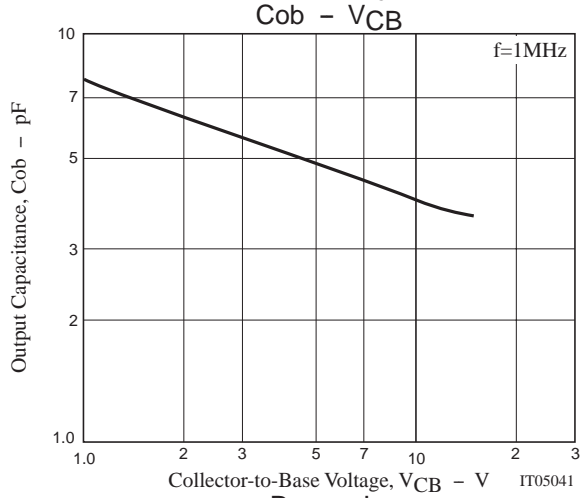
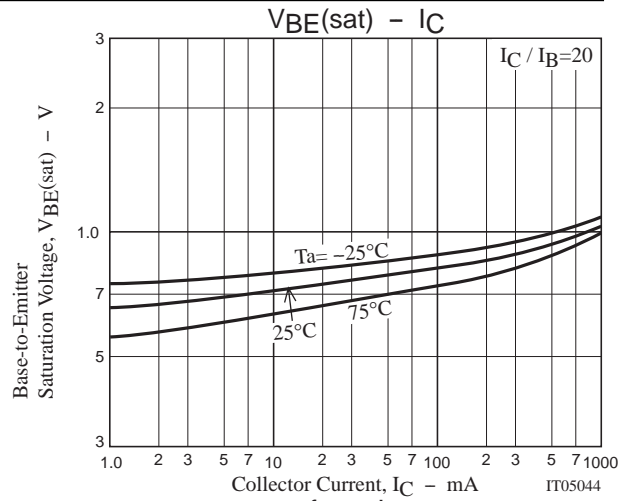
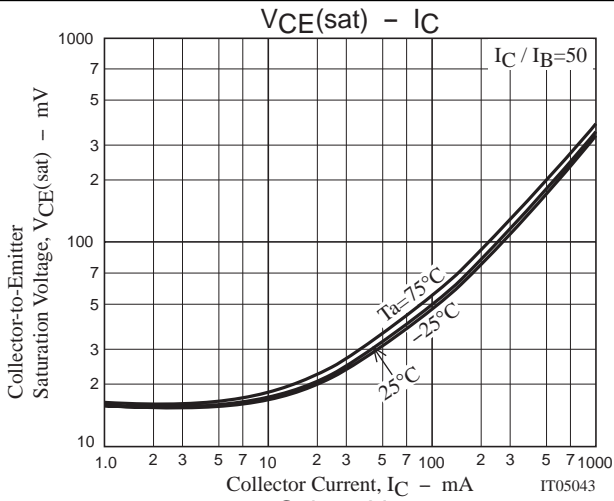
## Switching Time Test Circuit



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



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