

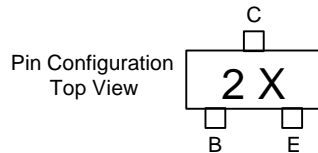


Micro Commercial Components  
 21201 Itasca Street Chatsworth  
 CA 91311  
 Phone: (818) 701-4933  
 Fax: (818) 701-4939

# MMBT4401

## Features

- Surface Mount SOT-23 Package
- Capable of 350mWatts of Power Dissipation



## NPN General Purpose Amplifier

### Electrical Characteristics @ 25°C Unless Otherwise Specified

Symbol	Parameter	Min	Max	Units
<b>OFF CHARACTERISTICS</b>				
$V_{(BR)CEO}$	Collector-Emmitter Breakdown Voltage* ( $I_C=1.0mA$ , $I_B=0$ )	40		Vdc
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage ( $I_C=10mA$ , $I_E=0$ )	60		Vdc
$V_{(BR)EBO}$	Emmitter-Base Breakdown Voltage ( $I_E=0.1mA$ , $I_C=0$ )	6.0		Vdc
$I_{BL}$	Base Cutoff Current ( $V_{CE}=35Vdc$ , $V_{BE}=0.4Vdc$ )		0.1	$\mu A$
$I_{CEX}$	Collector Cutoff Current ( $V_{CE}=35Vdc$ , $V_{BE}=0.4Vdc$ )		0.1	$\mu A$

### ON CHARACTERISTICS

$h_{FE}$	DC Current Gain* ( $I_C=0.1mA$ , $V_{CE}=1.0Vdc$ ) ( $I_C=1.0mA$ , $V_{CE}=1.0Vdc$ ) ( $I_C=10mA$ , $V_{CE}=1.0Vdc$ ) ( $I_C=150mA$ , $V_{CE}=1.0Vdc$ ) ( $I_C=500mA$ , $V_{CE}=1.0Vdc$ )	20 40 80 100 40	300	
$V_{CE(sat)}$	Collector-Emmitter Saturation Voltage ( $I_C=150mA$ , $I_B=15mA$ ) ( $I_C=500mA$ , $I_B=50mA$ )		0.4 0.75	Vdc
$V_{BE(sat)}$	Base-Emmitter Saturation Voltage ( $I_C=150mA$ , $I_B=15mA$ ) ( $I_C=500mA$ , $I_B=50mA$ )	0.75	0.95 1.2	Vdc

### SMALL-SIGNAL CHARACTERISTICS

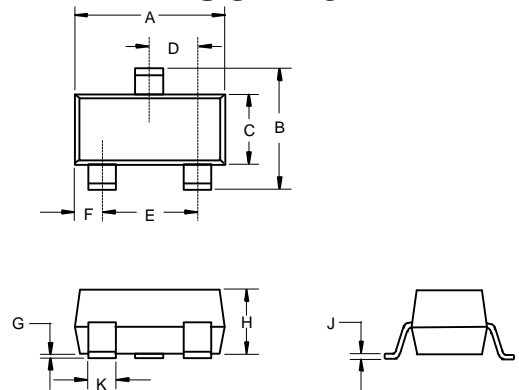
$f_T$	Current Gain-Bandwidth Product ( $I_C=20mA$ , $V_{CE}=10Vdc$ , $f=100MHz$ )	250		MHz
$C_{cb}$	Collector-Base Capacitance ( $V_{CB}=5.0Vdc$ , $I_E=0$ , $f=1.0MHz$ )		6.5	pF
$C_{eb}$	Emmitter-Base Capacitance ( $V_{BE}=0.5Vdc$ , $I_C=0$ , $f=1.0MHz$ )		30.0	pF

### SWITCHING CHARACTERISTICS

$t_d$	Delay Time	( $V_{CC}=30Vdc$ , $V_{BE}=0.2Vdc$ )	15	ns
$t_r$	Rise Time	( $I_C=150mA$ , $I_{B1}=15mA$ )	20	ns
$t_s$	Storage Time	( $V_{CC}=30Vdc$ , $I_C=150mA$ )	225	ns
$t_f$	Fall Time	( $I_{B1}=I_{B2}=15mA$ )	30	ns

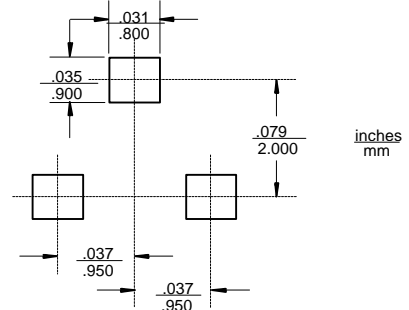
\*Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

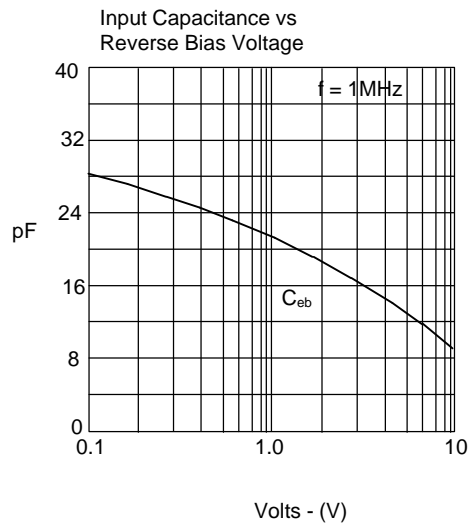
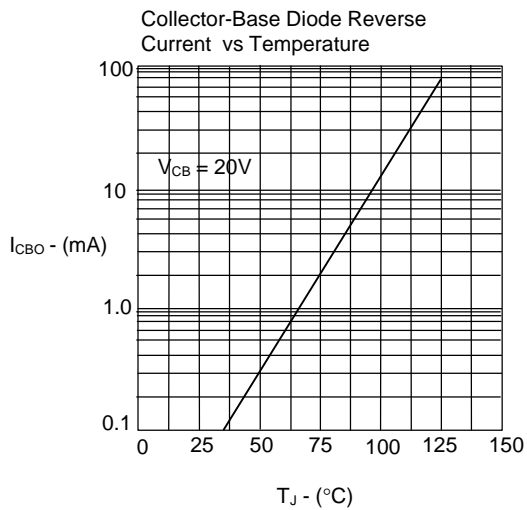
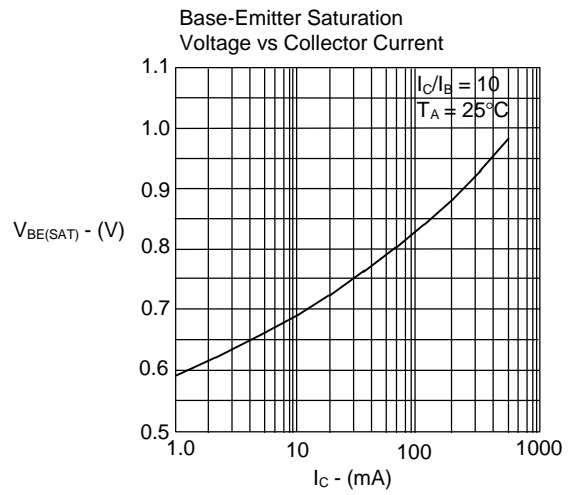
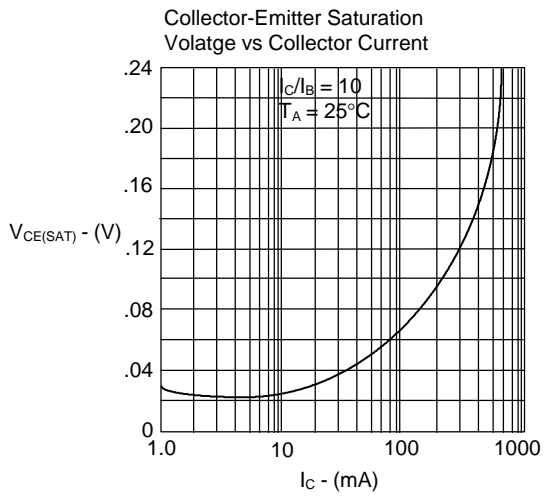
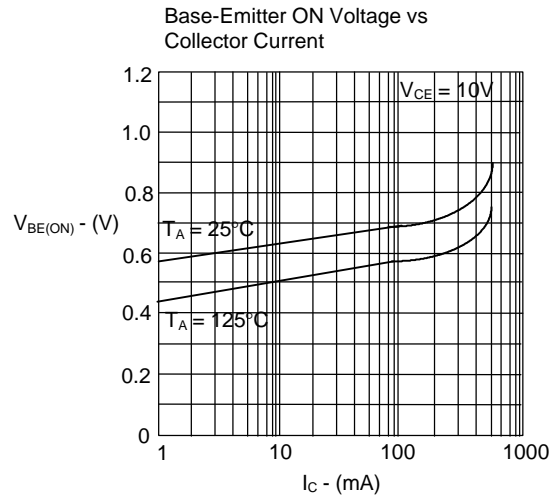
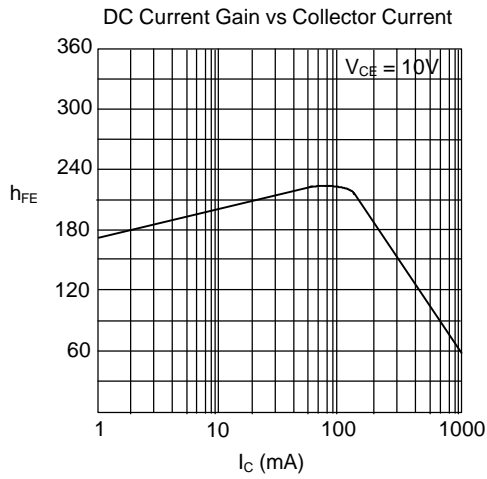
### SOT-23



DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	.110	.120	2.80	3.04	
B	.083	.098	2.10	2.64	
C	.047	.055	1.20	1.40	
D	.035	.041	.89	1.03	
E	.070	.081	1.78	2.05	
F	.018	.024	.45	.60	
G	.0005	.0039	.013	.100	
H	.035	.044	.89	1.12	
J	.003	.007	.085	.180	
K	.015	.020	.37	.51	

### Suggested Solder Pad Layout





# MMBT4401

