



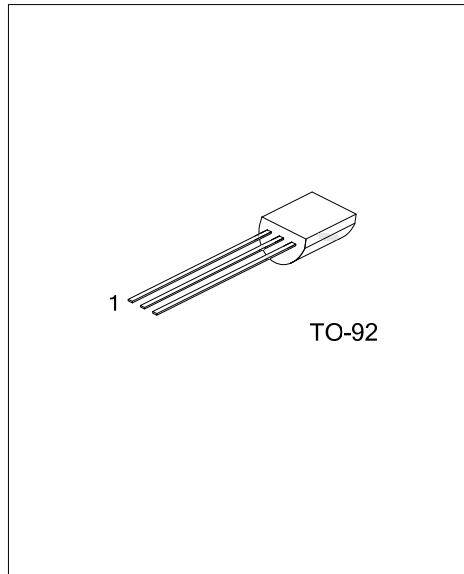
## MJE13001-P

## NPN SILICON TRANSISTOR

### NPN SILICON POWER TRANSISTOR

#### ■ FEATURES

- \* Collector-base voltage:  $V_{(BR)CBO}=600V$
- \* Collector current:  $I_C=0.2A$



#### ■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MJE13001-PL-x-T92-B	MJE13001-PG-x-T92-B	TO-92	B	C	E	Tape Box
MJE13001-PL-x-T92-K	MJE13001-PG-x-T92-K	TO-92	B	C	E	Bulk
MJE13001-PL-x-T92-A-B	MJE13001-PG-x-T92-A-B	TO-92	E	C	B	Tape Box
MJE13001-PL-x-T92-A-K	MJE13001-PG-x-T92-A-K	TO-92	E	C	B	Bulk

<p>MJE13001-PL-x-AB3-A-B</p>	<p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Rank (5) Lead Free</p>	<p>(1) B: Tape Box, K: Bulk (2) refer to Pin Assignment (3) T92: TO-92 (4) x: refer to Classification of <math>h_{FE1}</math> (5) L: Lead Free, G: Halogen Free, Blank: Pb/Sn</p>
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### ■ ABSOLUTE MAXIMUM RATINGS

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage	$V_{CEO}$	400	V
Collector-Base Voltage	$V_{CBO}$	600	V
Emitter Base Voltage	$V_{EBO}$	7	V
Collector Current	$I_C$	200	mA
Collector Power Dissipation	$P_C$	750	mW
Junction Temperature	$T_J$	+150	°C
Storage Temperature	$T_{STG}$	-55 ~ +150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.  
 Absolute maximum ratings are stress ratings only and functional device operation is not implied.

### ■ ELECTRICAL CHARACTERISTICS ( $T_a=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	$BV_{CBO}$	$I_C=100\ \mu\text{A}, I_E=0$	600			V
Collector-Emitter Breakdown Voltage	$BV_{CEO}$	$I_C=1\text{mA}, I_B=0$	400			V
Emitter-Base Breakdown Voltage	$BV_{EBO}$	$I_E=100\ \mu\text{A}, I_C=0$	7			V
Base-Emitter Voltage	$V_{BE}$	$I_E=100\ \text{mA}$			1.1	V
Collector Cutoff Cut-Off Current	$I_{CBO}$	$V_{CB}=600\text{V}, I_E=0\text{A}$			100	$\mu\text{A}$
Collector Emitter Cut-Off Current	$I_{CEO}$	$V_{CE}=400\text{V}, I_B=0$			200	$\mu\text{A}$
Emitter Cutoff Cut-Off Current	$I_{EBO}$	$V_{EB}=7\text{V}, I_C=0\text{A}$			100	$\mu\text{A}$

#### ON CHARACTERISTICS

DC Current Gain	$h_{FE1}^*$	$V_{CE}=20\ \text{V}, I_C=20\text{mA}$	10		70	
	$h_{FE2}$	$V_{CE}=10\text{V}, I_C=0.25\text{mA}$	5			
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=50\text{mA}, I_B=10\text{mA}$			1.2	V

#### SMALL-SIGNAL CHARACTERISTICS

Current Gain Bandwidth Product	$f_T$	$I_C=20\text{mA}, V_{CE}=20\text{V}, f=1\text{MHz}$	8			MHz
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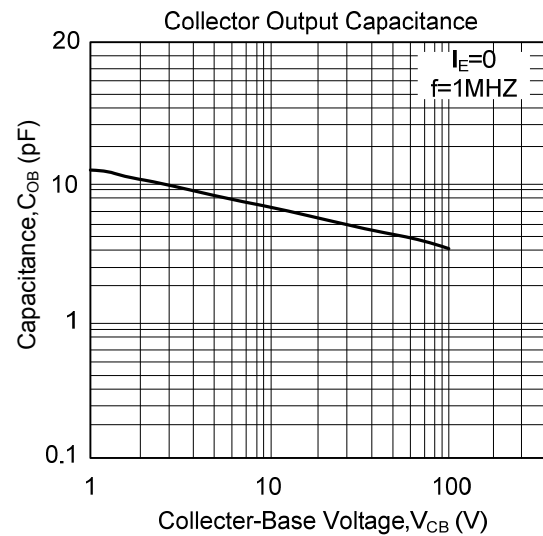
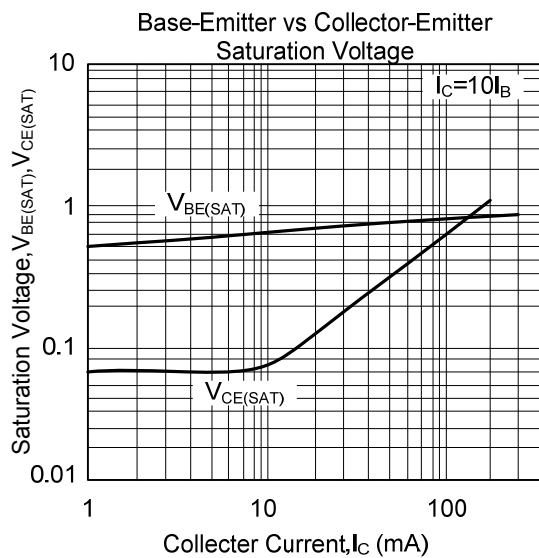
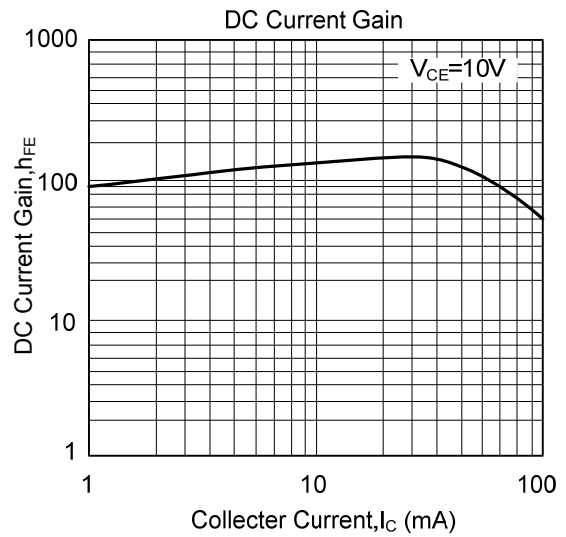
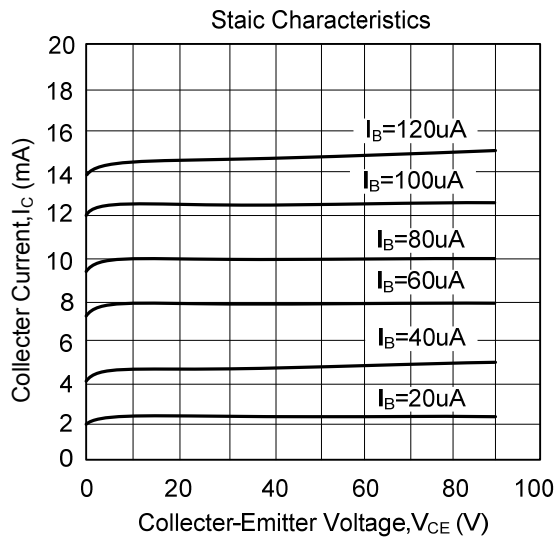
#### Resistive Load

Storage Time	$t_s$	$I_C=50\text{mA}, I_{B1}=-I_{B2}=5\text{mA},$			1.5	$\mu\text{s}$
Fall Time	$t_f$	$V_{CC}=45\text{V}$			0.3	$\mu\text{s}$

### ■ CLASSIFICATION OF $h_{FE1}^*$

RANK	A	B	C	D	E	F	G	H	I	J	K	L
RANGE	10-15	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55	55-60	60-65	65-70

## ■ TYPICAL CHARACTERISTICS



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