



MJE13003D-P

Preliminary

NPN SILICON TRANSISTOR

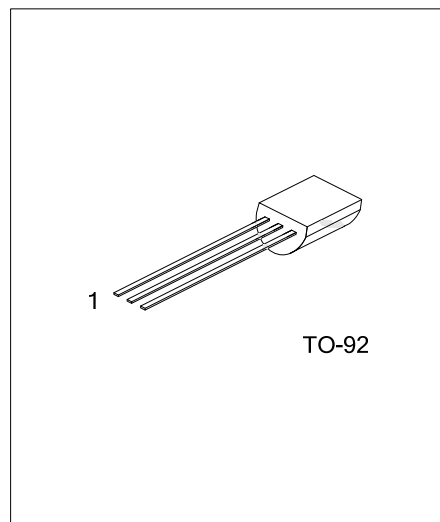
HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

DESCRIPTION

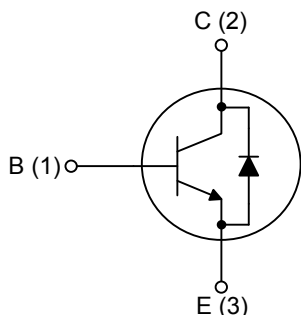
The UTC **MJE13003D-P** is a NPN Power Transistor. It is intended to be used in applications requiring medium voltage capability and high switching speeds.

FEATURES

- * Fast-Switching And High Voltage Capability
- * Dynamic Parameters With Low Spread
- * High Reliability
- * Integrated Antiparallel Collector-Emitter Diode



INTERNAL SCHEMATIC DIAGRAM



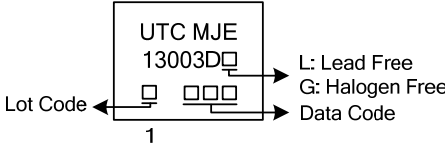
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MJE13003DL-P-x-T92-B	MJE13003DG-P-x-T92-B	TO-92	E	C	B	Tape Box
MJE13003DL-P-x-T92-K	MJE13003DG-P-x-T92-K	TO-92	E	C	B	Bulk

Note: Pin Assignment: C: Collector B: Base E: Emitter

<p>MJE13003L-P-x-T92-K</p> <ul style="list-style-type: none"> (1) Packing Type (2) Package Type (3) Rank (4) Green Package 	<ul style="list-style-type: none"> (1) B: Tape Box, K: Bulk (2) T92: TO-92 (3) x: refer to Classification of h_{FE1} (4) L: Lead Free, G: Halogen Free and Lead Free
--	---

MARKING



FLYING 汎翔國際有限公司
www.flying1688.com

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNIT	
Collector- Emitter Voltage ($V_{BE}=0$)	V_{CES}	700	V	
Collector-Emitter Voltage ($I_B=0$)	V_{CEO}	400	V	
Emitter-Base Voltage ($I_C=0, I_B=0.75\text{A}, t_P<10\mu\text{s}$)	V_{EBO}	9	V	
Collector Current	I_C	1.5	A	
Collector Peak Current ($t_P<5\text{ms}$)	I_{CM}	3	A	
Base Current	I_B	0.75	A	
Base Peak Current ($t_P<5\text{ms}$)	I_{BM}	1.5	A	
Power Dissipation	P_D	$T_A=25^\circ\text{C}$	1.1	W
		$T_C=25^\circ\text{C}$	1.5	W
Junction Temperature	T_J	150	$^\circ\text{C}$	
Storage Temperature	T_{STG}	-55 ~ +150	$^\circ\text{C}$	

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 ($T_C=25^\circ\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=10\text{mA}, I_C=0$	9		18	V
Collector-Emitter Sustaining Voltage (Note)	$V_{CEO(SUS)}$	$I_C=10\text{mA}, I_B=0$	450			V
Collector Cut-Off Current	I_{CES}	$V_{CE}=700\text{V}, V_{BE}=0$			1	mA
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$			0.5	V
		$I_C=1\text{A}, I_B=0.25\text{A}$			1	V
		$I_C=1.5\text{A}, I_B=0.5\text{A}$			3	V
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=0.5\text{A}, I_B=0.1\text{A}$			1	V
		$I_C=1\text{A}, I_B=0.25\text{A}$			1.2	V
DC Current Gain	h_{FE1}	$I_C=0.4\text{A}, V_{CE}=5\text{V}$	14		57	
	h_{FE2}	$I_C=1\text{A}, V_{CE}=5\text{V}$	5		30	
Resistive Load	Rise Time	$V_{CC}=125\text{V}, I_C=1\text{A}, I_{B1}=0.2\text{A}, I_{B2}=-0.2\text{A}, t_P=25\mu\text{s}$			1	μs
	Storage Time				4	μs
	Fall Time				0.7	μs
Inductive Load Storage Time	t_S	$I_C=1\text{A}, I_{B1}=0.2\text{A}, V_{BE}=-5\text{V}, L=50\text{mH}, V_{CLAMP}=300\text{V}$		0.8		μs
Diode Forward Voltage	V_F	$I_F=0.5\text{A}$			1.5	V

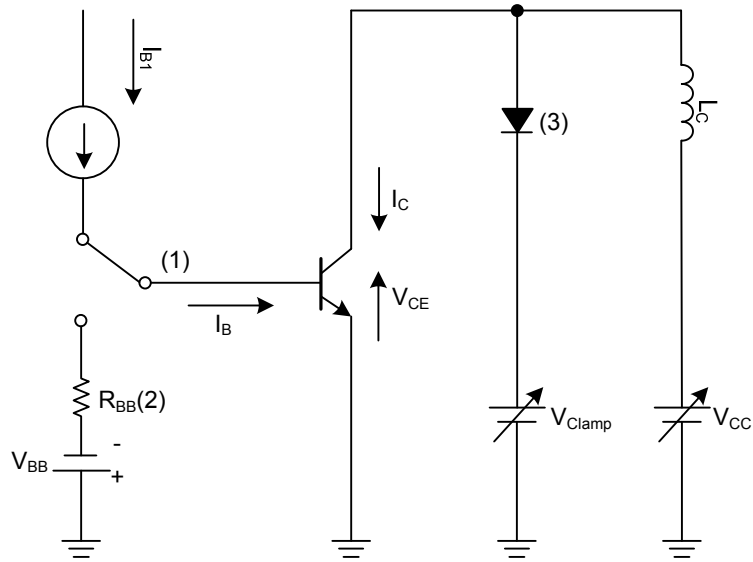
Note: Pulse Test: Pulse duration $\leq 300\mu\text{s}$, Duty cycle $\leq 2\%$

■ CLASSIFICATION OF h_{FE1}

RANK	A	B	C	D	E	F	G	H
RANGE	14 ~ 22	21 ~ 27	26 ~ 32	31 ~ 37	36 ~ 42	41 ~ 47	46 ~ 52	51 ~ 57

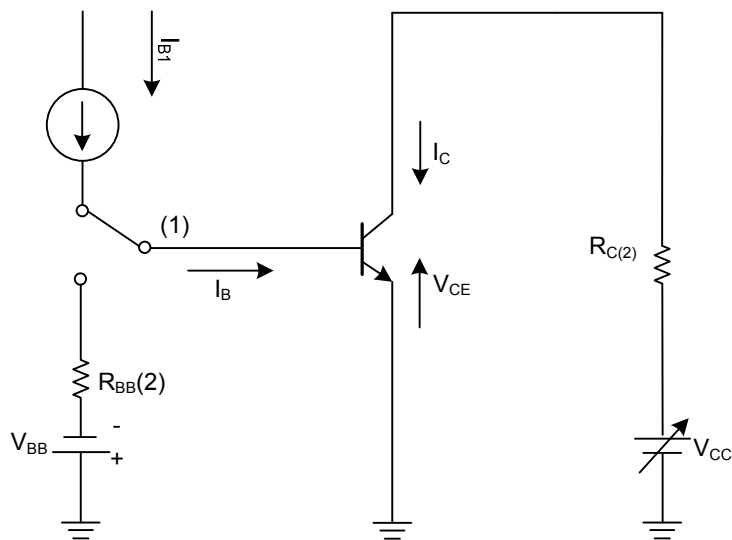
■ TEST CIRCUITS

Inductive Load Switching Test Circuit



- Notes: 1. Fast Electronic Switch
- 2. Non-Inductive Resistor
- 3. Fast Recovery Rectifier

Resistive Load Switching Test Circuit



- Notes: 1. Fast Electronic Switch
- 2. Non-Inductive Resistor

UTC assumes no responsibility for equipment failures that result from using products at values that exceed, even momentarily, rated values (such as maximum ratings, operating condition ranges, or other parameters) listed in products specifications of any and all UTC products described or contained herein. UTC products are not designed for use in life support appliances, devices or systems where malfunction of these products can be reasonably expected to result in personal injury. Reproduction in whole or in part is prohibited without the prior written consent of the copyright owner. The information presented in this document does not form part of any quotation or contract, is believed to be accurate and reliable and may be changed without notice.