



MJE13003D-P

Preliminary

NPN SILICON TRANSISTOR

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR

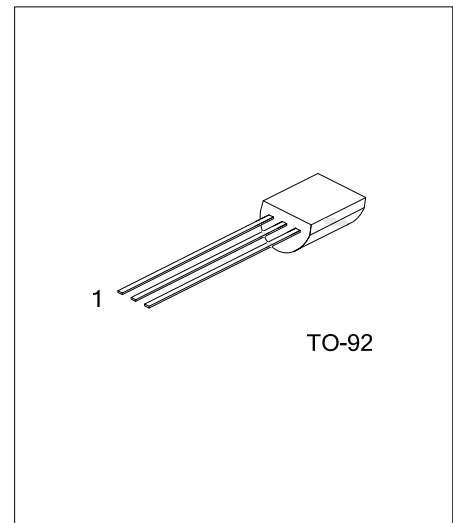
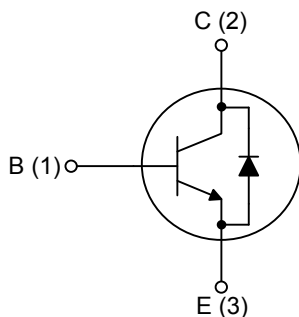
DESCRIPTION

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



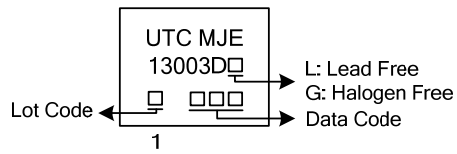
ORDERING INFORMATION

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
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■ MARKING



■ ABSOLUTE MAXIMUM RATINGS (T_A=25°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 =0.75A, t _p < 10μS)	V _{EBO}	9	V	
Collector Current	I _C	1.5	A	
Collector Peak Current (t _p <5ms)	I _{CM}	3	A	
Base Current	I _B	0.75	A	
Base Peak Current (t _p <5ms)	I _{BM}	1.5	A	
Power Dissipation	P _D	T _A =25°C	1.1	W
		T _C =25°C	1.5	W
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_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Emitter-Base Breakdown Voltage	BV _{EBO}	I _E =10mA, I _C =0	9		18	V
Collector-Emitter Sustaining Voltage (Note)	V _{CEO(SUS)}	I _C =10mA, I _B =0	450			V
Collector Cut-Off Current	I _{CES}	V _{CE} =700V, V _{BE} =0			1	mA
Collector-Emitter Saturation Voltage (Note)	V _{CE(SAT)}	I _C =0.5 A, I _B =0.1 A			0.5	V
		I _C =1 A, I _B =0.25 A			1	V
		I _C =1.5 A, I _B =0.5 A			3	V
Base-Emitter Saturation Voltage (Note)	V _{BE(SAT)}	I _C =0.5 A, I _B =0.1 A			1	V
		I _C =1 A, I _B =0.25 A			1.2	V
DC Current Gain	h _{FE1}	I _C =0.4A, V _{CE} =5 V	14		57	
	h _{FE2}	I _C =1 A, V _{CE} =5 V	5		30	
Resistive Load	Rise Time	t _R	V _{CC} =125 V, I _C =1 A,		1	μs
	Storage Time	t _S	I _{B1} =0.2 A, I _{B2} =-0.2 A		4	μs
	Fall Time	t _F	t _p =25μs		0.7	μs
Inductive Load Storage Time	t _S	I _C =1 A, I _{B1} =0.2 A, V _{BE} =-5 V, L=50mH, V _{CLAMP} =300V		0.8		μs
Diode Forward Voltage	V _F	I _F =0.5 A			1.5	V

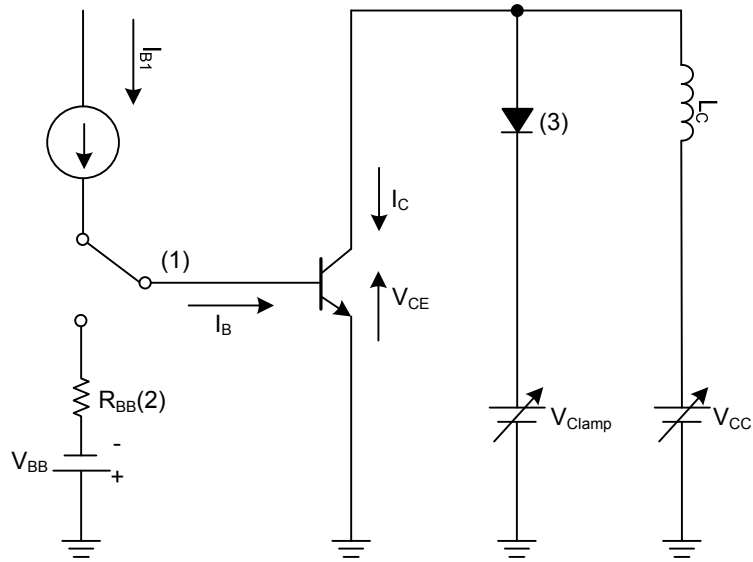
Note: Pulse Test: Pulse duration≤300μs, Duty cycle≤2 %

■ 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

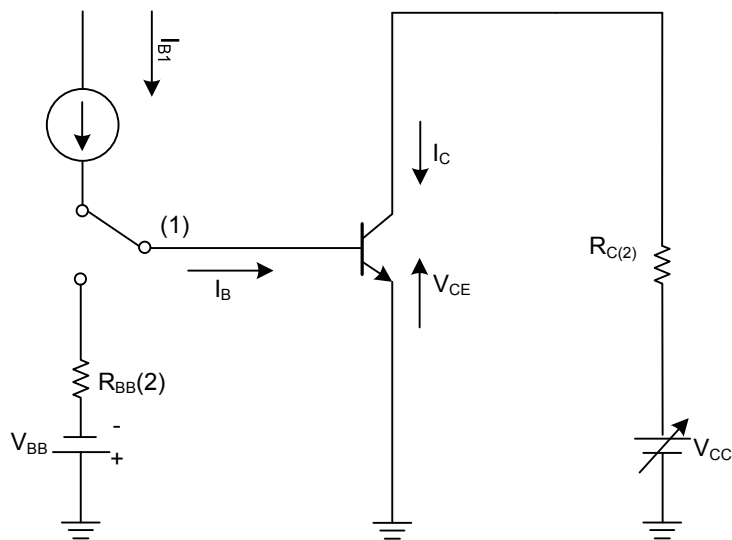
■ TEST CIRCUITS

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

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