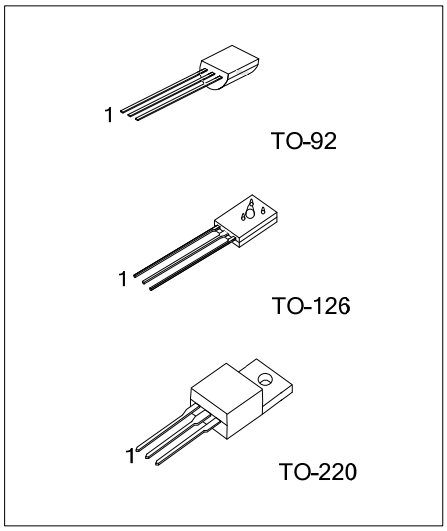
MJE13003D **Preliminary** ***NPN SILICON TRANSISTOR***

HIGH VOLTAGE FAST-SWITCHING NPN POWER TRANSISTOR



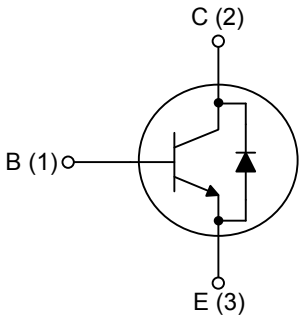
■ DESCRIPTION

The UTC **MJE13003D** 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-T60-K	MJE13003DG-T60-K	TO-126	B	C	E	Bulk
MJE13003DL-T92-B	MJE13003DG-T92-B	TO-92	B	C	E	Tape Box
MJE13003DL-T92-K	MJE13003DG-T92-K	TO-92	B	C	E	Bulk
MJE13003DL-T92-R	MJE13003DG-T92-R	TO-92	B	C	E	Tape Reel
MJE13003DL-TA3-T	MJE13003DG-TA3-T	TO-220	B	C	E	Tube

MJE13003DL-T60-K

(1) Packing Type
(2) Package Type
(3) Lead Free

(1) B: Tape Box, K: Bulk, R: Tape Reel, T: Tube
(2) T60: TO-126, T92: TO-92, TA3: TO-220
(3) G: Halogen Free, L: Lead Free

■ 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 (T_C=25°C)	TO-126	P_D	40	W
	TO-92		30	
	TO-220		70	
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.

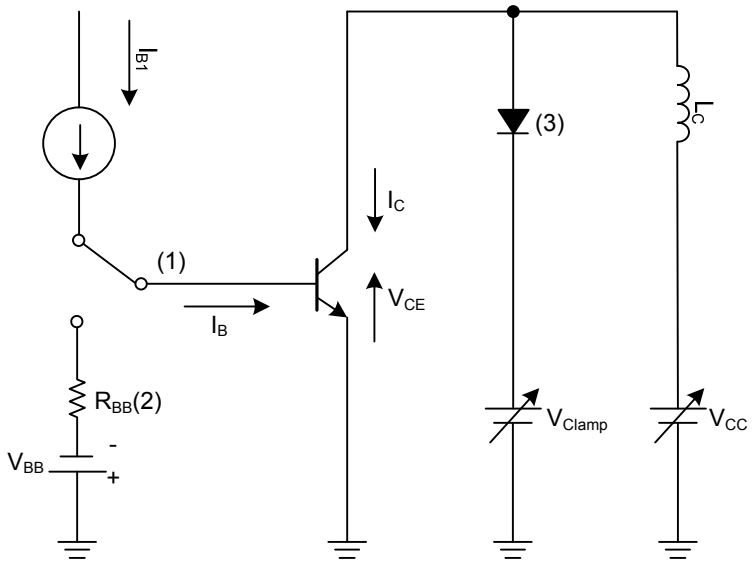
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

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	400			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_{FE}	I_C=0.5A, V_{CE} =5 V	8		51	
			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 %

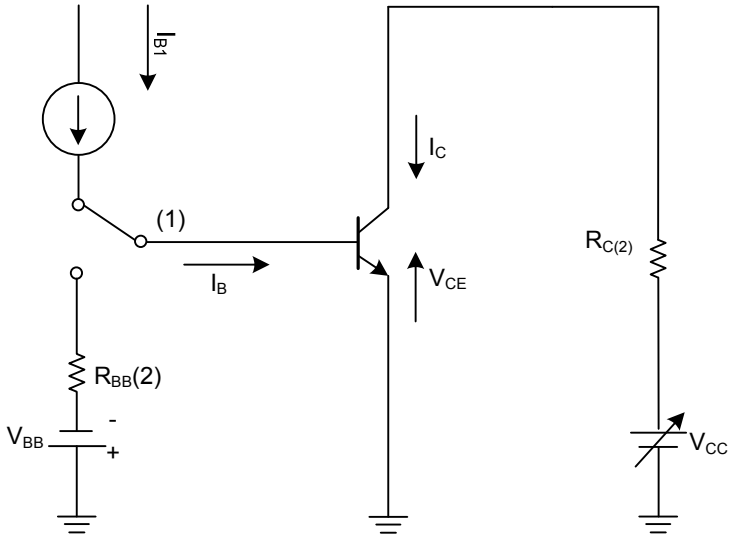
■ TEST CIRCURTS

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