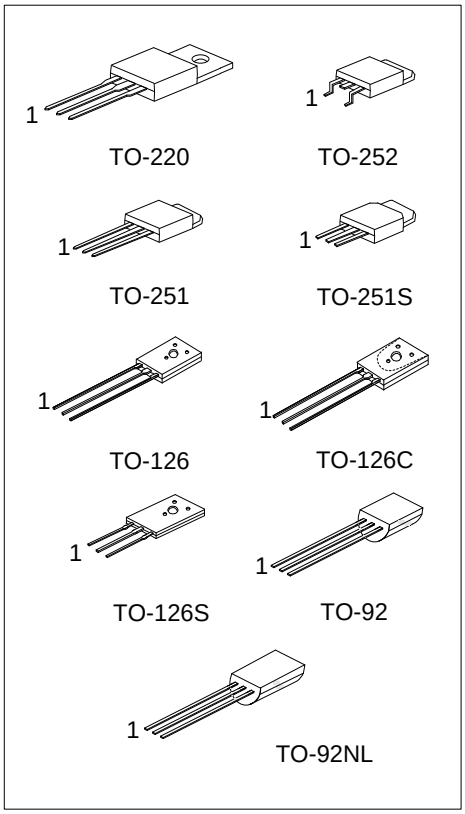
MJE13003-XS

NPN SILICON TRANSISTOR

NPN SILICON POWER TRANSISTOR



■ DESCRIPTION

These devices are designed for high-voltage, high-speed power switching inductive circuits where fall time is critical. They are particularly suited for 115V and 220V applications in switch mode.

■ FEATURES

* 700V blocking capability

■ APPLICATIONS

* Switching regulator's, inverters
* Motor controls
* Solenoid/relay drivers
* Deflection circuits

■ ORDERING INFORMATION

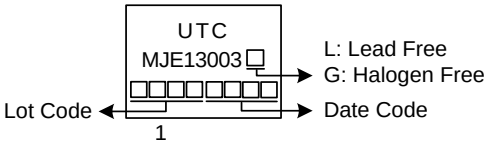
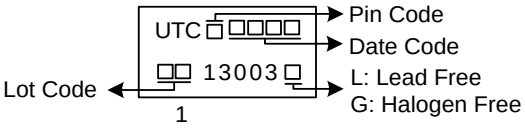
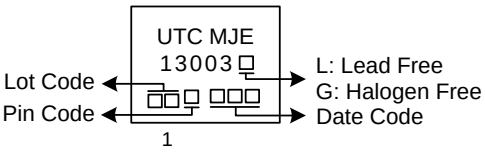
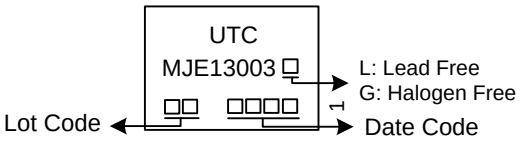
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen-Free		1	2	3	
MJE13003L-XS-TA3-T	MJE13003G-XS-TA3-T	TO-220	B	C	E	Tube
MJE13003L-XS-TM3-T	MJE13003G-XS-TM3-T	TO-251	B	C	E	Tube
MJE13003L-XS-TMS-T	MJE13003G-XS-TMS-T	TO-251S	B	C	E	Tube
MJE13003L-XS-TN3-R	MJE13003G-XS-TN3-R	TO-252	B	C	E	Tape Reel
MJE13003L-XS-T60-F-K	MJE13003G-XS-T60-F-K	TO-126	B	C	E	Bulk
MJE13003L-XS-T6C-A-K	MJE13003G-XS-T6C-A-K	TO-126C	E	C	B	Bulk
MJE13003L-XS-T6C-F-K	MJE13003G-XS-T6C-F-K	TO-126C	B	C	E	Bulk
MJE13003L-XS-T6S-F-K	MJE13003G-XS-T6S-F-K	TO-126S	B	C	E	Bulk
MJE13003L-XS-T92-A-B	MJE13003G-XS-T92-A-B	TO-92	E	C	B	Tape Box
MJE13003L-XS-T92-A-K	MJE13003G-XS-T92-A-K	TO-92	E	C	B	Bulk
MJE13003L-XS-T92-F-B	MJE13003G-XS-T92-F-B	TO-92	B	C	E	Tape Box
MJE13003L-XS-T92-F-K	MJE13003G-XS-T92-F-K	TO-92	B	C	E	Bulk
MJE13003L-XS-T9N-B	MJE13003G-XS-T9N-B	TO-92NL	E	C	B	Tape Box
MJE13003L-XS-T9N-K	MJE13003G-XS- T9N-K	TO-92NL	E	C	B	Bulk

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

MJE13003G-XS-T60-F-K
(1)Packing Type
(2)Pin Assignment
(3)Package Type
(4)Green Package

(1) K: Bulk, B: Tape Box, R: Tape Reel, T: Tube
(2) refer to Pin Assignment
(3) TA3: TO-220, TM3: TO-251, TMS: TO-251S, TN3: TO-252, T60: TO-126, T6C:TO-126C, T6S: TO-126S, T92: TO-92, T9N: TO-92NL
(4) G: Halogen Free and Lead Free, L: Lead Free

■ MARKING

TO-220 / TO-251 / TO-251S / TO-252	TO-126 / TO-126C / TO-126S
	
TO-92	**TO-92NL**
	

■ ABSOLUTE MAXIMUM RATINGS (T_A=25°C, unless otherwise specified)

PARAMETER			SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage			$V_{CEO(SUS)}$	400	V
Collector-Base Voltage			V_{CBO}	700	V
Collector-Emitter Voltage (V_{BE}=0)			V_{CES}	700	V
Emitter Base Voltage			V_{EBO}	9	V
Collector Current		Continuous	I_C	1	A
		Peak (1)	I_{CM}	2	A
Power Dissipation (Note 2)	T_A=25°C	TO-126/TO-126C TO-126S	P_D	1.4	W
		TO-92/TO-92NL		1.1	W
		TO-220		2	W
		TO-251/TO-251S TO-252		1.56	W
	T_C=25°C	TO-126/TO-126C TO-126S		20	W
		TO-92/TO-92NL		1.5	W
		TO-220		40	W
		TO-251/TO-251S TO-252		25	W
Junction Temperature			T_J	+150	°C
Storage Temperature			T_{STG}	-55 ~ +150	°C

Notes: 1. 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.
2. Device mounted on FR-4 substrate PC board, 2oz copper, with 1inch square pad.

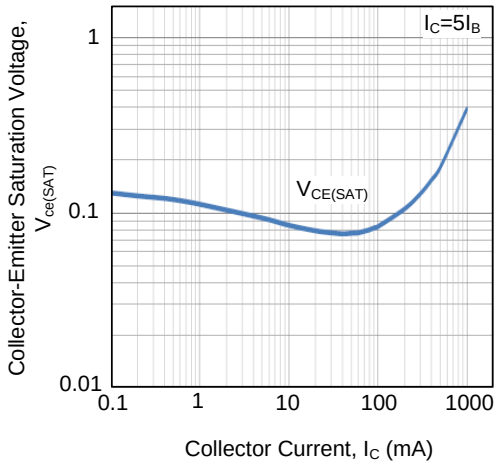
■ ELECTRICAL CHARACTERISTICS (T_C=25°C, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note)						
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	I_C=10mA , I_B=0	700			V
Collector Cutoff Current	I_{CBO}	V_{CB}=700V, I_E=0			10	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=9.0V, I_C=0			10	μA
ON CHARACTERISTICS (Note)						
DC Current Gain	h_{FE}	V_{CE}=5V, I_C=200mA	15		30	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=500mA, I_B=100mA			0.5	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=500mA, I_B=250mA			1.2	V
DYNAMIC CHARACTERISTICS						
Current-Gain-Bandwidth Product	f_T	V_{CE}=10V, I_C=0.1A, f=1MHz	5			MHz
Output Capacitance	C_{OB}	V_{CB}=10V, I_E=0, f=0.1MHz		16		pF
SWITCHING CHARACTERISTICS						
Storage Time	t_S	I_C=0.25A	1.5		4.0	μs

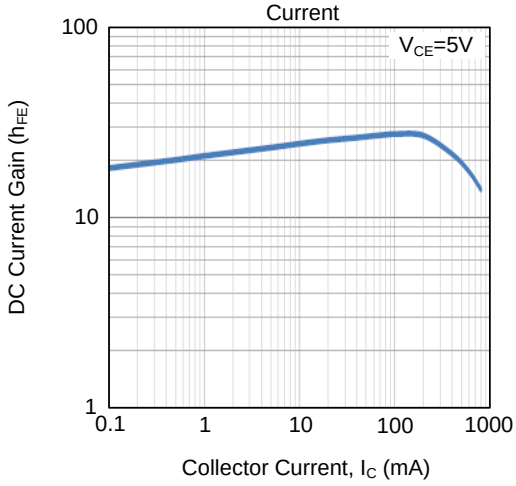
Note: Pulse Test: P_W = 300μs, Duty Cycle ≤ 2%.

■ TYPICAL CHARACTERISTICS

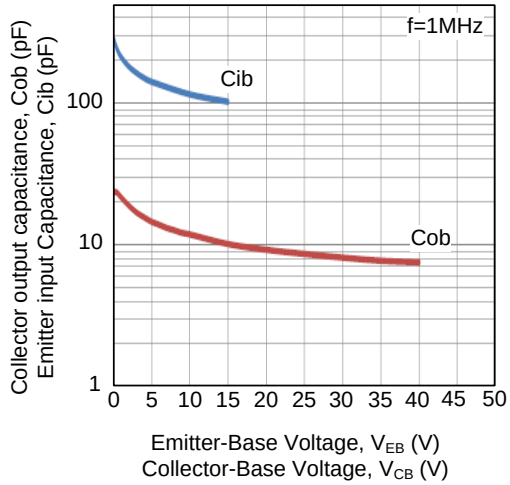
Collector-Emitter Saturation Voltage vs. Collector Current



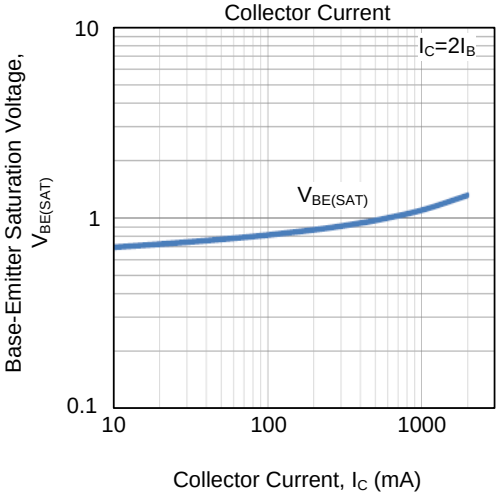
DC Current Gain vs. Collector Current



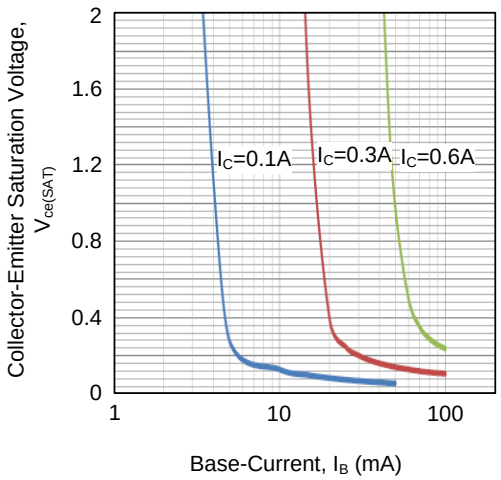
Capacitance Characteristics



Base-Emitter Saturation Voltage vs. Collector Current



Collector Saturation Region



Power Dissipation vs. Junction Temperature