



MJE13003D-XS

NPN SILICON TRANSISTOR

NPN SILICON POWER TRANSISTOR

■ DESCRIPTION

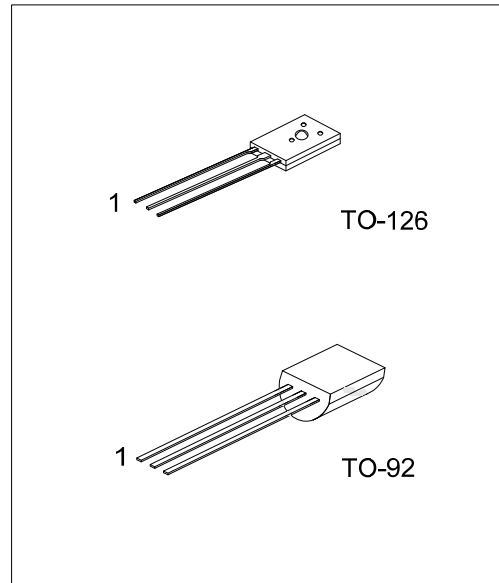
These devices are designed for high-voltage, high-speed power switching inductive circuits where fall time is critical. They are particularly suited for 115V and 220V applications in switch mode.

■ 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	
MJE13003DL-XS-T60-K	MJE13003DG-XS-T60-K	TO-126	B	C	E	Bulk
MJE13003DL-XS-92-A-B	MJE13003DG-XS-T92-A-B	TO-92	E	C	B	Tape Box
MJE13003DL-XS-T92-A-K	MJE13003DG-XS-T92-A-K	TO-92	E	C	B	Bulk
MJE13003DL-XS-92-F-B	MJE13003DG-XS-T92-F-B	TO-92	B	C	E	Tape Box
MJE13003DL-XS-T92-F-K	MJE13003DG-XS-T92-F-K	TO-92	B	C	E	Bulk

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

<p>MJE13003DG-XS-T92-A-B</p> <p>(1) Packing Type (2) Pin Assignment (3) Package Type (4) Green Package</p>	<p>(1) K: Bulk, B: Tape Box (2) refer to Pin Assignment (3) T60: TO-126, T92: TO-92 (4) G: Halogen Free and Lead Free, L: Lead Free</p>
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■ MARKING

TO-126	TO-92
<p>Lot Code ← UTC 13003D → Date Code L: Lead Free G: Halogen Free</p>	<p>Lot Code ← UTC MJE 13003D → L: Lead Free G: Halogen Free Pin Code ← → Date Code</p>

■ 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	1.2	A
	Peak (1)	I _{CM}	2.4	A
Power Dissipation	T _A =25°C	TO-126	1.4	W
		TO-92	1.1	W
	T _C =25°C	TO-126	20	W
		TO-92	1.5	W
Junction Temperature		T _J	+150	°C
Storage Temperature		T _{STG}	-55 ~ +150	°C

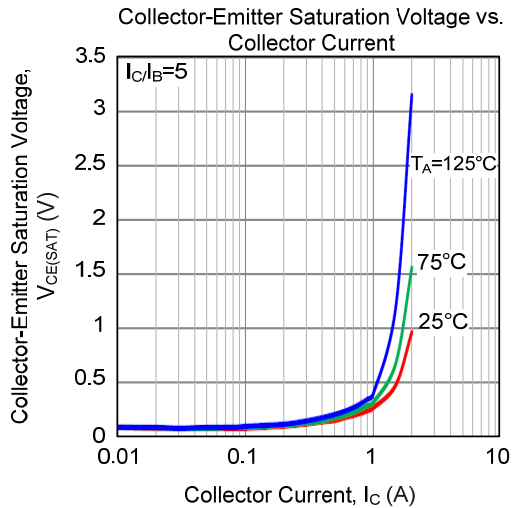
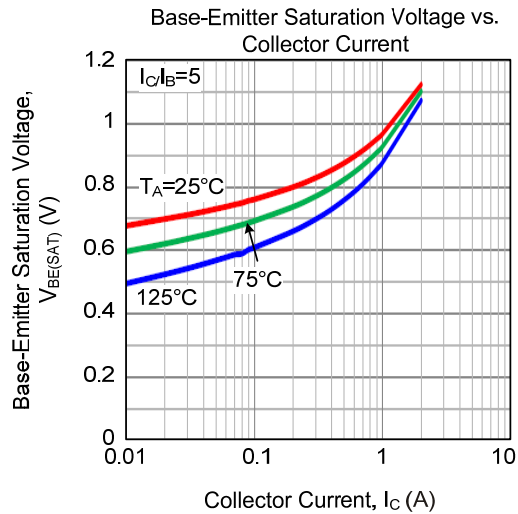
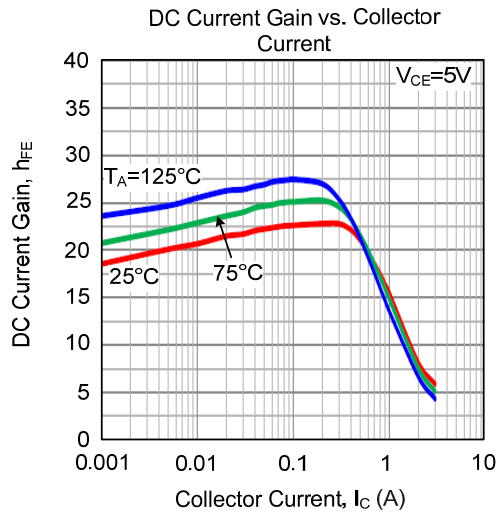
Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note)						
Collector-Emitter Sustaining Voltage	V _{CEO(SUS)}	I _C =10mA, I _B =0	400			V
Collector Cutoff Current	I _{CEO}	V _{CEO} =Rated Value, V _{BE(OFF)} =1.5 V			1	mA
					5	
Emitter Cutoff Current	I _{EBO}	V _{EB} =9V, I _C =0			1	mA
ON CHARACTERISTICS (Note)						
DC Current Gain	h _{FE1}	I _C =0.2A, V _{CE} =5V	15		30	V
	h _{FE2}	I _C =1A, V _{CE} =5V	5		30	V
Collector-Emitter Saturation Voltage	V _{CE(SAT)}	I _C =1A, I _B =0.2A			0.6	V
Base-Emitter Saturation Voltage	V _{BE(SAT)}	I _C =1A, I _B =0.25A			1.2	V
DYNAMIC CHARACTERISTICS						
Output Capacitance	C _{OB}	V _{CB} =10V, I _E =0, f=0.1MHZ		16		pF
SWITCHING CHARACTERISTICS						
Resistive Load (Table 1)						
Delay Time	t _D	V _{CC} =125V, I _C =1A, I _{B1} =I _{B2} =0.2A, t _P =25μs, Duty Cycle≤1%		0.05	0.1	μs
Rise Time	t _R			0.5	1	μs
Storage Time	t _S			2	4	μs
Fall Time	t _F			0.4	0.7	μs
Inductive Load, Clamped (Table 1)						
Storage Time	t _{STG}	I _C =1A, V _{CLAMP} =300V, I _{B1} =0.2A, V _{BE(OFF)} =5V _{DC} , T _C =100°C		1.7	4	μs
Crossover Time	t _C			0.29	0.75	μs
Fall Time	t _F			0.15		μs
Diode Forward Voltage	V _F	I _F =0.5A			1.4	V

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

TYPICAL CHARACTERISTICS



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