



## MJE13007-XS

NPN SILICON TRANSISTOR

### NPN BIPOLAR POWER TRANSISTOR FOR SWITCHING POWER SUPPLY APPLICATIONS

#### DESCRIPTION

The UTC MJE13007-XS is designed for high-voltage, high-speed power switching inductive circuits where fall time is critical. It is particularly suited for 115V and 220V switch mode applications.

#### FEATURES

- \*  $V_{CE(SUS)}$  400V
- \* 700V Blocking Capability

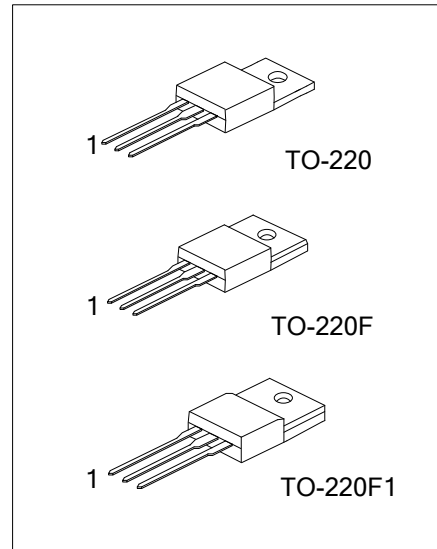
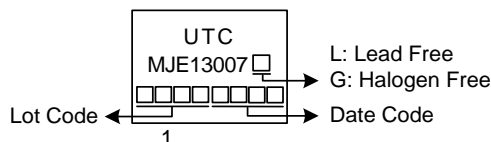
#### ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
MJE13007L-XS-TA3-T	MJE13007G-XS-TA3-T	TO-220	B	C	E	Tube
MJE13007L-XS-TF1-T	MJE13007G-XS-TF1-T	TO-220F1	B	C	E	Tube
MJE13007L-XS-TF3-T	MJE13007G-XS-TF3-T	TO-220F	B	C	E	Tube

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

<p>MJE13007G-XS-TA3-T</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) T: Tube</p> <p>(2) TA3: TO-220, TF1: TO-220F1, TF3: TO-220F</p> <p>(3) G: Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING



## ■ ABSOLUTE MAXIMUM RATING

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Sustaining Voltage		$V_{CEO}$	400	V
Collector-Emitter Breakdown Voltage		$V_{CBO}$	700	V
Collector-Emitter Voltage		$V_{CES}$	700	V
Emitter-Base Voltage		$V_{EBO}$	9.0	V
Collector Current	Continuous	$I_C$	5	A
	Peak (1)	$I_{CM}$	10	A
Power Dissipation ( $T_C = 25^\circ\text{C}$ )	TO-220	$P_D$	80	W
	TO-220F		36	W
	TO-220F1			
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.

## ■ THERMAL DATA

PARAMETER		SYMBOL	RATINGS	UNIT
Junction to Ambient		$\theta_{JA}$	62.5	$^\circ\text{C/W}$
Junction to Case	TO-220	$\theta_{JC}$	1.56	$^\circ\text{C/W}$
	TO-220F		3.28	$^\circ\text{C/W}$
	TO-220F1			

Note: 1. Pulse Test: Pulse Width = 5.0 ms, Duty Cycle  $\leq 10\%$ .

Measurement made with thermocouple contacting the bottom insulated mounting surface of the package (in a location beneath the die), the device mounted on a heatsink with thermal grease applied at a mounting torque of 6 to 8•lbs.

## ■ ELECTRICAL CHARACTERISTICS ( $T_C=25^\circ\text{C}$ , unless otherwise noted)

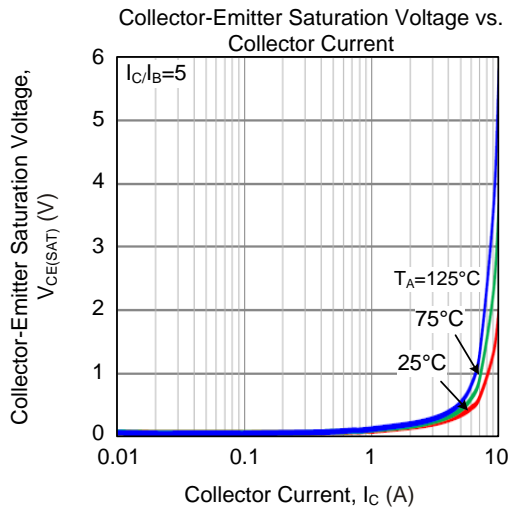
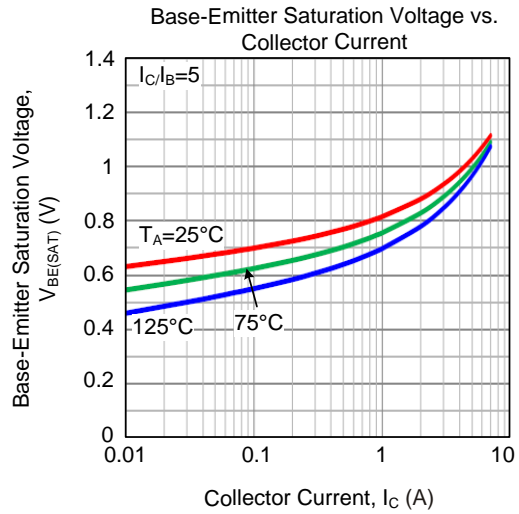
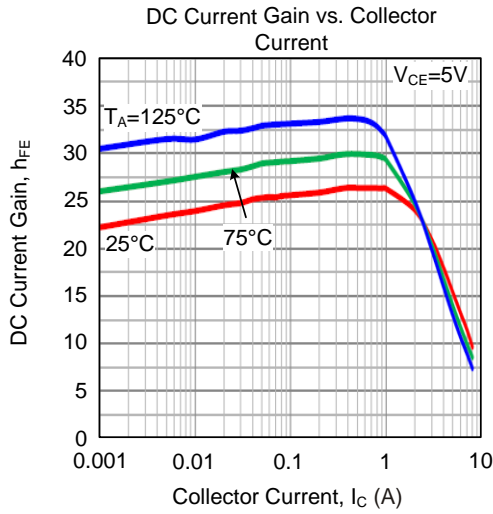
PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	$I_C=10\text{mA}, I_B=0$	400			V
Collector Cutoff Current	$I_{CBO}$	$V_{CES}=700\text{V}$			0.1	mA
		$V_{CES}=700\text{V}, T_C=125^\circ\text{C}$			1.0	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=9.0\text{V}, I_C=0$			100	$\mu\text{A}$
DC Current Gain	$h_{FE1}$	$I_C=2.0\text{A}, V_{CE}=5.0\text{V}$	8.0		40	
	$h_{FE2}$	$I_C=5.0\text{A}, V_{CE}=5.0\text{V}$	5.0		30	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C=5.0\text{A}, I_B=1.0\text{A}$			2.0	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C=5.0\text{A}, I_B=1.0\text{A}$			1.6	V
Output Capacitance	$C_{OB}$	$V_{CB}=10\text{V}, I_E=0, f=0.1\text{MHz}$		57		pF

### RESISTIVE LOAD (TABLE 1)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Delay Time	$t_D$	$V_{CC}=125\text{V}, I_C=5.0\text{A}, I_{B1}=I_{B2}=1.0\text{A}, t_p=25\mu\text{s}, \text{Duty Cycle}\leq 1.0\%$		0.025	0.1	$\mu\text{s}$
Rise Time	$t_R$			0.5	1.5	$\mu\text{s}$
Storage Time	$t_S$			1.8	3.0	$\mu\text{s}$
Fall Time	$t_F$			0.23	0.7	$\mu\text{s}$

Note: Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

## ■ TYPICAL CHARACTERISTICS



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