

**13003DF**

Preliminary

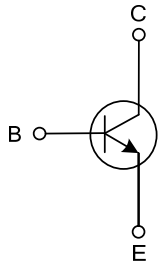
NPN SILICON TRANSISTOR**NPN SILICON BIPOLAR
TRANSISTORS FOR LOW
FREQUENCY AMPLIFICATION****DESCRIPTION**

The UTC **13003DF** is a silicon NPN power switching transistor; it uses UTC's advanced technology to provide customers high collector-base breakdown voltage, low reverse leakage current and high reliability, etc.

The UTC **13003DF** is suitable for electronic ballast power switch circuit and the compact electronic energy-saving light.

FEATURES

- * High collector-base breakdown voltage
- * Low reverse leakage current
- * High reliability

EQUIVALENT CIRCUIT**ORDERING INFORMATION**

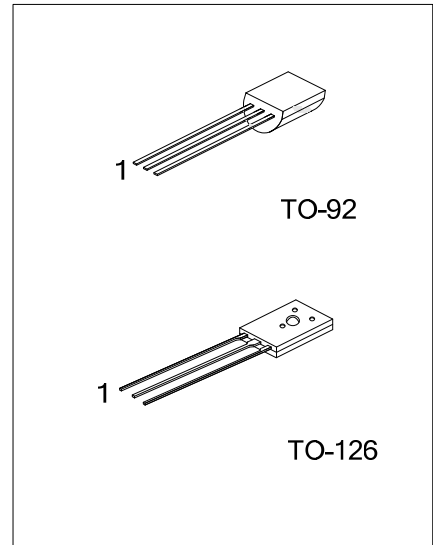
Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
13003DFL-xx-T60-F-K	13003DFG-xx-T60-F-K	TO-126	B	C	E	Bulk
13003DFL-xx-T92-A-B	13003DFG-xx-T92-A-B	TO-92	E	C	B	Tape Box
13003DFL-xx-T92-A-K	13003DFG-xx-T92-A-K	TO-92	E	C	B	Bulk

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

13003DFL-T60-F-B	(1) B: Bluk, K: Bulk (2) refer to Pin Assignment (3) T60: TO-126, T92: TO-92 (4) L: Lead Free, G: Halogen Free
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MARKING

TO-126	TO-92
UTC 13003DF Pin Code Data Code L: Lead Free G: Halogen Free	UTC 13003DF Pin Code L: Lead Free G: Halogen Free Data Code



■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	RATINGS	UNIT
Collector-Base Voltage	V_{CBO}	600	V
Collector-Emitter Voltage	V_{CEO}	400	V
Emitter-Base Voltage	V_{EBO}	9	V
Continuous Collector Current	I_C	1.5	A
Power Dissipation	P_D	$T_A=25^\circ\text{C}$ 1.25	W
		$T_C=25^\circ\text{C}$ 50	W
Junction Temperature	T_J	150	$^\circ\text{C}$
Storage Temperature Range	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.

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Collector-Base Breakdown Voltage	BV_{CBO}	$I_C=0.1\text{mA}$	600			V
Collector-Emitter Breakdown Voltage	BV_{CEO}	$I_C=1\text{mA}$	400			V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E=0.1\text{mA}$	9			V
Collector Cut-Off Current	I_{CBO}	$V_{CB}=600\text{V}$, $I_E=0$			0.1	mA
Collector-Emitter Cut-Off Current	I_{CEO}	$V_{CE}=400\text{V}$, $I_B=0$			0.1	mA
Emitter-Base Cut-Off Current	I_{EBO}	$V_{EB}=9\text{V}$, $I_C=0$			0.1	mA
DC Current Gain (Note 1)	h_{FE}	$V_{CE}=5\text{V}$, $I_C=0.2\text{A}$	15		30	
Low current and high current h_{FE2} h_{FE1} ratio	h_{FE1}/h_{FE2}	h_{FE1} : $V_{CE}=5\text{V}$, $I_C=5\text{mA}$	0.75	0.9		
		h_{FE2} : $V_{CE}=5\text{V}$, $I_C=0.2\text{A}$				
Collector-Emitter Saturation Voltage (Note)	$V_{CE(SAT)}$	$I_C=1\text{A}$, $I_B=0.25\text{A}$		0.3	0.9	V
Base-Emitter Saturation Voltage (Note)	$V_{BE(SAT)}$	$I_C=1\text{A}$, $I_B=0.25\text{A}$		0.9	1.2	V
Storage Time	t_S	UI9600, $I_C=0.1\text{A}$	3		5	μs
Rise Time	t_R				1	μs
Fall Time	t_F				1	μs
Transition Frequency	f_T	$I_C=0.1\text{A}$, $V_{CE}=10\text{V}$, $f=1\text{MHz}$	5			MHz

Note: Pulse test, pulse width $t_p \leq 300\mu\text{s}$, Duty cycles $\leq 2\%$

■ CLASSIFICATION OF h_{FE}

RANK	A	B	C
RANGE	15 ~ 20	20 ~ 25	25 ~ 30

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