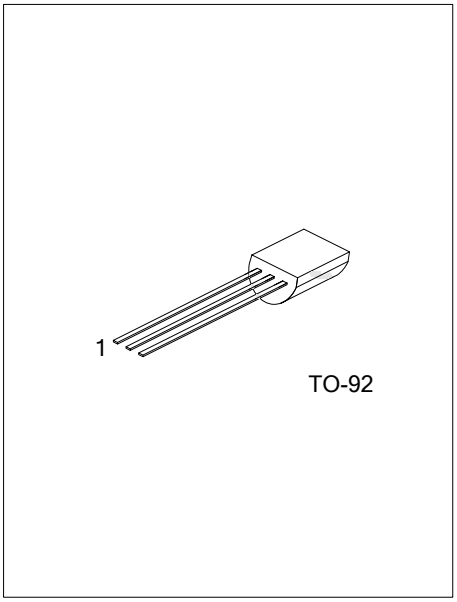
NPN SILICON POWER TRANSISTORS



■ DESCRIPTION

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

■ FEATURES

* $V_{CEO(SUS)}$= 800 V
* Reverse bias SOA with inductive loads @ T_C = 100°C
* Inductive switching matrix 2 to 4 Amp, 25 and 100°C
  t_C @ 3A, 100°C is 180 ns (Typ)
* 800V blocking capability
* SOA and switching applications information

■ APPLICATIONS

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

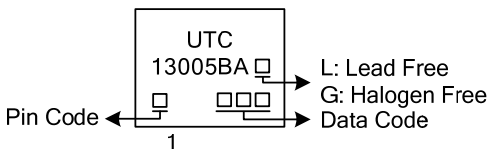
■ ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
13005BAL-T92-A-B	13005BAG-T92-A-B	TO-92	E	C	B	Tape Box
13005BAL-T92-A-K	13005BAG-T92-A-K	TO-92	E	C	B	Bulk
13005BAL-T92-F-B	13005BAG-T92-F-B	TO-92	B	C	E	Tape Box
13005BAL-T92-F-K	13005BAG-T92-F-K	TO-92	B	C	E	Bulk

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

13005BAL-T92-A-B (1)Packing Type (2)Pin Assignment (3)Package Type (4)Lead Free	(1) B: Bluk, K: Bulk (2) refer to Pin Assignment (3) T92: TO-92 (4) L: Lead Free, G: Halogen Free

■ MARKING



■ ABSOLUTE MAXIMUM RATINGS

PARAMETER		SYMBOL	RATINGS	UNIT
Collector-Emitter Voltage		$V_{CEO(SUS)}$	400	V
Collector-Emitter Voltage (V_{BE}=0)		V_{CES}	800	V
Collector-Base Voltage		V_{CBO}	800	V
Emitter Base Voltage		V_{EBO}	9	V
Collector Current	Continuous	I_C	3	A
	Peak (1)	I_{CM}	8	A
Base Current	Continuous	I_B	2	A
	Peak (1)	I_{BM}	4	A
Emitter Current	Continuous	I_E	6	A
	Peak (1)	I_{EM}	12	A
Power Dissipation at T_A=25°C		P_D	1	W
Junction Temperature		T_J	-65 ~ +150	°C
Storage Temperature Range		T_{STG}	-65 ~ +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.

■ THERMAL DATA

PARAMETER	SYMBOL	RATINGS	UNIT
Junction to Ambient	θ_{JA}	150	°C/W
Junction to Case	θ_{JC}	112	°C/W

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

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
OFF CHARACTERISTICS (Note 1)						
Collector-Emitter Sustaining Voltage	$V_{CEO(SUS)}$	I_C=10mA , I_B=0	800			V
Collector Cutoff Current	I_{CBO}	V_{CBO}=Rated Value, $V_{BE(OFF)}$=1.5V			1	mA
		V_{CBO}=Rated Value, $V_{BE(OFF)}$=1.5V, T_C=100°C			5	mA
Emitter Cutoff Current	I_{EBO}	V_{EB}=9V, I_C=0			1	mA
ON CHARACTERISTICS (Note 1)						
DC Current Gain	h_{FE1}	I_C=0.5A, V_{CE}=5V	15		50	
	h_{FE2}	I_C=1A, V_{CE}=5V	10		60	
	h_{FE3}	I_C=2A, V_{CE}=5V	8		40	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	I_C=1A, I_B=0.2A			0.5	V
		I_C=2A, I_B=0.5A			0.6	V
		I_C=4A, I_B=1A			1	V
		I_C=2A, I_B=0.5A, T_A=100°C			1	V
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	I_C=1A, I_B=0.2A			1.2	V
		I_C=2A, I_B=0.5A			1.6	V
		I_C=2A, I_B=0.5A, T_C=100°C			1.5	V
DYNAMIC CHARACTERISTICS						
Current-Gain-Bandwidth Product	f_T	I_C=500mA, V_{CE}=10V, f=1MHz	4			MHz
Output Capacitance	C_{OB}	V_{CB}=10V, I_E=0, f=0.1MHz		65		pF
SWITCHING CHARACTERISTICS						
Resistive Load (Table 1)						
Delay Time	t_D	V_{CC}=125V, I_C=2A, I_{B1}=I_{B2}=0.4A, t_P=25μs, Duty Cycle≤1%		0.025	0.1	μs
Rise Time	t_R			0.3	0.7	μs
Storage Time	t_S			1.7	4	μs
Fall Time	t_F			0.4	0.9	μs

Notes: 1. Pulse Test: Pulse Width=5ms, Duty Cycle≤10%
2. Pulse Test: P_W=300μs, Duty Cycle≤2%