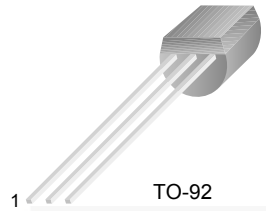
FAIRCHILD SEMICONDUCTOR®

October 2012

KSP44/45
NPN Epitaxial Silicon Transistor

Features

- High-Voltage Transistor
- Collector-Emitter Voltage: V_{CEO} = KSP44: 400V
  KSP45: 350V
- Collector Power Dissipation: P_C(max) = 625mW



TO-92

1. Emitter 2. Base 3. Collector

Ordering Information

Part Number	Top Mark	Package	Packing Method
KSP44BU	KSP44	TO-92 3L	Bulk
KSP44TA	KSP44	TO-92 3L	Ammo
KSP44TF	KSP44	TO-92 3L	Tape and Reel
KSP45TA	KSP45	TO-92 3L	Ammo

Absolute Maximum Ratings

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only.

Values are at T_A = 25°C unless otherwise noted.

Symbol	Parameter		Value	Unit
V_{CBO}	Collector-Base Voltage	: KSP44 : KSP45	500 400	V V
V_{CEO}	Collector-Emitter Voltage	: KSP44 : KSP45	400 350	V V
V_{EBO}	Emitter-Base Voltage		6	V
I_C	Collector Current		300	mA
T_J	Junction Temperature		150	°C
T_{STG}	Storage Temperature		-55 to 150	°C

Thermal Characteristics

Symbol	Parameter	Value	Unit
P_C	Collector Power Dissipation (T_A = 25°C)	625	mW
P_C	Collector Power Dissipation (T_C = 25°C)	1.5	W
$R_{\theta JC}$	Thermal Resistance, Junction to Case	83.3	°C/W
$R_{\theta JA}$	Thermal Resistance, Junction to Ambient	200	°C/W

Electrical Characteristics

Values are at T_a = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
BV_{CBO}	Collector-Base Breakdown Voltage : KSP44 : KSP45	I_C = 100μA, I_B = 0	 500 400		 V V
BV_{CEO}	Collector -Emitter Breakdown Voltage(1) : KSP44 : KSP45	I_C = 1mA, I_B = 0	 400 350		 V V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 100μA, I_C = 0	6		V
I_{CBO}	Collector Cut-off Current : KSP44 : KSP45	 V_{CB} = 400V, I_E = 0 V_{CB} = 320V, I_E = 0		 0.1 0.1	 μA μA
I_{CES}	Collector Cut-off Current : KSP44 : KSP45	 V_{CE} = 400V, I_B = 0 V_{CE} = 320V, I_B = 0		 0.5 0.5	 μA μA
I_{EBO}	Emitter Cut-off Current	V_{EB} = 4V, I_C = 0		0.1	μA
h_{FE}	DC Current Gain(1)	V_{CE} = 10V, I_C = 1mA V_{CE} = 10V, I_C = 10mA V_{CE} = 10V, I_C = 50mA V_{CE} = 10V, I_C = 100mA	40 50 45 40	200	
V_{CE} (sat)	Collector-Emitter Saturation Voltage(1)	I_C = 1mA, I_B = 0.1mA I_C = 10mA, I_B = 1mA I_C = 50mA, I_B = 5mA		0.4 0.5 0.75	V V V
V_{BE} (sat)	Base-Emitter Saturation Voltage(1)	I_C = 10mA, I_B = 1mA		0.75	V
C_{ob}	Output Capacitance	V_{CB} = 20V, I_E = 0, f = 1MHz		7	pF

Note:

1. Pulse Test: PW ≤ 300μs, Duty Cycle ≤ 2%.

Typical Performance Characteristics

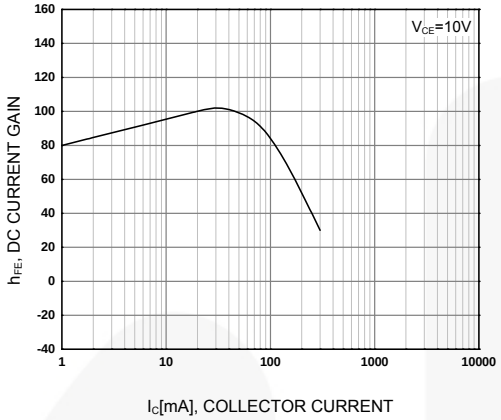


Figure 1. DC Current Gain

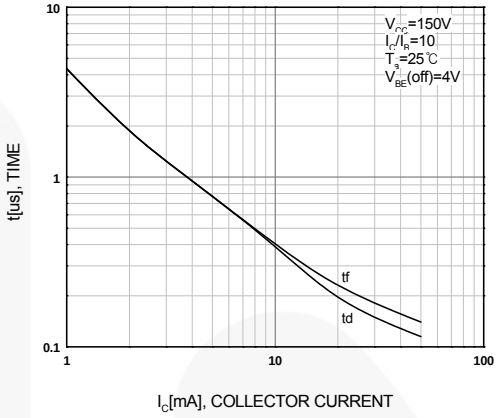


Figure 2. Turn-On Switching Times

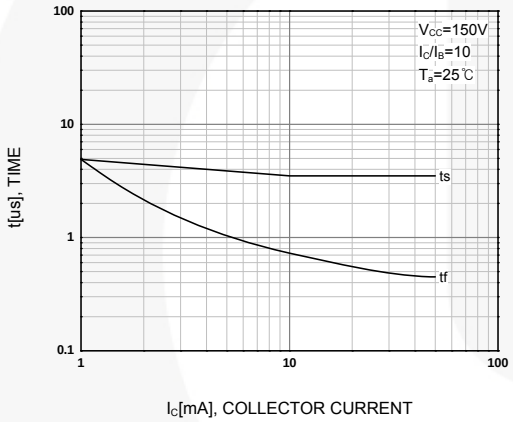


Figure 3. Turn-Off Switching Times

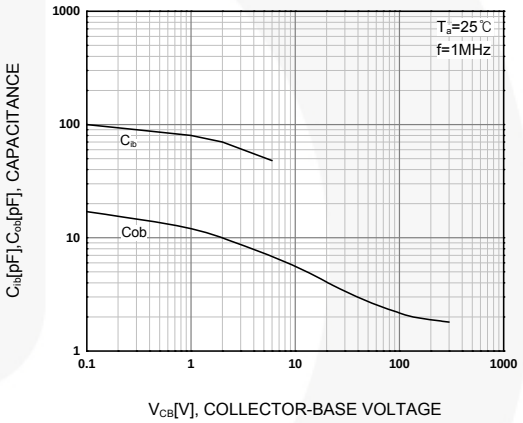


Figure 4. Capacitance

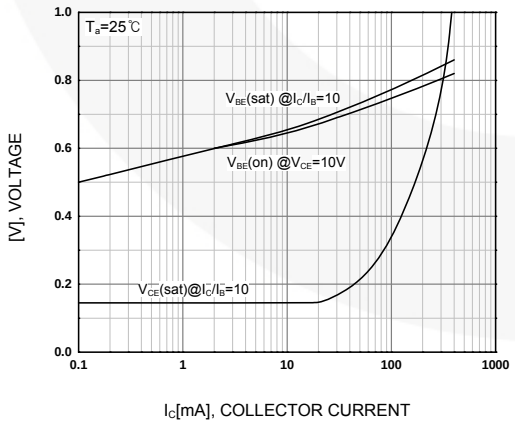


Figure 5. On Voltage

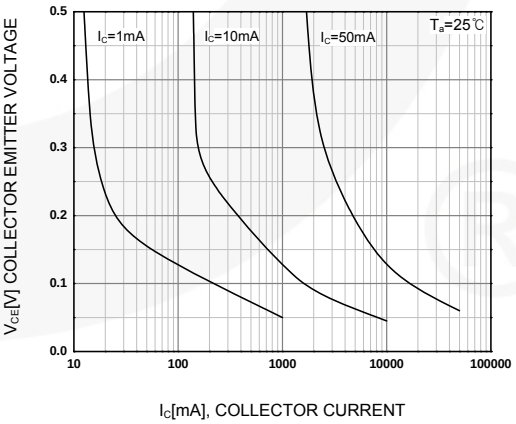


Figure 6. Collector Saturation Region

Typical Performance Characteristics (Continued)

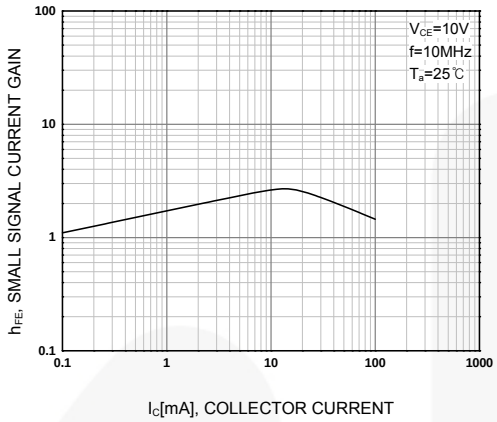


Figure 7. High-Frequency Current Gain

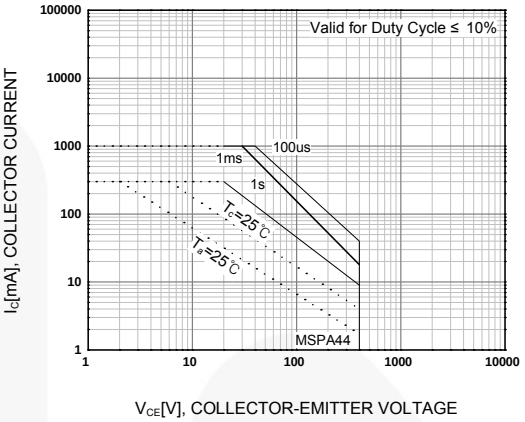
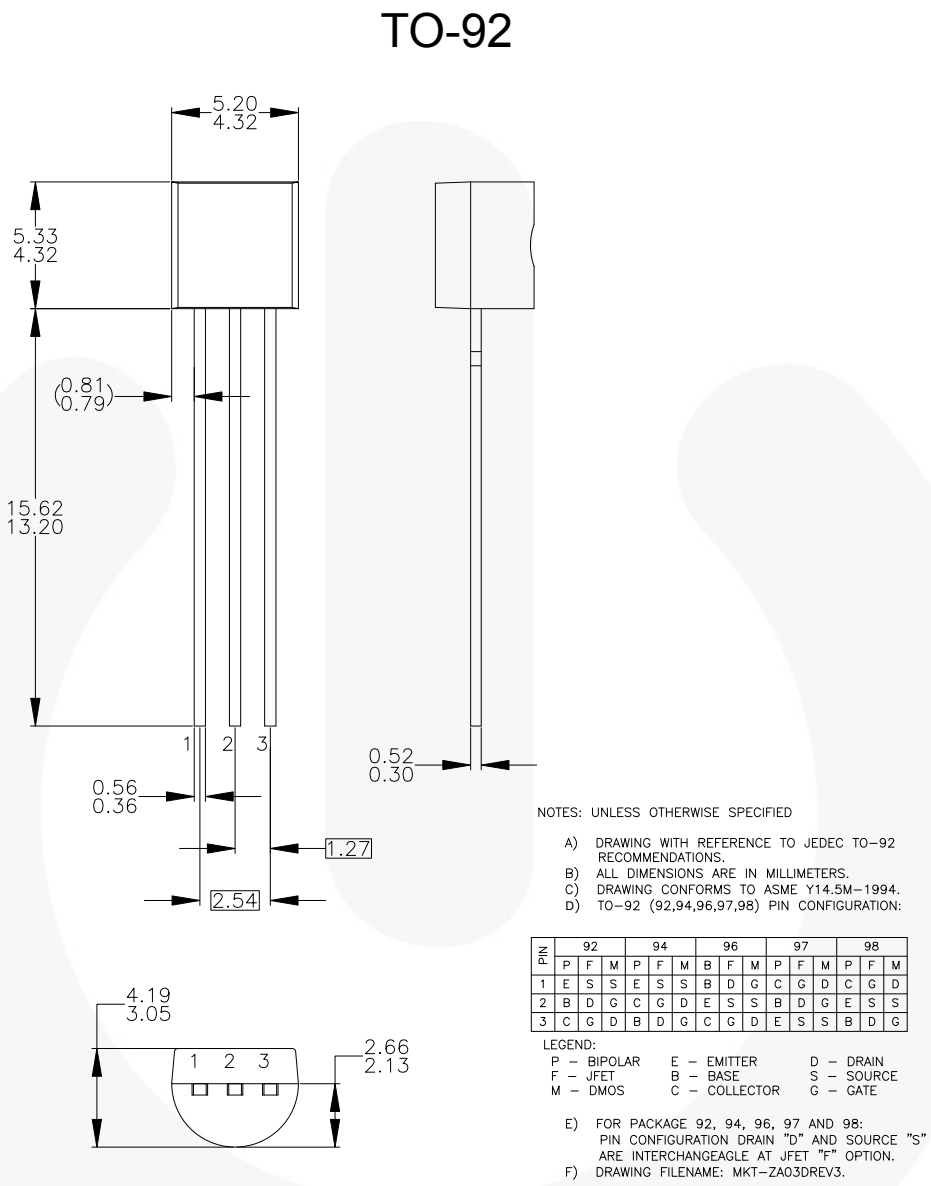


Figure 8. Safe Operating Area

Physical Dimensions



PIN	92			94			96			97			98		
	P	F	M	P	F	M	B	F	M	P	F	M	P	F	M
1	E	S	S	E	S	S	B	D	G	C	G	D	C	G	D
2	B	D	G	C	G	D	E	S	S	B	D	G	E	S	S
3	C	G	D	B	D	G	C	G	D	E	S	S	B	D	G

Figure 9. 3-Lead, TO-92, Molded, Standard Straight Lead, Bulk Type

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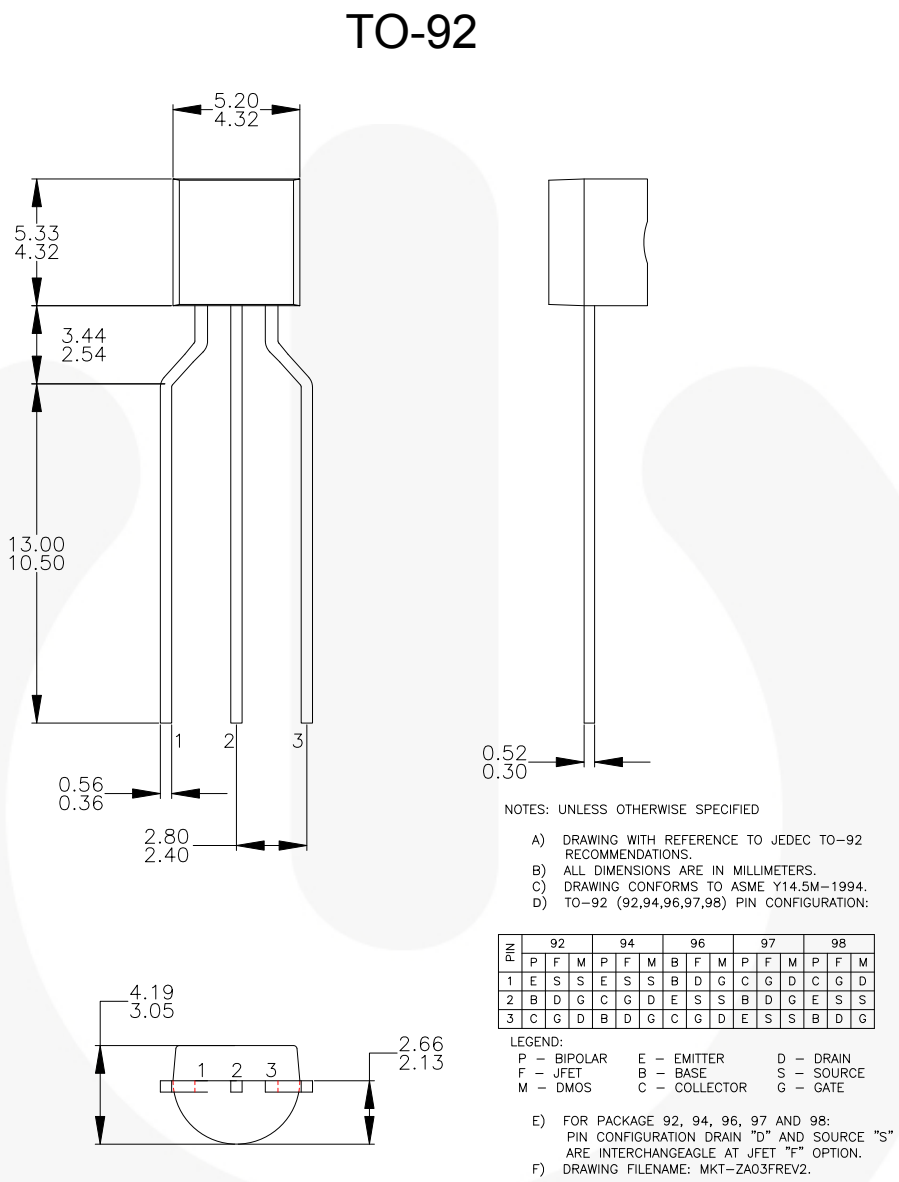
Physical Dimensions (Continued)



PIN	92			94			96			97			98		
	P	F	M	P	F	M	B	F	M	P	F	M	P	F	M
1	E	S	S	E	S	S	B	D	G	C	G	D	C	G	D
2	B	D	G	C	G	D	E	S	S	B	D	G	E	S	S
3	C	G	D	B	D	G	C	G	D	E	S	S	B	D	G

Figure 10. 3-Lead, TO-92, Molded, 0.2 In Line Spacing Lead Form, Ammo, Tape and Reel Type

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