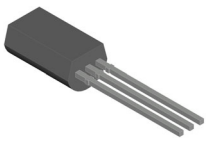
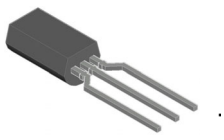
PNP Epitaxial Silicon Transistor

KSA1013



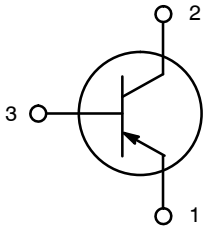
TO−92 3
CASE 135AP



TO−92 3 LF
CASE 135AM

Features

- Color TV Audio Output
- Color TV Vertical Deflection Output



1. Emitter
2. Collector
3. Base

MARKING DIAGRAM



A = Assembly Site
A1013 = Specific Device Code
Y = Year of Production
WW = Work Week

ABSOLUTE MAXIMUM RATINGS

(T_A = 25°C unless otherwise noted.)

Symbol	Parameter	Ratings	Unit
V_{CBO}	Collector−Base Voltage	−160	V
V_{CEO}	Collector−Emitter Voltage	−160	V
V_{EBO}	Emitter−Base Voltage	−6	V
I_C	Collector Current	−1	A
I_B	Base Current	−0.5	A
T_J	Junction Temperature	150	°C
T_{STG}	Storage Temperature	−55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

THERMAL CHARACTERISTICS (Note 1)

(T_A = 25°C unless otherwise noted.)

Symbol	Parameter	Value	Unit
P_D	Power Dissipation	900	mW
	Derate Above T_A = 25°C	7.2	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction−to−Ambient	139	°C/W

1. PCB size: FR−4, 76 mm × 114 mm × 1.57 mm (3.0 inch × 4.5 inch × 0.062 inch) with minimum land pattern size.

ORDERING INFORMATION

Device	Package	Shipping
KSA1013YBU	TO−92 3 (Pb−Free)	6000 Units / Bulk
KSA1013YTA	TO−92 3 LF (Pb−Free)	2000 Units / Ammo

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
I_{CBO}	Collector Cut−off Current	V_{CB} = −150 V, I_E = 0	−	−	−1	μA
I_{EBO}	Emitter Cut−off Current	V_{BE} = −6 V, I_C = 0	−	−	−1	μA
BV_{CEO}	Collector−Emitter Breakdown Voltage	I_C = −10 mA, I_B = 0	−160	−	−	V
h_{FE}	DC Current Gain	V_{CE} = −5 V, I_C = −200 mA	60	−	320	
V_{CE} (sat)	Collector−Emitter Saturation Voltage	I_C = −500 mA, I_B = −50 mA	−	−	−1.5	V
V_{BE} (on)	Base−Emitter On Voltage	V_{CE} = −5 V, I_C = −5 mA	−0.45	−	−0.75	V
f_T	Current Gain Bandwidth Product	V_{CE} = −5 V, I_C = −200 mA	15	50	−	MHz
C_{ob}	Output Capacitance	V_{CB} = −10 V, I_E = 0, f = 1 MHz	−	−	35	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

h_{FE} Classification

Classification	R	O	Y
h_{FE}	60 ~ 120	100 ~ 200	160 ~ 320

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TYPICAL PERFORMANCE CHARACTERISTICS

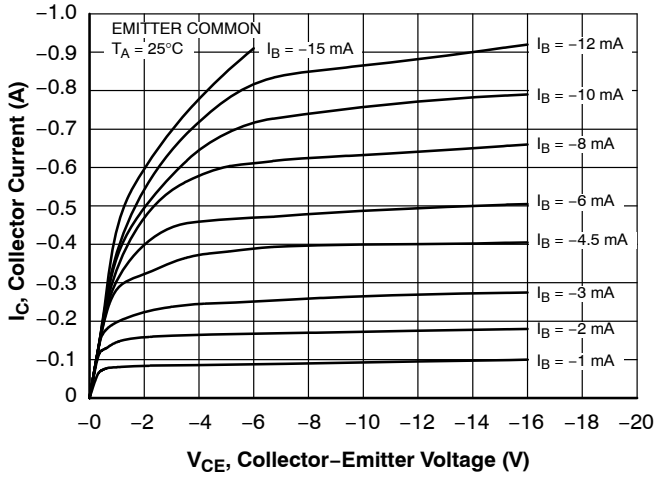


Figure 1. Static Characteristic

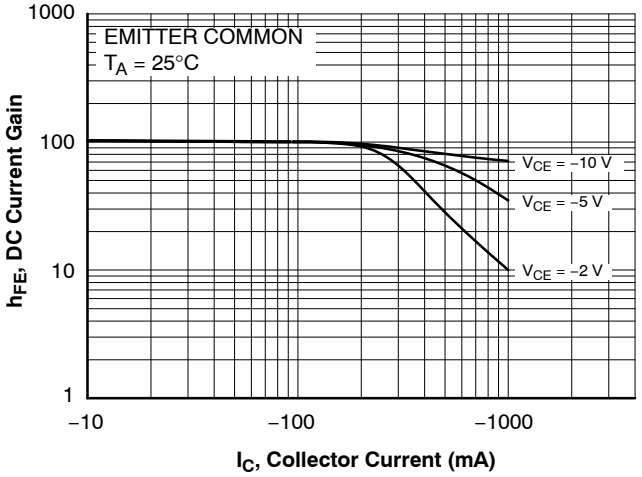


Figure 2. DC Current Gain

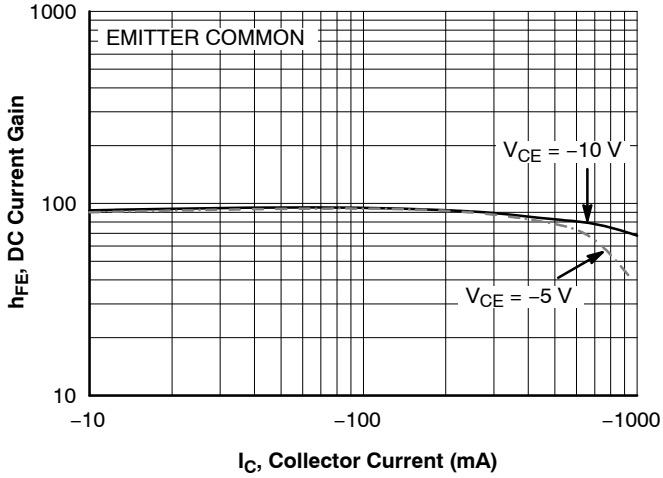


Figure 3. DC Current Gain

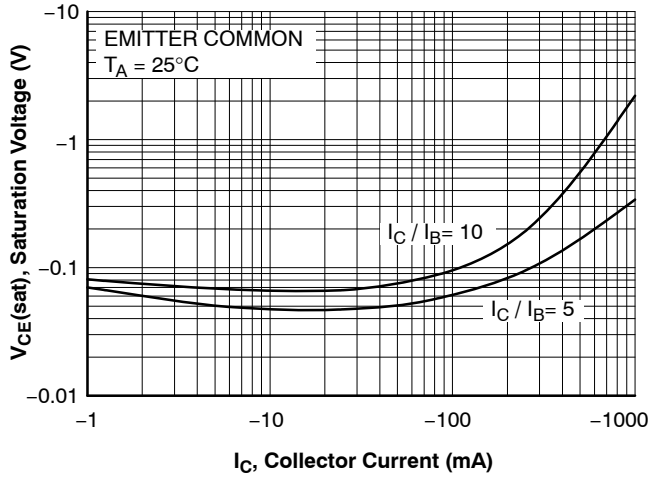


Figure 4. Collector−Emitter Saturation Voltage

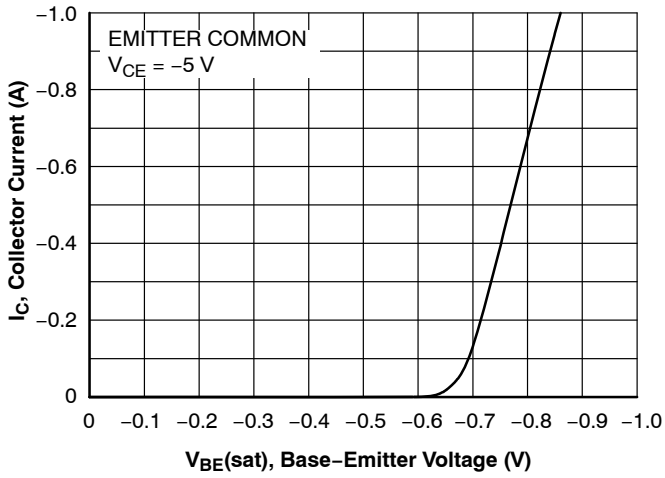


Figure 5. Base−Emitter On Voltage

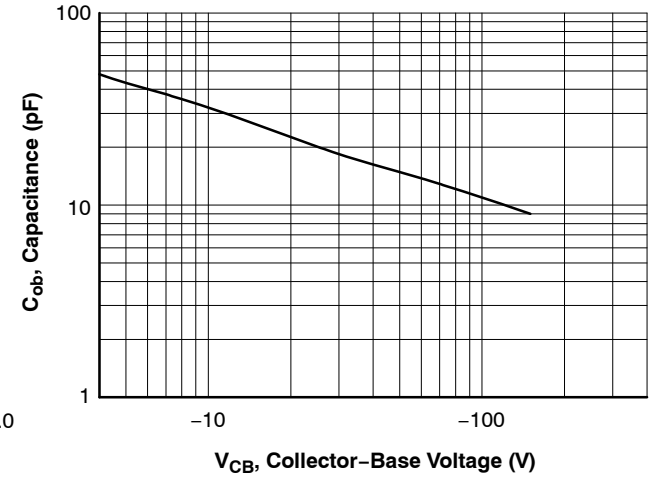


Figure 6. Collector Output Capacitance

TYPICAL PERFORMANCE CHARACTERISTICS (CONTINUED)

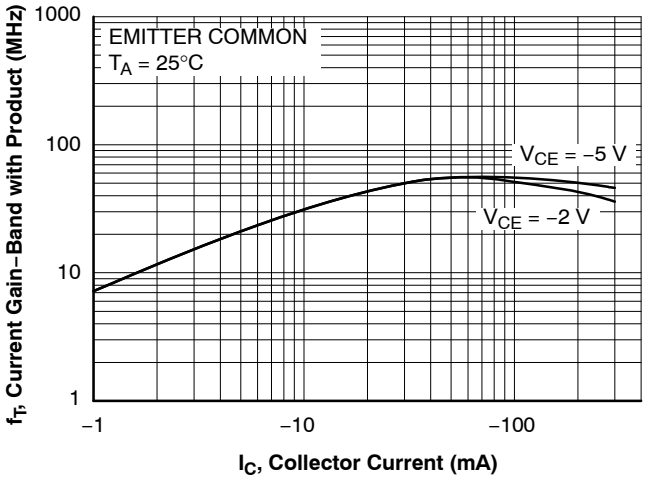


Figure 7. Current Gain Bandwidth Product

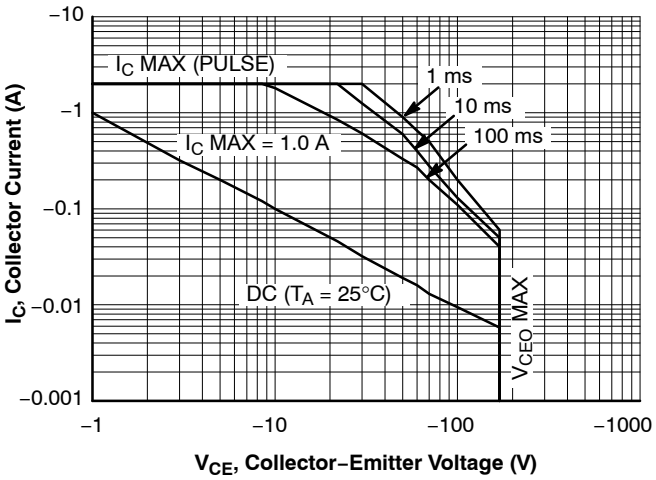
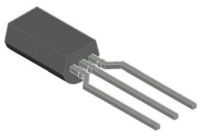
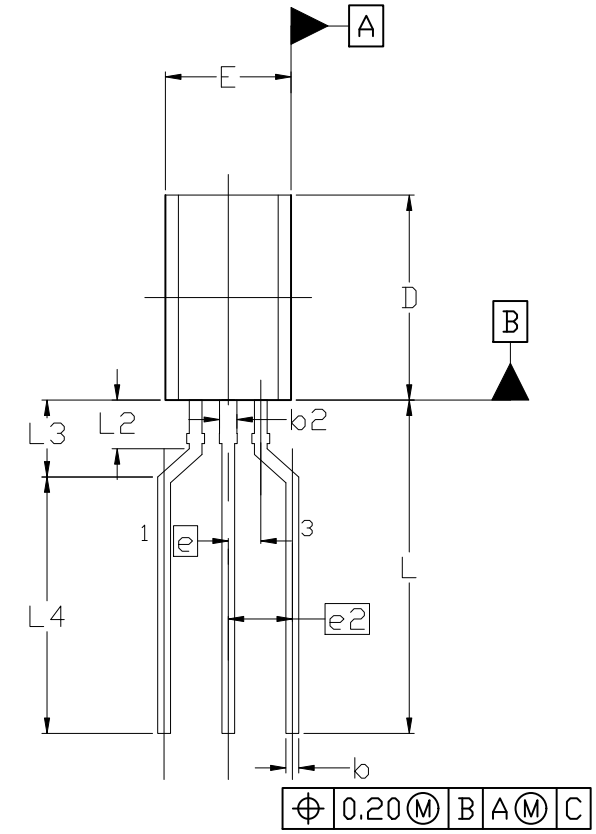


Figure 8. Safe Operating Area

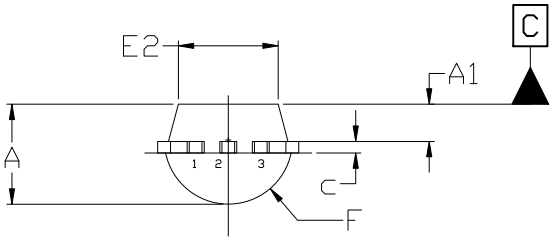


TO−92 3 8.0x4.9 (LEADFORMED)
CASE 135AM
ISSUE B

DATE 14 JAN 2021



TOP VIEW



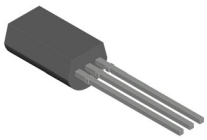
END VIEW

NOTES:
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2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH, GATE REMAINS AND TIE BAR PROTRUSIONS.
4. DIMENSION b AND b2 DOES NOT INCLUDE DAMBAR PROTRUSION. DIMENSION b2 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	3.70	3.90	4.10
A1	1.25	1.45	1.65
b	0.35	0.50	0.60
b2	0.62	---	0.78
c	0.35	0.45	0.55
D	7.80	8.00	8.20
E	4.70	4.90	5.10
E2	3.70	3.90	4.10
e	1.27 BSC		
e2	2.50 BSC		
F	2.45 REF		
L	13.00 REF		
L2	1.50	---	1.90
L3	2.60	---	3.40
L4	10.40 REF		

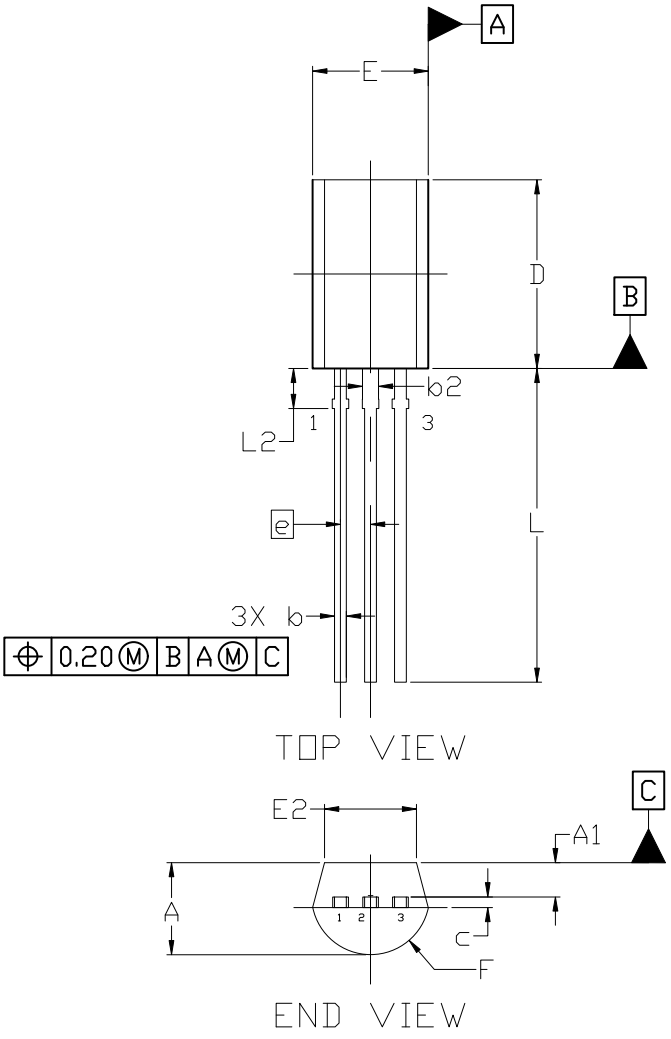
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TO−92 3 8.0x4.9
CASE 135AP
ISSUE A

DATE 13 JAN 2021



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c	0.35	0.45	0.55
D	7.80	8.00	8.20
E	4.70	4.90	5.10
E2	3.70	3.90	4.10
e	1.27 BSC		
F	2.45 REF		
L	13.30	---	14.20
L2	1.70 REF		

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