

KSB13003A / KSG13003A KSC13003A / KSH13003A

NPN Silicon Power Transistor, $V_{CBO}=700V$, $V_{CEO}=400V$, $I_C=1.5A$

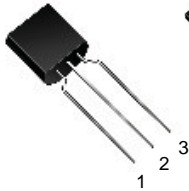
General Description

- High Speed Switching
- Suitable for Electronic Ballast up to 21W

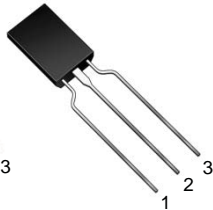
Features

- $V_{CBO} = 700V$
- $V_{CEO} = 400V$
- $V_{BEO} = 9V$
- $I_C = 1.5A$

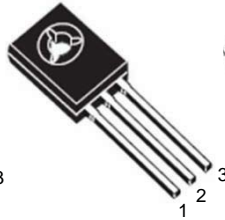
TO-92



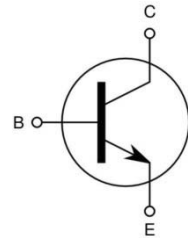
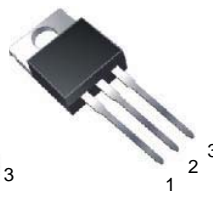
TO-92L



TO-126



TO-220



Ordering Information

Ordering number	Package	Pin Assignment			Packing
		1	2	3	
KSB13003A	TO-92	B	C	E	Ammo
KSB13003AR	TO-92	E	C	B	Ammo
KSG13003AR	TO-92L	E	C	B	Ammo
KSC13003A	TO-126	B	C	E	Bulk
KSH13003A	TO-220	B	C	E	Tube

h_{FE} Classification

Classification	O	Y
h_{FE}	10 ~ 25	20 ~ 35

* Test Condition : $V_{CE}=2V, I_C=0.5A$

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NPN Silicon Power Transistor, $V_{CBO}=700V$, $V_{CEO}=400V$, $I_C=1.5A$

Absolute Maximum Ratings TC=25°C unless otherwise noted

CHARACTERISTICS	SYMBOL	RATING				UNIT
		TO-92	TO-92L	TO-126	TO-220	
Collector-Base Voltage	V_{CBO}	700				V
Collector-Emitter Voltage	V_{CEO}	400				V
Emitter-Base Voltage	V_{EBO}	9				V
Collector Current(DC)	I_C	1.5				A
Collector Current(Pulse)	I_{CP}	3				A
Base Current	I_B	0.75				A
Collector Dissipation(Tc=25°C)	P_C	1.1	1.5	20	30	W
Junction Temperature	T_J	150				°C
Storage Temperature	T_{STG}	-65~150				°C

Electrical Characteristics TC=25°C unless otherwise noted

CHARACTERISTICS	SYMBOL	Test Condition	Min	Typ.	Max	Unit
Collector-Base Breakdown Voltage	V_{CBO}	$I_C=500\mu A, I_E=0$	700			V
Collector-Emitter Breakdown Voltage	V_{CEO}	$I_C=10mA, I_B=0$	400			V
Emitter Cut-off Current	I_{EBO}	$V_{EB}=9V, I_C=0$			10	μA
*DC Current Gain	h_{FE1} h_{FE2}	$V_{CE}=2V, I_C=0.5A$ $V_{CE}=2V, I_C=1A$	10 5		35	
*Collector-Emitter Saturation Voltage	$V_{CE}(sat)$	$I_C=0.5A, I_B=0.1A$ $I_C=1A, I_B=0.25A$ $I_C=1.5A, I_B=0.5A$			0.5 1.0 3.0	V V V
*Base-Emitter Saturation Voltage	$V_{BE}(sat)$	$I_C=0.5A, I_B=0.1A$ $I_C=1A, I_B=0.25A$			1.2 1.4	V V
Output Capacitance	C_{ob}	$V_{CB}=10V, f=0.1MHz$		21		pF
Current Gain Bandwidth Product	f_T	$V_{CE}=10V, I_C=0.1A$	4			MHz
Turn on Time	t_{on}	$V_{CC}=125V, I_C=1A$ $I_{B1}=0.2A, I_{B2}=-0.2A$ $R_L=125\Omega$			1.1	μs
Storage Time	t_{stg}				4.0	μs
Fall Time	t_F				0.7	μs

* Pulse Test: Pulse Width $\leq 300\mu s$, Duty Cycles $\leq 2\%$

Typical Characteristics

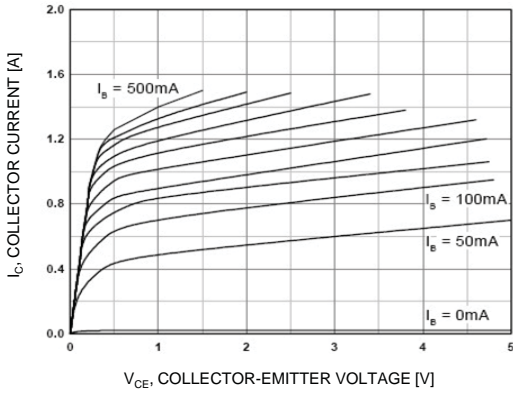


Figure 1. Static Characteristic

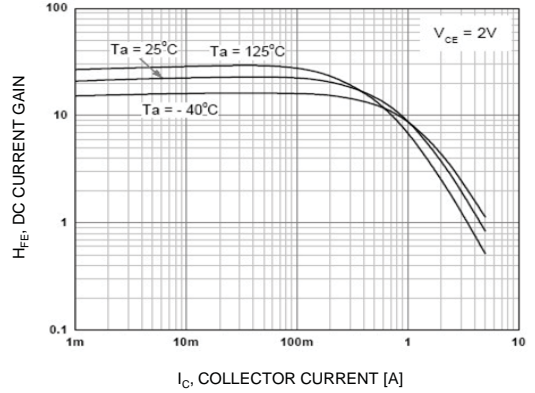


Figure 2. DC Current Gain

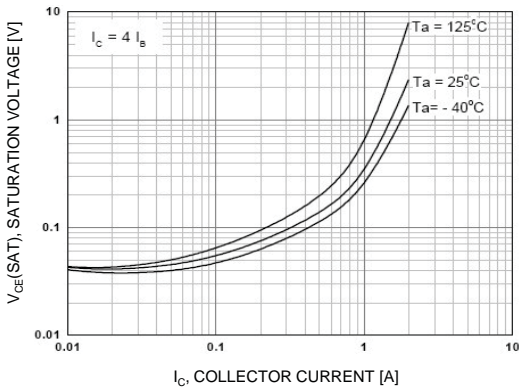


Figure 3. Collector-Emitter Saturation Voltage

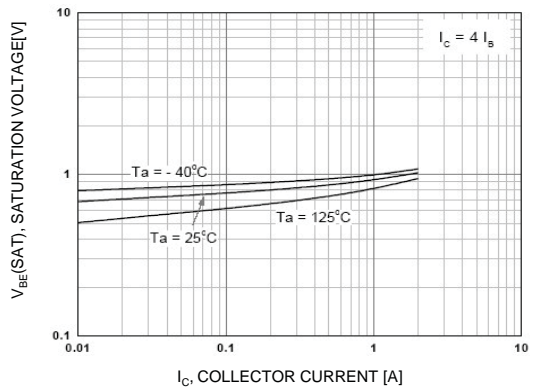


Figure 4. Base-Emitter Saturation Voltage

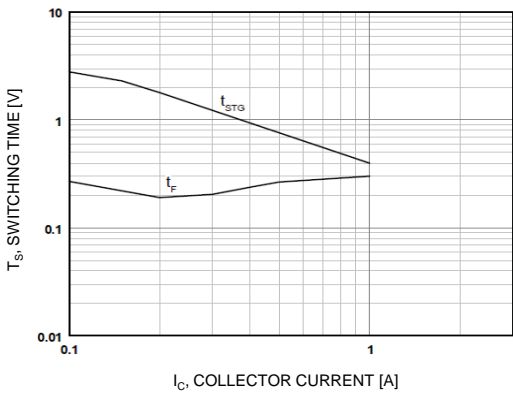


Figure 5. Resistive Load Switching Time

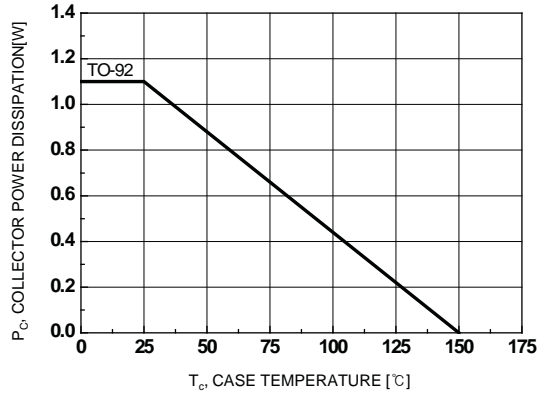


Figure 6. Power Derating

Typical Characteristics

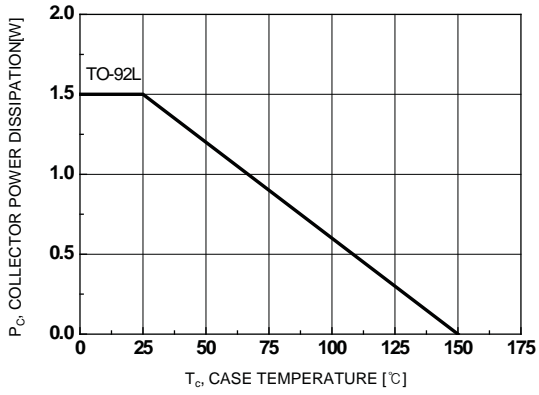


Figure 7. Power Derating

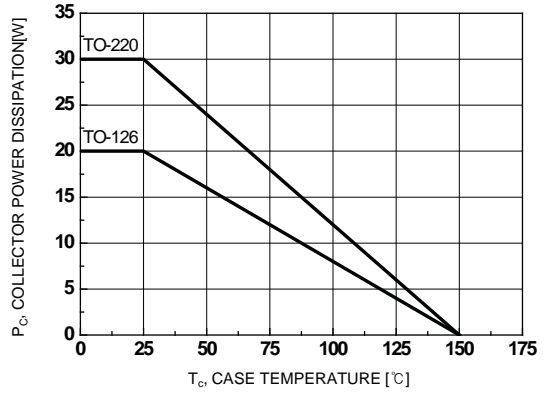
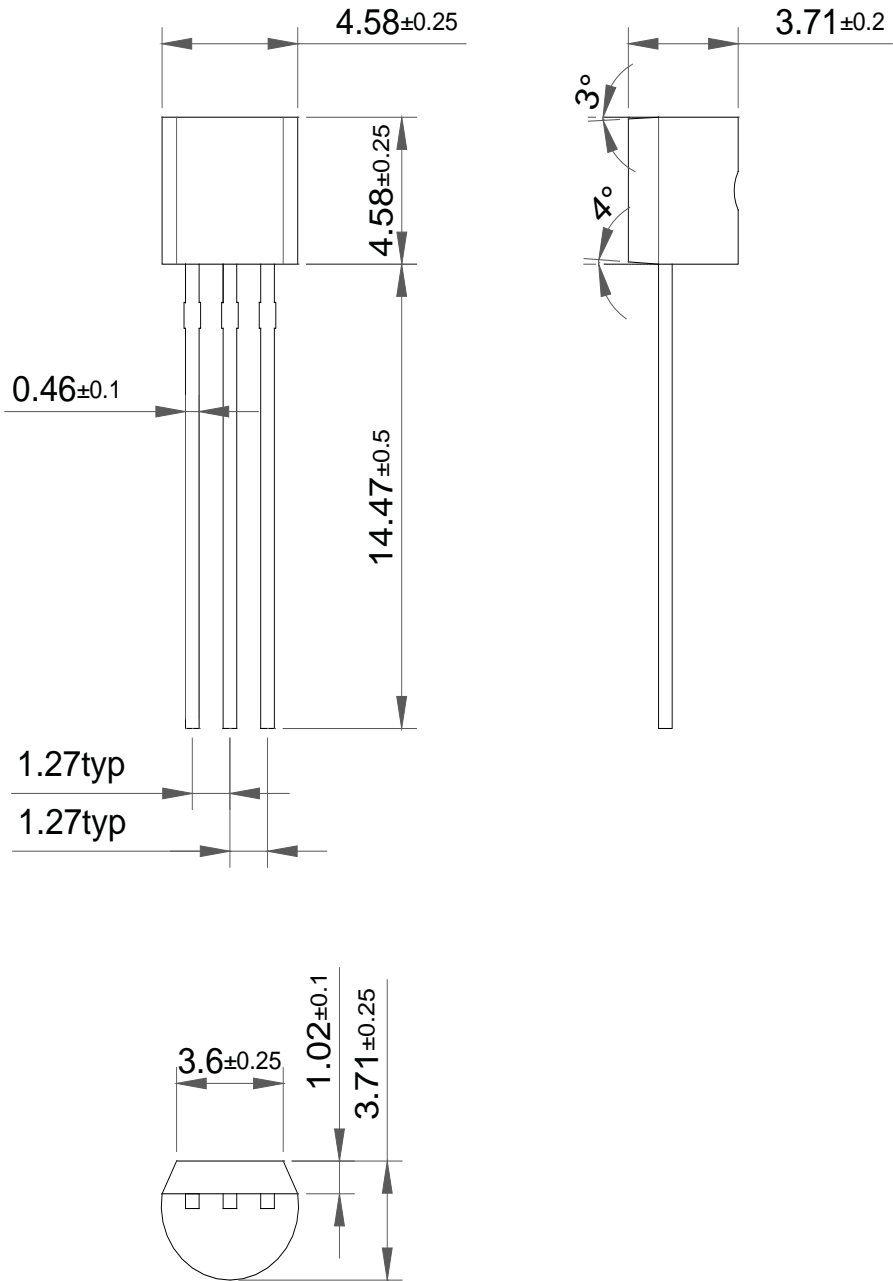


Figure 8. Power Derating

Package Dimension

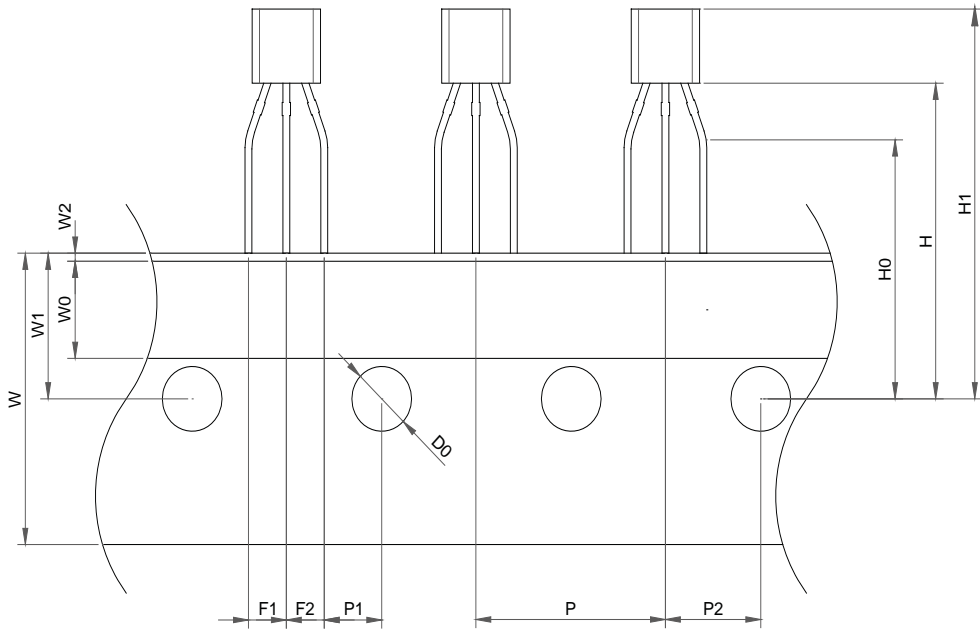
TO-92



Dimensions in Millimeters

Package Dimension

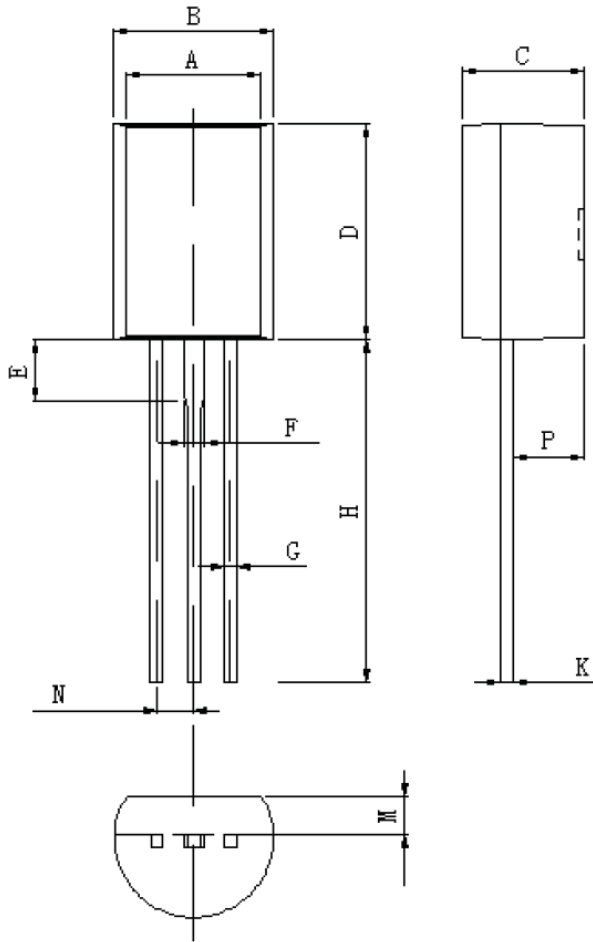
TO-92 TAPING



Item	Symbol	Dimension [mm]	
		Reference	Tolerance
Component pitch	P	12.7	±0.5
Side lead to center of feed hole	P1	3.85	±0.5
Center lead to center of feed hole	P2	6.35	±0.5
Lead pitch	F1,F2	2.5	+0.2/-0.1
Carrier Tape width	W	18.0	+1.0/-0.5
Adhesive tape width	W0	6.0	±0.5
Tape feed hole location	W1	9.0	±0.5
Adhesive tape position	W2	1.0 MAX	
Center of feed hole to bottom of component	H	19.5	±1
Center of feed hole to lead form	H0	16.0	±0.5
Component height	H1	27.0 max	
Tape feed hole diameter	D0	4.0	±0.2

Package Dimension

TO-92L

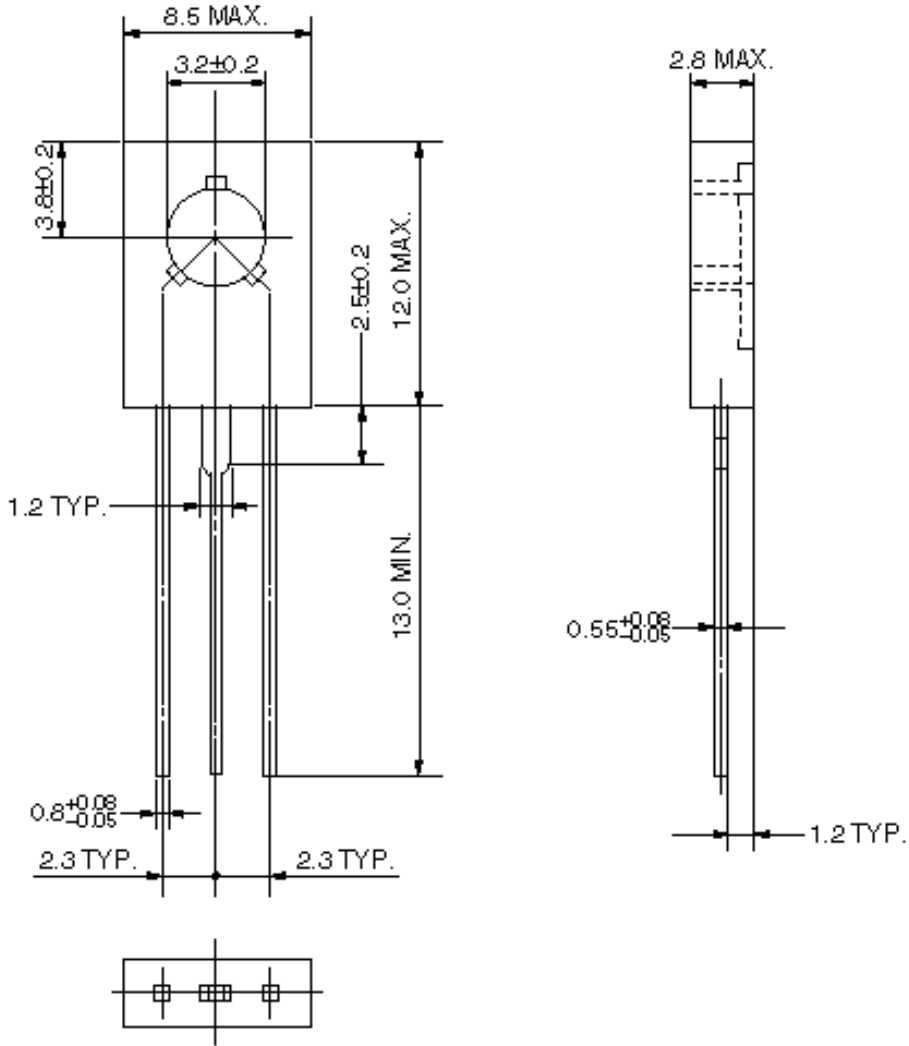


DIM	MILLIMETERS
A	5.8 _{-0.2}
B	6.3 _{+0.2}
C	4.8 _{+0.2}
D	8.6 _{+0.2}
E	3.0 _{+0.2}
F	1.0 _{+0.2}
G	0.5 _{+0.1}
H	13.0 _{+0.2}
K	0.5 _{+0.1}
M	1.5 _{+0.2}
N	1.4 _{+0.2}
P	2.9 _{+0.3}

Package Dimension

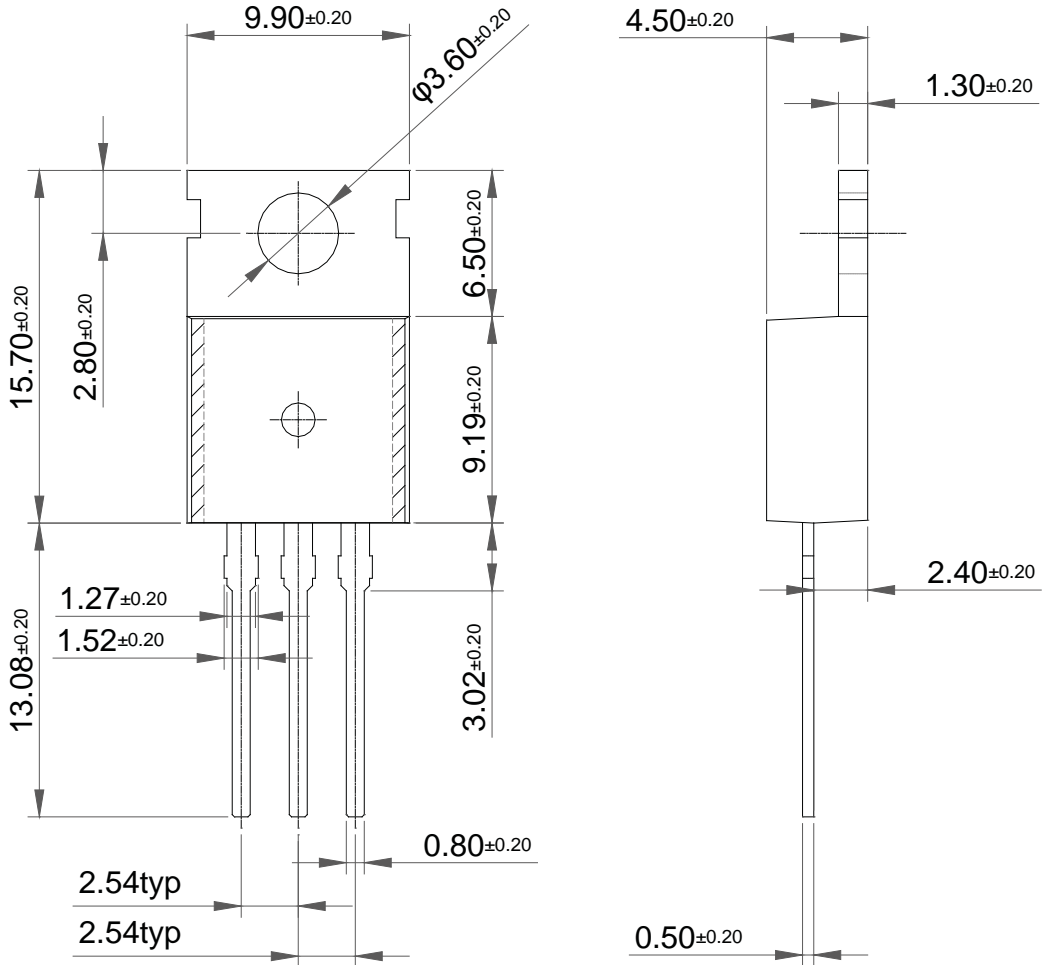
TO-126

UNIT : mm



Package Dimension

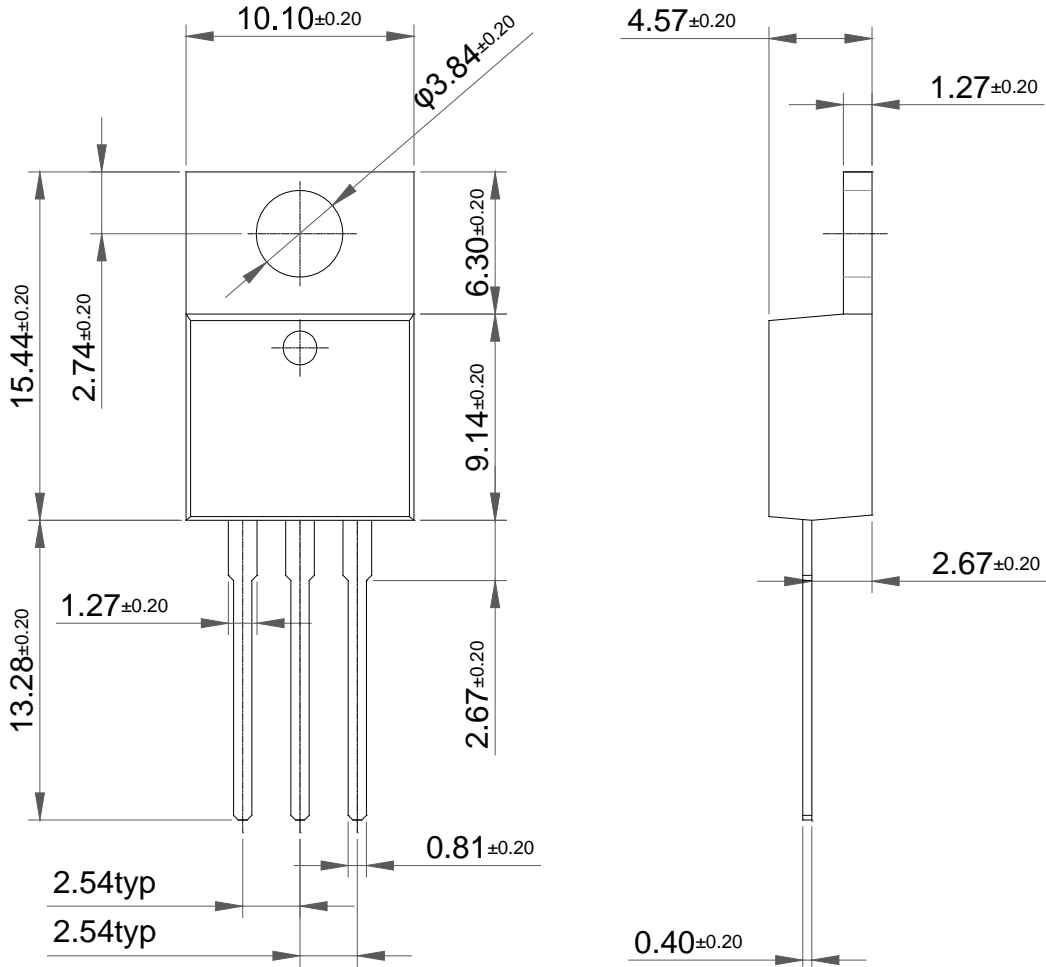
TO-220 (A)



Dimensions in Millimeters

Package Dimension

TO-220 (B)



Dimensions in Millimeters